F&O Number	F&O Details
4-13	The PRA model currently uses flag events indicate which standby component is running. It was noted that these flags could be set to zero or one (TRUE or FALSE during quantification) as in the ERCW system, or could be set to an appropriate split fraction to reflect the percentage of time each component was running as was done in the CCS system. (The base PRA model solution appears to assume a specific set of components are running or in standby, with the exception of CCS, which assumes a 50%/50% likelihood of each train running.) The "mixing" of assumed configurations with probabilistic configurations should be re-examined. For CCS, the split fractions are based on assumptions based on system design, but are reviewed by the system engineers for accuracy. However, operational data is not reviewed to determine the specific split fractions for each component. Therefore, the requirements of Category I for SR DA-C8 are met.

(This F&O originated from SR DA-C8)

Associated SR(s)

IE-A6

IE-C10

DA-C8

Basis for Significance

This is considered to be a suggestion, as Category I of DA-C8 is met and this should be adequate for most applications. The determination of more precise split fractions (e.g., 54% and 46% vs. an assumed 50%/50% split) would not impact the overall PRA results significantly.

Possible Resolution

To meet Category II, collect operating data to determine the actual standby/running fractions for plant equipment. This data could be documented either in each system notebook or in the data notebook. Consideration should also be given to using a consistent set of assumptions concerning system alignments (i.e., either all based on an assumed configuration or all based on probabilistic estimates for each alignments).

Response

The values used in each fault tree were agreed upon by the system engineers from the site. No changes will be made to the split fraction values.

F&O Number	F&O Details
4-14	The Level 2 documentation as presented in MDN-000-000-2010-0206 provides documentation of each of the steps of the Level 2 analysis process. The documentation is reasonably thorough; however, various documentation recommendations have been noted in the various LE SRs that will further improve the quality of the overall documentation package.

Also, there are a number of known changes to the Level 2 notebook that was reviewed that need to be made (incorporation of Sequoyah-specific containment failure evaluation results, updated CETs, updated LOSP recovery information, expanded discussion of systematic reviews that were performed, updated results, truncation studies, and sensitivity studies, etc.) This new/revised information needs to be incorporated as soon as possible in order to ensure that the notebook is consistent with the actual Level 2 model and properly documents all of the information that is required by the Standard.

(This F&O originated from SR LE-G1)

Associated SR(s)

LE-B1

LE-B2

LE-C3

LE-C9

LE-C10

LE-D1

LE-D2

LE-G1

Basis for Significance

This is considered a suggestion since it pertains to documentation enhancement. However, it is important that the Level 2 documentation reflect the current model and results.

Possible Resolution

Update the notebook to reflect the comments in the referenced SRs and to incorporate the most recent information.

Response

Sequoyah specific containment failure results have been included in the document. The containment event trees have also been updated. The LOSP recoveries use level

one recovery factors, which should be conservative as discussed in Section 10.1. Updated results, truncation and sensitivity studies have been incorporated into the current document.

F&O Number	F&O Details
4-15	The accident sequences are developed to a level of detail to account for the potential contributors identified in LE-B1 and analyzed in LE-B2. The containment structural capability and phenomena challenging containment are discussed in MDN-000-000-2010-0206 Sections 5.11, 5.12, and 5.13. The description of the questions considered in the Level 2 event trees are described in Section 6 and depicted in Appendix B. However, for SBO sequences, Assumptions 10 and 11 state that if offsite power is restored, that containment systems and injection systems will then operate successfully and may arrest core melt in-vessel and provide containment heat removal. The possibility that these mitigating systems might not function should be considered following power restoration. This would affect the logic associated with questions 10 and 16 of the SBO CET. (This F&O originated from SR LE-C1) **Associated SR(s)** LE-C1 **Basis for Significance** This is considered to be a suggestion since this modeling enhancement should have only a small impact on the Level 2 results (mostly for non-LERF sequences). **Possible Resolution** Enhance the CET logic to consider the potential for failure of ECCS or CHR following AC power recovery. **Response** This suggestion has not been incorporated into the current model but it will be considered for future model updates. Note that while not considering failure of these systems is a source of potential non-conservative results, the current model does not credit power recoveries beyond those considered in level 1 which is a conservative counter-balance to this effect.

F&O Number	F&O Details
4-16	There are several issues identified with the use of the rule-based recovery file and its associated documentation. Section 9.3 of the Level 2 Notebook says that various recovery rules were used to remove invalid combinations; these have now been replaced by a combination of fault tree logic changes and mutually-exclusive rules. The LOSP recovery information described in section 10 is out of date. Specifically, the notebook says that the additional time between core damage and vessel failure was included in the OSP recovery terms (as compared to the Level 1 analysis); however, the Level 1 OSP recovery factors were used in the level 2 (i.e., no credit for the additional time). Also, the recovery factor data shown in the notebook pertains to Watts Bar and is not the SQN-specific data used in this PRA. Recovery rules are also used to apply state of knowledge correlation adjustments to the ISLOCA valve failure probabilities. Similar to the issues seen with HEP dependency analysis, cutsets containing combinations of multiple valve failures may be truncated from the solution if the nominal values are used. So, an approach similar to HEP dependency rule application must be used (i.e. solve the fault tree model with artificially high values for the ISLOCA valve failures, and then use the recovery file to either apply the SOK values as appropriate or to restore the valve failure probabilities to their proper values.) (This F&O originated from SR LE-E4) **Associated SR(s)** LE-E4 **Basis for Significance** This is considered to be a suggestion since the items pertain either to documentation updates or to relatively minor technical corrections. The proper treatment of the SOK adjustments may result in a small increase in ISLOCA probability. The consideration of the additional time available to restore OSP after core damage may result in a small reduction in LERF. **Possible Resolution** Address the issues identified with the recovery rules. **Response** The current level 2 analysis does not use level 2 specific recovery factors and the documentation has been updated to reflect this. The difference in results produced by increasing the default failure rates in the ISLOCA tree is deemed to be very small. ISLOCA contributes a small amount to the results for both level 1 and level 2, and utilizing a "seed value" approach similar to what was used for HEPS would not increase ISLOCA contribution significantly.

F&O Number	F&O Details
4-17	HRA analysis was performed using the EPRI HRA Calculator for feasible operator actions following the onset of core damage. The specific operator actions credited and not credited are described in MDN-000-000-2010-0206 Section 7. The details of the analysis of each HFE is contained in the HRA Notebook (MDN-000-000-2010-0204). The SQN level 2 analysis used the Watts bar PRA as a starting point. At Watts Bar, the SG PORVs will fail upon loss of power and are not credited after that time. However, at SQN, operators can use reach rods to operate the SG PORVs in SBO conditions. The Level 2 analysis should be updated to consider use of the SG PORVs, particularly since SBO is a key LERF contributor. Other conservative assumptions in the model (as documented in Section 5 of the Level 2 notebook) should also be re-evaluated. (This F&O originated from SR LE-C2) **Associated SR(s)** LE-C2 **Basis for Significance** This is a suggestion since it could be used to improve the PRA model through the reduction of conservatism **Possible Resolution** Re-evaluate the manual operation of SG-PORVs in a SBO, as well as other conservative assumptions in the Level 2 analysis. **Response** The manual operation of SG-PORVs in a SBO is covered in the level 1 analysis which is incorporated in the level 2 analysis.

F&O Number	F&O Details
5-1	Little description of the screening values is provided in the main text.

For example, two primary screening values are used for post-initiator HEPs, 1.0E-8 and 1.0. Even though Appendix E provides the basis for the screening value, the main HRA notebook should have a description on the approach taken to assign the screening values.

In addition, Table 10-2 of the HRA notebook shows that some events in the table are set to a value of 1.0E-8. An asterisk follows this number. However, the meaning of the asterisk is not provided.

(This F&O originated from SR HR-I2)

Associated SR(s)

HR-I2

Basis for Significance

This is a suggestion because these are enhancements to the documentation.

Possible Resolution

1) Document the basis of the assigned screening values and the process used to determine the appropriate values in the text of the HRA notebook.
2) Provide an explanation of the meaning of the asterisk for HEPs set to a value of 1.0E-8 in Table 10-2.

Response

1) The screening values are appropriately documented in appendix E and no value would be added by moving this section to the main text of the document.

2) Table 10-2 was revised and no HEPs are set to 1.0E-8 or have an asterisk.

F&O Number	F&O Details
5-4	The basis of very short manipulation time (Tm) and median response time ($T_{1/2}$) values for time critical HEPs such as HAOS1 and HASE2 needs to be more completely documented. The current documentation using the Appendix C operator interview notes as a basis is not considered sufficient. (This F&O originated from SR HR-G5) **Associated SR(s)** HR-G5 **Basis for Significance** This is a suggestion because this is primarily an issue with the completeness of the documentation. **Possible Resolution** Perform more time evaluation, such as simulator observations, for these kinds of time critical HFEs. **Response** Various T_m and $T_{1/2}$ timing values have been refined and further documentation has been added to the HRA Calculator and the calculator reports in Appendix B. Simulator observations will be performed as they can be scheduled in the future, to further refine the HRA timing.

F&O Number	F&O Details
5-7	Even though MDN-000-000-2010-0201 identifies the key safety functions in general (see Section 6.2), the manner in which each key safety function is satisfied in the individual event trees is not consistently documented. For example, the discussion of the LLOCA accident sequences contains a summary of the manner in which each key safety function is modeled. However, a similar discussion is not included in the discussion of the General Transient accident sequences. (This F&O originated from SR AS-A2) **Associated SR(s)** AS-A2 **Basis for Significance** The information is available in the Success Criteria Notebook, but there should be consistent discussion of the key safety functions in the various sections of the Accident Sequence Notebook. **Possible Resolution** Each accident sequence should describe the key safety functions, especially for grouped initiating events like General Transients. **Response** The suggestion will be incorporated during the next revision of the notebook. For each event tree key safety functions will be explicitly detailed.

F&O Number	F&O Details
5-8	MDN-000-000-2010-0201 delineates all accident sequences. However the descriptions do not have clear information regarding the top events. (This F&O originated from SR AS-C2) **Associated SR(s)** AS-C2 **Basis for Significance** The modeling appears to be correct, but the documentation could be improved. **Possible Resolution** The event sequence description should includes a combination of failed and succeed top events. For example, the LLOCA-002 sequence description should have the event sequence using top events, LLOCA*/ACC*/LPI3*/LPR3*LPH. **Response** The accident sequence top events are described in the Accident sequence notebook, all top events have their success criteria discussed under the appropriate event tree.

F&O Number	F&O Details
5-11	The graphical event trees and accident sequence descriptions delineate the transfers between event trees (e.g., transfers from GTRAN to SLOCA or from SLOCA to ATWS). However, the transferred sequence and boundary conditions are not discussed in the entry conditions for the event tree the sequence transfers to. The CAFTA single top logic method preserves the existing conditions of the transferred sequences. **Associated SR(s)** AS-A11 AS-C2 **Basis for Significance** The receiving event trees do not have any description about the transferred sequences from other event trees. **Possible Resolution** The transfer sequences should be discussed in the initiating event discussion of the accident sequence the transfer is linked to, including the boundary conditions transferred. **Response** The boundary conditions are supplied by the input decks and their associated output files from MAAP. All transfer events from GTRAN to SLOCA are documented within the accident sequences.

F&O Number	F&O Details
5-15	Per Section 5.6 of MDN-000-000-2010-0208 and explanations provided by the TVA PRA analyst, the HRA event dependency in the cutset or sequence is properly assessed during the quantification process. However improvement of the documentation is needed to better explain the process by which this is done. For example, a special software tool, "HRASeedOptimizer 2.0.0.0," was used to avoid a truncation stage from deleting necessary cutsets containing the HFE dependency combination during the quantification process. However, MDN-000-000-2010-0208 does not explain how this tool is used or how it ensures proper HEP values are used during the quantification to avoid truncation problems. In addition, a two-stage multiplication method is used in the recovery rules for some high order HFE dependency combination due to a limitation of QRecover. However, MDN-000-000-2010-0208 does not explain the Qrecover limitation or how the applied process compensates for the limitation. (This F&O originated from SR QU-C2) **Associated SR(s)** QU-C2 **Basis for Significance** The process is technically acceptable, but the documentation of the process used is incomplete. **Possible Resolution** Revise the documentation to: 1) Describe the use of the HRASeedOptimizer and the manner in which it applies the selected HEP seed values. 2) Describe the Qrecover limitation requiring the use of the two-stage multiplication method and how the applied process compensates for the limitation. **Response** Added description in the Quantification notebook to address resolution in section 4.0.

F&O Number	F&O Details
6-1	Assessed as meeting category I. Site response to peer review team questions regarding the performance of a precursor review indicated that a review was performed, but not documented. Documentation of the review would allow for meeting capability category II. (This F&O originated from SR IE-A9) **Associated SR(s)** IE-A9 **Basis for Significance** This is a suggestion for moving the categorization of this SR to Capability Category II. **Possible Resolution** Document an initiating event precursor review to meet category II. **Response** Added discussion to initiating event notebook to describe how precursor events were searched for and how events for intake blockage and loss of feedwater were considered.

F&O Number	F&O Details
6-8	Overall, the documentation was well organized, and presented in a manner that facilitated review. There were some items that were noted that could enhance the documentation, however.

1) IE analysis, p. 17: Unit 1 results are considered applicable to Unit 2 due to "similarity."
2) IE analysis, p. 17: Table A-2 of the Initiating Events Analysis refers the reader to the Accident Sequence Analysis for discussion of Supporting Requirements (SRs) IE-B2 through IE-B5. However, Appendix A of the Accident Sequence analysis lists AS SRs but not the IE SRs.
3) Uncertainty Analysis, section 6.4: Documentation describing how initiating event frequency 5th and 95th percentile values were calculated could not be identified.
4) IE analysis, Table 5-2: The table identifies NUREG/CR-1829 as the source for initiator %LLOCACL. However, this should actually reference NUREG-1829.

(This F&O originated from SR IE-D1)

Associated SR(s)

IE-D1

Basis for Significance

Items noted are enhancements to the existing documentation.

Possible Resolution

Suggested resolutions to items as numbered in the description:

1) The statement on similarity could be expanded slightly to describe how the units are similar, e.g., they are similar in design, configuration and operation.
2) Provide a map to refer the reader to the documentation in which IE-B2 through IE-B5 are addressed.
3) TVA personnel indicate that Crystal Ball ® was used to calculate the 5th and 95th percentile values. To improve traceability of the analysis, provide a reference to this supporting analysis.
4) Correct typo.

Response

Added discussion to IE notebook to address items 1, 2, and 4.

Item 3 should be addressed in uncertainty analysis notebook.

F&O Number	F&O Details
6-9	No requirements to compare results from similar plants for Capability Category I. While a listing of CDF values from other 4 loop Westinghouse plants is provided, a more thorough comparison of the results with an explanation of the causes for significant differences is required to meet Category II/III. (This F&O originated from SR QU-D4) **Associated SR(s)** QU-D4 **Basis for Significance** Current documentation meets Capability Category I. **Possible Resolution** Provide a more thorough comparison of PRA results beyond CDF (e.g. major sequence and initiating event contributors). **Response** A table showing the initiator distribution for similar plants has been added to the Quantification notebook.

F&O Number	F&O Details
6-11	Documentation of the model integration process in MDN-000-000-2010-0208 is adequate overall and contains sufficient detail to understand the process. The documentation of quantification results is also satisfactory overall. The following documentation issues were noted:

1) MDN-000-000-2010-0208, section 5.7 - The recovery events included in the importance tables do not include event descriptions.
2) MDN-000-000-2010-0208, section 5.1 references appendix F for a detailed review of the top ten cutsets - this documentation does not exist in appendix F.
3) MDN-000-000-2010-0208 Section 4.1 states 'Limitations that are known to have an impact on model development or quantification are addressed in Section 3.0 which discusses the general methodology used to develop the SQN PRA Model.' No such discussion could be found in the referenced section.
4) MDN-000-000-2010-0208 Section 4.2 indicates that the sequence successes are contained in the PRAQuant file when they are not actually contained in the PRAQuant file.

(This F&O originated from SR QU-F2)

Associated SR(s)

QU-A1

QU-B1

QU-B6

QU-F2

Basis for Significance

The issues noted are minor issues that do not detract from the technical quality of the results.

Possible Resolution

1) As was done for other events in the section 5.7 importance tables, include event descriptions for the recovery events.
2) Provide the review or remove the reference.
3) Provide discussion in section 3 or delete reference.
4) Remove the referenced statement.

Response

References have been updated and all issues are resolved in the Quantification

notebook.

Best Practice F&Os

F&O Number	F&O Details
4-5	A thorough evaluation of the potential for human-induced floods is documented in section 8.6 of the flooding notebook(MDN-000-000-2010-0203). Two types of floods are considered: 'maintenance-induced floods' which considered the potential for an isolation valve to fail during a maintenance event and 'human-induced events' in which isolation is incorrectly performed, a tank is overfilled, etc. The calculated frequencies for these events are then added to the random failure frequencies for the appropriate flood initiators. (This F&O originated from SR IFEV-A7) **Associated SR(s)** IFEV-A7 **Basis for Significance** This is considered a best practice, as the evaluation of human-induced events was quite comprehensive and considered different types of flooding mechanisms. **Possible Resolution** N/A **Response** No response required.

F&O Number	F&O Details
5-10	SQN PRA delineates not only accident sequences that result in core damage (MDN-000-000-2010-0201), but also describes the success sequences (MDN-000-000-2010-0207). (This F&O originated from SR AS-A7) **Associated SR(s)** AS-A7 **Basis for Significance** This is considered a best practice, as the descriptions of the accident sequences were quite comprehensive and considered both core damage and success paths. **Possible Resolution** N/A **Response** No response required.

F&O Number	F&O Details
5-18	In addition to the general description to meet ASME standard, MDN-000-000-2010-0208 provides good information facilitating further update the model. Examples include: - Table 7.0-1: Summary of Modeling Changes, - Comments in recovery rule file, and - Appendix H: steps for creating a merged model (This F&O originated from SR QU-F2) **Associated SR(s)** QU-F2 **Basis for Significance** This is considered a best practice, as the documentation of the changes made to the fault tree model to address system reviewer's comments, modeling logic corrections, and changes based upon cutset reviews is quite comprehensive. In addition, the documentation of the recovery rules, and model integration process is quite thorough and will facilitate the model maintenance and update process. **Possible Resolution** N/A **Response** No response required.

Licensee Response/NRC Response/NRC Question Closure

Id	**10**
NRC Question Number	**KNH-001**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed. However, there may be follow-up questions to the F&Os related to the response. (From Jonathan Evans, APLA)**
Question Closure Date	**3/27/2014**
Notification	**Scott Bowman** **Kristy Bucholtz** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Matthew Hamm** **Khadijah Hemphill** **Lynn Mynatt** **Lisa Regner** **Carl Schulten** **Roger Scott** **Gerald Waig**
Added By	**Khadijah Hemphill**
Date Added	**4/2/2014 1:12 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**7**
NRC Question Number	**KNH-002**
Category	**Technical**
ITS Section	**TSTF-425 - PRA**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Jonathan Evans**
Conf Call Requested	**N**
NRC Question	**The NRC staff would like to better understand where in the LER internal fire, external hazards, and shutdown risk are addressed. Provide a summary of considerations of external/internal events since the SQN IPEEE. Please refer to RIS 2007-06, "Regulatory Guide 1.200 Implementation," (ADAMS accession number ML070650428).**
Attach File 1	
Attach File 2	
Issue Date	**2/4/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**2/4/2014 4:10 PM**
Notification	**Michelle Conner Khadijah Hemphill Ray Schiele Gerald Waig**

Licensee Response/NRC Response/NRC Question Closure

Id	**6**
NRC Question Number	**KNH-002**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**Please refer to previously docketed correspondence, submitted as part of SQN's license renewal, for discussions concerning SQN's PRA. The ADAMS accession numbers are ML13024A010 (Attachment E.1, Evaluation of SQN PRA Model) and ML13227A003 (Response to NRC Request for Additional Information Regarding the Environmental Review of the Sequoyah Nuclear Plant, Units 1 and 2, License Renewal Application).**
Response Date/Time	**2/6/2014 3:00 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Lynn Mynatt** **Lisa Regner** **Ray Schiele** **Gerald Waig**
Added By	**Scott Bowman**
Date Added	**2/6/2014 1:57 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**32**
NRC Question Number	**KNH-002**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation. Follow-up questions will be posted later.**
Question Closure Date	**5/20/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**5/20/2014 6:42 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**93**
NRC Question Number	**KNH-003**
Category	**Technical**
ITS Section	**TSTF-425 PRA**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Hossein Hamzehee**
Technical Branch POC	**Jonathan Evans**
Conf Call Requested	**N**
NRC Question	**1) According to Regulatory Guide 1.200, Revision 2 "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," the Nuclear Regulatory Commission (NRC) staff needs additional information in support of this application that is related to the PRA technical adequacy. Please provide the following information.** **A. The licensee's submittal does not discuss the key area of uncertainty for this application, standby failure rate, and cyclic-demand failure rate, which should be utilized in the determination of STI extension impact. Regulatory Guide 1.177, Section 2.3.3 discusses stand by and cyclic-demand time-related component unavailability. Please identify assumptions regarding key sources of uncertainty, including discussion on the licensee's handling of standby and cyclic−demand time-related component availability.**
Attach File 1	
Attach File 2	
Issue Date	**5/28/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	

Date Added	**5/28/2014 3:31 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**160**
NRC Question Number	**KNH-003**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**The SQN PRA model does not distinguish between time-related failure contribution and cyclic demand-related failure contribution. When the breakdown between time-related and demand-related contributions is unknown, all failures will be assumed to be time-related to obtain the maximum test-limited risk contribution. If a further breakdown of failure probability is required to remove conservatism from the risk impact calculation of a proposed surveillance frequency change, SQN will abide by the caution noted in NEI 04-10, Step 8, "…caution should be taken in dividing the failure probability into time-related and cyclic demand-related contributions because the test-limited risk can be underestimated when only part of the failure rate is considered as being time-related while this may not be the case". When performing an assessment, Step 14 of NEI 04-10 advises that sensitivity studies be performed on those basic events whose probability is being impacted by the change in surveillance frequency, and this will also be followed.** **[During a subsequent teleconference, TVA and NRC staff agreed that it was not necessary for TVA to specifically identify assumptions regarding key sources of uncertainty.]**
Response Date/Time	**6/27/2014 2:00 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**6/27/2014 12:58 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**213**
NRC Question Number	**KNH-003**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**7/24/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**7/24/2014 7:49 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**94**
NRC Question Number	**KNH-004**
Category	**Technical**
ITS Section	**TSTF-425 PRA**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Hossein Hamzehee**
Technical Branch POC	**Jonathan Evans**
Conf Call Requested	**N**

NRC Question

According to Regulatory Guide 1.200, Revision 2 "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," the Nuclear Regulatory Commission (NRC) staff needs additional information in support of this application that is related to the PRA technical adequacy. Please provide the following information.

A. The licensee does not discuss the considerations made regarding the evaluation of external and shutdown events in their submittal. NEI 04-10 states that, "Plants implementing TSTF-425 shall evaluate their PRAs in accordance with [RG 1.200]." NRC Regulatory Issue Summary 2007-06 further states that, "If an implementation period for routine, limited scope risk–informed license applications is needed, the NRC would expect licensees to fully address all scope elements consistent with Revision 2 of RG 1.200 by the end of 2009."

i. Please describe, in more detail, how external events will be assessed consistent with NEI 04-10 guidance. If a bounding method is to be used, please describe the method, how it is consistent with NEI 04-10 guidance (Step 10b), and how the bounding analysis considers the current plant configuration and operation.

Attach File 1	
Attach File 2	
Issue Date	**5/28/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	

Date Added	**5/28/2014 3:32 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**148**
NRC Question Number	**KNH-004**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	

SQN is committed to evaluating surveillance test interval (STI) changes in accordance with NEI 04−10, Rev. 1. The SQN process will be governed by procedure, based on NEI 04−10, Rev. 1 that provides the approach to be taken in addressing external events. STI risk assessments should be quantitative where practical, if not practical, a qualitative assessment and/or a bounding analysis will be performed.

For a given STI change the associated structures, systems, and components (SSCs) will be established and a determination will be made as to whether the SSC is modeled (either explicitly or implicitly) by the PRA. To determine if the SSC is implicitly modeled in the PRA, the following questions are considered:

1. **Can its failure contribute to an initiating event in the PRA?**
2. **Is it credited for prevention of core damage or large early release in the PRA?**
3. **Is it necessary for another (e.g., supported) system or structure function evaluated in the PRA to prevent an event or mitigate an event?**

The procedure states "If a particular hazard is not modeled either in an integrated PRA model or in an individual PRA (e.g., Fire PRA), the STI change impact on the hazard risk should be evaluated using a bounding or qualitative analysis…" STI changes will use the following sources of information with respect to external events until such time that the external hazard PRA is completed:

Fire Risk -	**IPEEE - Fire Induced Vulnerability Evaluation (FIVE)**
Seismic Risk -	**IPEEE - Seismic Margins Analysis (SMA)**
Other External Events -	**Insights from the IPEEE**

The following describes the processes as defined in the SQN procedure for consideration of external events which is consistent with NEI 04-10, Step 10.

Fire Risk

1. Either an application-specific evaluation or FIVE will be used for the analysis. If the STI SSC is explicitly evaluated in the fire analysis, then the analysis results may be used to determine the acceptability of the proposed change.
2. If the SSC is determined to be only implicitly modeled in the fire analysis, then either a bounding analysis, a refined analysis, or the fire analysis will be refined to adequately represent the SSC.
3. The risk increase values resulting from the FIVE evaluation, the bounding analysis, or the refined analysis are considered a single effect and will be included in the summation of all single effects to obtain the total effect.
4. If the SSC is not evaluated (either explicitly or implicitly) in the fire analysis, the STI change will be qualitatively screened out, and documented, as not having a fire risk impact on the core damage frequency (CDF) or large early release frequency (LERF) metrics.

Seismic Risk

1. The SQN SMA will be used for the evaluation if the STI, associated SSC is included (either explicitly or implicitly) in the seismic analysis. Qualitative information will be developed to determine if the STI change is acceptable with respect to the seismic risk.
2. If the STI SSC is not evaluated (either explicitly or implicitly) in the seismic analysis, the STI change may be qualitatively screened out as not having an impact on seismic risk.

Other External Events

1. An external hazards screening evaluation, that was performed to support the requirements of the IPEEE, may be used for the evaluation. If the STI SSC is evaluated in the external hazards analysis (either explicitly or implicitly), qualitative information will be developed to determine if the STI change is acceptable with respect to the external hazards risk.
2. If the SSC is not evaluated (either explicitly or implicitly) by the external hazards analysis, the STI change may be qualitatively screened out as not having an impact on external hazards risk.

Bounding Analysis – The bounding analysis methodology pertains to STI changes when the qualitative assessment alone is deemed insufficient to bring before the Integrated Decisionmaking Panel (IDP). The draft procedure developed by SQN follows the process described in NEI 04-10 Rev. 1. Consistent with Step 10b, the bounding analysis is performed for those SSCs that are not explicitly modeled in the PRA, but rather are implicitly included in the model at the initiating event, mitigating system, or functional level. In that case, the basic event(s) associated with the initiating event, mitigating system, or function can be identified to use as a surrogate for the SSC being investigated. Reasonable variations to the

basic event value(s) are then explored to determine the potential bounding impact of the STI change. The three approaches to be followed are:

1. **Consistent with NEI 04-10 Rev. 1, Step 10b, manipulate the initiating events, mitigating system, or functions that are associated with the STI change in order to bound the impact of the change.**
2. **If the bounding analysis shows that the ΔCDF and ΔLERF values are below the 1.0E−07/yr CDF and 1.0E-08/yr LERF limits, then the PRA Engineer will further assess the impact of the STI change for Fire Risk, Seismic Risk and Other External Hazards in accordance with the steps described above which are consistent with NEI 04−10 Rev.1, Step 10.**
3. **If the bounding analysis cannot show that the STI change is below the 1.0E-07/yr CDF and 1.0E-08 LERF limits, a refined analysis will be performed consistent with NEI 04−10 Rev. 1, Step 10c.**

The SQN PRA models are referred to as "living models" meaning they adequately represent the as-built, as-operated plant, and are updated periodically to ensure that changes to the design and operation of the plant are assessed. With respect to bounding analyses, surrogate basic events will be used as appropriate, which will represent the as-built, as-operated plant. Furthermore, as necessary, to best ascertain the impact of a proposed STI change, sensitivity analyses will be performed consistent with NEI 04-10 Rev. 1, Step 14. For those STIs impacted by external events, the event frequencies can be adjusted to determine how sensitive the STI change is to an increase in the likelihood of a given initiator.

Response Date/Time	**6/27/2014 7:50 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**6/27/2014 6:42 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**214**
NRC Question Number	**KNH-004**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**7/24/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**7/24/2014 7:50 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**95**
NRC Question Number	**KNH-005**
Category	**Technical**
ITS Section	**TSTF-425 PRA**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Hossein Hamzehee**
Technical Branch POC	**Jonathan Evans**
Conf Call Requested	**N**
NRC Question	**According to Regulatory Guide 1.200, Revision 2 “An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities,” the Nuclear Regulatory Commission (NRC) staff needs additional information in support of this application that is related to the PRA technical adequacy. Please provide the following information.** B. **The licensee does not discuss the considerations made regarding the evaluation of external and shutdown events in their submittal. NEI 04-10 states that, “Plants implementing TSTF-425 shall evaluate their PRAs in accordance with [RG 1.200].” NRC Regulatory Issue Summary 2007-06 further states that, “If an implementation period for routine, limited scope risk-informed license applications is needed, the NRC would expect licensees to fully address all scope elements consistent with Revision 2 of RG 1.200 by the end of 2009.”** **ii. Please provide the considerations made for shutdown events.**
Attach File 1	
Attach File 2	
Issue Date	**5/28/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	

Date Added	**5/28/2014 3:35 PM**
Notification	**Scott Bowman** **Michelle Conner** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**149**
NRC Question Number	**KNH-005**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**The overall process for risk-informing surveillance test intervals (STIs) will be governed by procedure which defines the risk hazards that must be assessed. The TVA procedure will be developed using the methodology described in NEI 04-10, Rev. 1. The risk assessment is based on evaluation of internal events at full power, fire events, seismic events, other external hazards (e.g., tornados) and shutdown events. The SQN PRA does not explicitly model shutdown events; therefore, in accordance with NEI 04-10, Rev. 1 consideration for these events will be addressed through qualitative methods and to the extent possible, quantitative methods by use of surrogates, or in some cases, refined modeling, including application specific modeling, or bounding risk analysis. Note: This RAI addresses Shutdown Events, refer to RAI KNH-004 licensee response for External Events.** **Shutdown Events - SQN has a Shutdown Risk Management Program (similar to Shutdown Safety Program) which was developed in accordance with NUMARC 91-06 that provides the process for assessing and managing risk during shutdown operations with focus on the key shutdown safety functions. NEI 04-10 states that the shutdown safety program can be used for the STI evaluation, or an application specific shutdown analysis may be performed. The SQN process uses a blended approach of high level fault trees and defense-in-depth to characterize risk associated with a given plant configuration during shutdown operations. Therefore, with respect to STIs determined to be credited in the NUMARC 91-06 analysis, qualitative information will be developed that supports the acceptability of the STI change with respect to shutdown risk for considerations defined in NEI 04-10, Step 10a, “Qualitative Analysis Sufficient for IDP.” This evaluation will be performed by personnel that are knowledgeable in the scope, level of detail and assumptions of NUMARC 91-06.** **If the structure, system, and component (SSC) is not credited by the NUMARC 91-06 program, the SSC can be screened qualitatively and the information presented to the IDP (Integrated Decision-making Panel). This initial screening would be based on shutdown risk not having an impact on the CDF (core damage frequency) and LERF (large early release frequency) metrics.**

Response Date/Time	**6/27/2014 7:50 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**6/27/2014 6:45 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**215**
NRC Question Number	**KNH-005**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**7/24/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**7/24/2014 7:53 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**96**
NRC Question Number	**KNH-006**
Category	**Technical**
ITS Section	**TSTF-425 PRA**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Hossein Hamzehee**
Technical Branch POC	**Jonathan Evans**
Conf Call Requested	**N**
NRC Question	**Please summarize the peer review conducted in 2011 and clarify if it was a full peer review where the team met the guidelines outlined in NEI 00-02 (e.g., 5 or 6 members that included the full range of experience required to perform an internal events PRA), followed the process outlined in NEI 00-02 (e.g., offsite preparation, one week onsite review, and post review documentation), and reviewed the PRA against all the elements in the ASME 2009 standard. Also, state what revision of Regulatory Guide 1.200 was used by the peer review team. If the review was not a full peer review, please describe the review in detail.**
Attach File 1	
Attach File 2	
Issue Date	**5/28/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**5/28/2014 3:36 PM**
Notification	**Scott Bowman** **Michelle Conner** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**150**
NRC Question Number	**KNH-006**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**A full scope peer review of the SQN Internal Events (including flooding) was performed in accordance with the requirements of:**

- **Regulatory Guide 1.200 Revision 2, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities."**
- **ASME/ANS Ra-Sa-2009, "Addenda to ASME/ANS RA-S-2008, "Standard for Level 1/Large early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications."**
- **NEI 00-02, Revision 3A, "Probabilistic Risk Assessment (PRA) Peer Review Process Guidance."**

Six individuals representing both utility and industry experts made up the team that performed the SQN peer review over a one week period at TVA's Chattanooga Office Complex. The team consisted of a diverse group of individuals; including education ranging from B.S. to PhD level, SRO (Senior Reactor Operator) license/experience, and PE (Professional Engineer) license. Experience included PRA and other areas of commercial nuclear power such as design and system engineering, safety analysis, plant operations and others.

The guidelines of NEI 00-02 were met including review of materials prior to the on-site visit, one-week on-site and review of the report. All team members confirmed that they had no previous involvement in the SQN PRA, reviewed the final report and determined that it reflects the process used by the peer review team, and the element grading, facts, observations and conclusions agreed to by the review team in its consensus discussions during the review. Furthermore, the team members submitted preliminary questions prior to the on-site review at TVA's Chattanooga offices.

All elements against the ASME/ANS 2009 Standard were assessed for applicability to SQN's Internal Events (including Internal Flooding) PRA. The SQN PRA was evaluated against all applicable supporting requirements.

Response Date/Time	**6/27/2014 7:55 AM**

Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**6/27/2014 6:51 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**311**
NRC Question Number	**KNH-006**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/3/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**9/3/2014 7:27 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**97**
NRC Question Number	**KNH-007**
Category	**Technical**
ITS Section	**TSTF-425 PRA**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Hossein Hamzehee**
Technical Branch POC	**Jonathan Evans**
Conf Call Requested	**N**
NRC Question	**Please identify any PRA upgrades made since the 2011 peer reviewed. If upgrades were made since then, discuss your plans to perform an appropriate focused scope peer review for the upgrades.**
Attach File 1	
Attach File 2	
Issue Date	**5/28/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**5/28/2014 3:38 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**151**
NRC Question Number	**KNH-007**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**The ASME/ANS standard defines a PRA upgrade as the incorporation of new methodology or significant changes in scope or capability that impact the significant accident sequences. The standard defines PRA maintenance as updates to reflect plant changes such as modifications, procedure changes or plant performance (data). There have been no PRA upgrades, per the ASME/ANS definition, to the SQN PRA since the 2011 peer review. PRA maintenance has been performed to include known plant configuration changes due to completed modifications, identified modeling errors, and changes in plant procedures or practices.**
Response Date/Time	**6/27/2014 8:00 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman Michelle Conner Khadijah Hemphill Andrew Hon Ray Schiele**
Added By	**Scott Bowman**
Date Added	**6/27/2014 6:56 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**312**
NRC Question Number	**KNH-007**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/3/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**9/3/2014 7:27 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**98**
NRC Question Number	**KNH-008**
Category	**Technical**
ITS Section	**TSTF-425 PRA**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Hossein Hamzehee**
Technical Branch POC	**Jonathan Evans**
Conf Call Requested	**N**
NRC Question	**Please provide the Facts and Observations (F&Os) mentioned in the LAR Enclosure 10, section 3, with their resolution to meet capability category II for the SR. Please note which SRs, if any, remained at capability category I after the F&O resolutions were completed. For those F&Os considered to be open for the PRA model of record used for the LAR, discuss their significance for the TSTF-425 application, and discuss if a sensitivity analysis would be applied in using the NEI 04-10 guidance.**
Attach File 1	
Attach File 2	
Issue Date	**5/28/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**5/28/2014 3:39 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**164**
NRC Question Number	**KNH-008**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	

There were three Facts and Observations (F&Os) mentioned in the SQN license amendment request (LAR) Enclosure 10, Section 3 as having supporting requirements (SRs) that remained at capability category (CC)-I (i.e., were not met) after the F&O resolutions were completed. They are F&O 1-15 (Finding), F&O 4-1 (Suggestion), and F&O 4-13 (Suggestion). Each F&O from the Peer Review Final Report is listed below followed by the SQN response or resolution.

F&O 1-15 (Finding)

The super initiator "super transient" may overlook certain differences among its contributors. For example, the impact of specific IEs [initiating events] like LOSP [loss of offsite power] and Loss of DC [direct current] that may prevent PORV [power operated relief valve] operation and challenge the Pressurizer Safeties do not appear to be captured.

In addition, failure to provide a separate event tree for SBO [station blackout] may overestimate the success of power recovery by not addressing the operation of systems such as charging and AFW [auxiliary feedwater] following power recovery.

(This F&O originated from SR AS-A10)

Associated SR(s)

AS-A10
AS-B1
SC-B3

Basis for Significance

The accident sequences do not contain sufficient detail to capture important system requirements and required operator interactions for all initiating events.

Possible Resolution

1) **Subdivide the General Transients event tree to better represent the unique challenges presented by specific initiating events (e.g.,**

Transient with Loss of PCS [Power Conversion System], Transient with PCS Available, LOSP) or document how those challenges are addressed in the top logic model.

2) Modify the existing event sequence and/or linked fault tree to ensure that the challenge to the Pressurizer Safeties is captured for initiating events that would prevent the PORVs from opening.

3) Explicitly model the SBO sequences to ensure that the necessary mitigating systems are addressed following power recovery.

F&O 1-15 SQN Response/Resolution

The SQN PRA model was updated to meet CC-II or CC I – III for SRs AS-A10, AS-B1, and SC−B3. Recommended resolution #2 was incorporated into the General Transient event tree to ensure that the pressurizer safeties and PORVs opening and closing were addressed in the PRA model. Recommended resolutions #1 and #3 were not incorporated to meet CC-II or CC I – III. Rather, the model was updated via other means to meet the associated SRs with this F&O.

AS-A10: The PRA model was updated to improve the capture of the initiating event dependencies. The general Transient event tree models the plant response to all initiating events that are not loss of coolant accidents (LOCAs), secondary side line breaks, or anticipated transients without scram (ATWS) events. The plant response to these initiating events is the same; however, the equipment available is affected by the initiating event. To capture that dependency, the fault tree models for the systems credited in the General Transient event tree were updated and verified to have correctly modeled the effect of the initiating event.

AS-B1: The effect on systems was developed within the system notebook calculations so that the correct initiator impact was modeled for each of the accident sequences.

SC-B3: The success criteria developed for each of the event tree nodes was discussed in the Accident Sequence calculation as well as the Success Criteria calculation. The new nodes for the General Transient event tree and the required success criteria were added to these calculations.

To meet the requirements of CC-II or CC I – III, the system fault trees were revised. Proposed resolution #1 gives a choice of either subdividing the General Transient event tree or documenting how challenges are addressed in the top logic model. The Summary Notebook in section 3.2, Accident Sequence Analysis, lists the ten event trees developed for the SQN PRA. Table 2 from that section of the Summary Notebook provides the initiating event linking that was performed. The table includes the Transient with and without PCS, as well as, the loss of support initiating events that includes the loss of offsite power (LOOP).

Initiator General Transients was restructured to address proposed resolution #2 which was resolved by inclusion in the Revision 6 PRA model. The event tree was updated to explicitly ask demands for PORVs and Safeties.

Proposed resolution #3 was addressed in the response to NRC RAI 7.a.viii.4 (for the SQN severe accident mitigation alternative (SAMA)), reference ML13227A003. The TVA response was that to model the SBO event, there would not be appreciable enhancement to the PRA insights. An analysis was performed that included the SBO system failures post power recovery. The result was a negligible effect (e.g., Δ E-8/yr) on the core damage frequency (CDF). Therefore, there would be insignificant effect on the calculations to risk-informed surveillance frequencies. In accordance with the NEI 04-10, Rev. 1 guidance (refer to Step 12−A4), given no significant effect on the PRA metrics, sensitivity analyses are not required in this case.

However, the TVA procedure being developed for implementation of NEI 04-10 will have provisions to invoke sensitivity studies based on the actual PRA metrics obtained during analysis and other factors such as assumptions and initiating frequency (e.g., LOOP, seismic) that could drive a sensitivity study to be performed.

F&O 4-1 (Suggestion)

Section 5.2 of the Internal Flooding Notebook (MDN-000-000-2010-0203) considers flood areas in the buildings of both units, and includes all common buildings. At the building level, the text discusses whether the building contains shared equipment; however, the text and tables do not indicate which specific flood areas can impact both units. It would be helpful to enhance the documentation to indicate which flood areas have multi-unit impacts."
(This F&O originated from SR IFPP-A3)

Associated SR(s)

IFPP-A3
IFSO-A2

Basis for Significance

This is a suggestion since it pertains solely to enhancement of the documentation of the flood area partitioning and flood source identification process. The flood analysis itself correctly addresses multi-unit impacts.

Possible Resolution

Include (in the text of Section 5.2 or within the tables of the included areas) indication of what areas have multi-unit impacts. Include similar

documentation in Section 6.1 for flood sources.

F&O 4-1 SQN Response

F&O 4-1 proposes revising tables in the flooding analysis. This was not done because the flooding analysis already had the proposed information in tables and corresponding figures provided in Section 5.2 (Plant Partitioning) of the SQN Internal Flooding Analysis, MDQ-000-000-2010-0203. This recommendation would have added an unnecessary redundancy and the potential benefit to be achieved would not justify the effort to revise the Internal Flooding Analysis Notebook with the proposed resolution.

Furthermore, the SRs (IFPP-A3 & IFSO-A2) associated with F&O 4-1 were characterized by the peer review team as meeting CC I – III. This F&O is simply an administrative suggestion and does not have any quantifiable effect on the STI change application.

F&O 4-13 (Suggestion)

The PRA model currently uses flag events [to] indicate which standby component is running. It was noted that these flags could be set to zero or one (TRUE or FALSE during quantification) as in the ERCW [essential raw cooling water] system, or could be set to an appropriate split fraction to reflect the percentage of time each component was running as was done in the CCS [component cooling system] system. (The base PRA model solution appears to assume a specific set of components are running or in standby, with the exception of CCS, which assumes a 50%/50% likelihood of each train running.) The "mixing" of assumed configurations with probabilistic configurations should be re-examined. For CCS, the split fractions are based on assumptions based on system design, but are reviewed by the system engineers for accuracy. However, operational data is not reviewed to determine the specific split fractions for each component. Therefore, the requirements of Category I for SR DA-C8 are met.

(This F&O originated from SR DA-C8)

Associated SR(s)

IE-A6
IE-C10
DA-C8

Basis for Significance

This is considered to be a suggestion, as Category I of DA-C8 is met and this should be adequate for most applications. The determination of more precise split fractions (e.g., 54% and 46% vs. an assumed 50%/50% split

would not impact the overall RPA results significantly.

Possible Resolution

To meet category II, collect operating data to determine the actual standby/running fractions for plant equipment. This data could be documented either in each system notebook or the data notebook. Consideration should also be given to using a consistent set of assumptions concerning system alignments (i.e., either all based on an assumed configuration or all based on probabilistic estimates for each alignment).

F&O 4-13 SQN Response

F&O 4-13, with respect to SR DA-C8, suggests using plant-specific operational records to determine the time components are configured in their standby status. The change in risk associated with a change in the periodicity of surveillance frequencies is not expected to be affected significantly by the use of split-fractions for systems with a normally operating train/pump, and another in standby. SRs IE-A6 and IE-C10 associated with this Suggestion F&O were characterized by the review team to meet CC II and I – III, respectively. SR DA-C8 met CC-I. To meet CC II-III, plant-specific operational records must be referenced to ascertain the time components were configured in their standby configuration. The effect of an STI change is judged to have an insignificant effect on the risk metrics. However, the procedure for implementation of NEI 04-10 will require sensitivity analyses to be performed as required in NEI 04-10 to ensure that assumptions and/or uncertainties made in the PRA are not masking the importance of an SSC (this is discussed more fully in the response to RAI KNH-009).

Response Date/Time	**7/2/2014 12:35 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/2/2014 11:32 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**385**
NRC Question Number	**KNH-008**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**11/25/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**11/25/2014 7:33 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**99**
NRC Question Number	**KNH-009**
Category	**Technical**
ITS Section	**TSTF-425 PRA**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Hossein Hamzehee**
Technical Branch POC	**Jonathan Evans**
Conf Call Requested	**N**
NRC Question	**According to the LAR Enclosure 10, section 3, F&O 4-13 is with respect to SR DA-C8 which suggests using plant-specific operational records to determine the time components are configured in their standby status. The disposition is that the change in risk associated with a change in the periodicity of surveillance frequencies is not expected to be impacted by the use of split-fractions for systems with normally operating train/pump, and another in standby. This disposition implies that systems which alternate standby components are modeled as being in a configuration where certain components are always running and certain components are always in standby. The TSTF-425 surveillance test interval evaluation applies to components which are in standby. If the Internal Events PRA model excludes standby components by modeling them as always operating and never in standby, provide justification for doing so for application of the TSTF-425 surveillance test interval program.**
Attach File 1	
Attach File 2	
Issue Date	**5/28/2014**
Added By	**Khadijah Hemphill**
Date Modified	

Modified By	
Date Added	**5/28/2014 3:40 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**152**
NRC Question Number	**KNH-009**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**The SQN Internal Events PRA model does not exclude standby components by modeling them as always operating and never in standby. The SQN PRA model has the capability of modeling the standby components in either operation or standby alignment, or modeling those components with split-fractions between operating and standby. The SQN process for evaluating surveillance test interval changes will be governed by procedure based on NEI 04–10, Rev. 1. In applying TSTF-425 surveillance test interval program to alternating standby components, a refined analysis using plant data, a bounding analysis, or sensitivity studies, as applicable, may be conducted to evaluate the impact of the split fractions utilized or alignment of the standby components on the risk in terms of CDF (core damage frequency) and LERF (large early release frequency) as described in NEI 04-10.**
Response Date/Time	**6/27/2014 8:00 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**6/27/2014 6:58 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**313**
NRC Question Number	**KNH-009**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/3/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**9/3/2014 7:28 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**100**
NRC Question Number	**KNH-010**
Category	**Technical**
ITS Section	**TSTF-425 PRA**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Hossein Hamzehee**
Technical Branch POC	**Jonathan Evans**
Conf Call Requested	**N**
NRC Question	**According to the LAR Enclosure 10, section 3, F&O 1-15 (SRs AS-B1, AS-A10, and SC-B3) is related to not having explicit treatment of station blackout in the accident scenario analysis (e.g., event trees). The NRC staff considers that capability category II (CCII) is necessary for the Internal Events PRA model supporting a TSTF-425 application. Please describe how the disposition of this F&O meets CCII for the applicable Supporting Requirements. The discussion in the LAR on this F&O states that the inclusion of the SBO system failures post power recovery has a negligible effect on CDF. No mention is made of large early release frequency (LERF) associated with loss of offsite power (LOOP) or SBO due to the lack of SBO event trees in the PRA model. Please note that loss of offsite power and SBO sequences are typically significant contributors to both CDF and LERF. Therefore, in addition to addressing CCII SRs above, provide justification that the Internal Events PRA model is technically adequate for evaluating LERF for the TSTF-425 evaluations.**
Attach File 1	
Attach File 2	
Issue Date	**5/28/2014**
Added By	**Khadijah Hemphill**
Date Modified	

Modified By	
Date Added	**5/28/2014 3:42 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**165**
NRC Question Number	**KNH-010**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**The SQN PRA model was revised to address F&O 1-15 (SRs AS-B1, AS-A10, and SC-B3). The resolutions to the SRs are as follows:**

AS-A10: The PRA model was updated to improve the capture of the initiating event dependencies. The general transient event tree models the plant response to all initiating events that are not Loss of Coolant Accidents (LOCAs), Secondary Side Breaks, or Anticipated Transient Without SCRAM (ATWS) events. The plant response to these initiating events is the same; however the equipment available is affected by the initiating event. To capture that dependency the fault trees for the systems credited in the General Transient event tree were updated and verified to have correctly modeled the effect of the initiating event.

AS-B1: The Systems Calculations for the PRA model discuss the phenomenological conditions encountered by the equipment credited in each of the event trees. The effect on the systems was developed within the systems calculations, so that the correct initiator impact (including AC power availability) was modeled for each of the accident sequences.

SC-B3: The success criteria developed for each of the event tree nodes was discussed in the Accident Sequence calculation as well as the Success Criteria calculation. The new nodes for pressurizer safety valves and Power Operated Relief Valves (PORVs) were added to the general transient event tree and the required success criteria were added to these calculations. This change incorporated possible resolution number 2 of the F&O.

A response to F&O 1-15 was previously submitted to NRC via RAI 7.a.viii.4 (ML 13227A003). The conclusion of the analysis performed for that RAI response is that if SBO was modeled as proposed, the delta risk to core damage frequency (CDF) would be in the low E-08 range. A worst case for large early release frequency (LERF) would be equivalent to the increase in CDF, which would also be in the low E-08 range which can be characterized as a negligible increase.

For at power risk models, NUREG/CR-6595 suggests that core damage initiated by a Loss of Offsite Power (LOOP) (which includes initiating events %0LOSP-GR [Grid Related], %0LOSP-PC [Plant Centered], %0LOSP-

SC [Switchyard Centered], and %0LOSP-WI [Weather Induced]) can be mitigated by accounting for LOOP restoration prior to core damage. The current level 2 model uses the same recovery factors credited in the level 1 model and does not account for the additional time between core damage and vessel breach (no credit is taken for mitigating vessel breach), and core damage sequences are assumed to lead to either Low Pressure Melt Ejection (LPME) or High Pressure Melt Ejection (HPME)). As such, the SQN PRA is technically adequate to assess LERF for surveillance Test interval (STI) changes.

At SQN, the contribution of LOOP events is not as significant an event as at other comparable power plants. The contribution to CDF is less than 3%, in comparison with seven other stations representing twelve units, where the LOOP contribution to CDF (at the time of the benchmark) ranged from 13% to more than 60%. The likelihood of station blackout (SBO) at Sequoyah is lower than other nuclear plants due to a unique design feature called the utility bus. This bus allows for a cross-tie of the 6900 V shutdown boards from either unit. For example, when both diesel generators fail for Unit 1, one of the shutdown boards for Unit 2 can be de-energized and an operating diesel generator from Unit 2 can be aligned to provide power to one Unit 1 shutdown board. Procedures for performing this alignment are in place at SQN.

The TVA procedure being developed for implementation of NEI 04-10 will have provisions to invoke sensitivity studies based on the actual PRA Metrics obtained during the analysis and other factors such as assumptions and initiating event frequency (e.g., LOOP, Seismic). NEI and procedural guidance will be followed for STI changes associated with AC electrical power including the emergency diesel generators. Sensitivity studies will be performed as required.

Response Date/Time	**7/2/2014 12:35 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/2/2014 11:35 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**384**
NRC Question Number	**KNH-010**
Select Application	**NRC Response**
Attachment 1	
Attachment 2	

Response Statement

Follow-up RAI (KNH-010):

The peer review F&O 1-15 finding included a possible resolution to explicitly model the SBO sequences to ensure that the necessary mitigation systems are addressed following power recovery. The NRC staff notes that these undeveloped SBO sequences may involve modeling TSTF 425-related equipment if they were to be developed. Furthermore, it is not clear whether their risk contribution for potential surveillance test interval (STI) increases is negligible.

a) Explain how the STI increase risk contribution, including CDF and LERF, from these undeveloped sequences will be considered for the TSTF-425 program, including the applicable guidance in NEI 04-10.

b) Explain whether the high pressure LERF sequences associated with these undeveloped sequences will be considered in the STI increase evaluation, and that the conditional LERP for these high pressure sequences is consistent with technical studies and guidance for ice condensers.

Please identify the technical document(s) that were used to evaluate the LERF high pressure sequences, or provide the rational for the approach used in the PRA model.

Response Date/Time	**11/25/2014 6:00 PM**
Closure Statement	
Question Closure Date	
Notification	**Michelle Conner** **Khadijah Hemphill** **Andrew Hon**

	Lynn Mynatt **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**11/25/2014 7:09 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**424**
NRC Question Number	**KNH-010**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	

NRC Question

The peer review F&O 1-15 finding included a possible resolution to explicitly model the SBO sequences to ensure that the necessary mitigation systems are addressed following power recovery. The NRC staff notes that these undeveloped SBO sequences may involve modeling TSTF-425 related equipment if they were to be developed. Furthermore, it is not clear whether their risk contribution for potential surveillance test interval (STI) increases is negligible.

a. Explain how the STI increase risk contribution, including CDF and LERF, from these undeveloped sequences will be considered for the TSTF-425 program, including the applicable guidance in NEI 04-10.

b. Explain whether the high pressure LERF sequences associated with these undeveloped sequences will be considered in the STI increase evaluation, and that the conditional LERP for these high pressure sequences is consistent with technical studies and guidance for ice condensers.

Please identify the technical document(s) that were used to evaluate the LERF high pressure sequences, or provide the rational for the approach used in the PRA model.

SQN Response

a. For the SQN PRA model, all sequences associated with a station blackout (SBO) are ended at the point of offsite power recovery (i.e., once power is recovered, it is assumed that the mitigation equipment is successful). The potential contribution associated with additional hardware failures following offsite power recovery will be directly calculated if a future version of the SQN PRA model supports the calculation; otherwise, the following bounding approach will be used for equipment that is credited in SBO sequences.

1) All station blackout cutsets, where a probability of non-recovery of offsite power occurs, are evaluated to determine what is the probability of successful recovery of offsite power by adjusting the non-recovery of offsite power probability to one minus the calculated probability. This value gives the total frequency of cutsets that represents the successful recovery of offsite power, without the subsequent failures that are assumed to not occur in the SQN PRA model.

2) To estimate the additional hardware failures, the Conditional Core Damage Probability (CCDP)/Conditional Large Early Release Probability (CLERP) was calculated for small loss of coolant accidents (LOCAs). This was done because all SBO events result in a small LOCA either through the seals of the reactor coolant pumps or from a stuck open pressurizer safety valve.

3) The probability of the recovery of offsite power (from Step 1, above) is then multiplied by the CCDP/CLERP for small LOCAs (from Step 2, above) to estimate the contribution of modeling the additional failures following offsite power recovery.

This sensitivity represents a bounding quantitative

analysis of the additional risk that is not modeled within the SQN PRA model. The results are bounding with respect to the potential outcomes because the calculation of a CCDP/CLERP for the additional hardware failures "double counts" potential failures that are already assessed in the calculation of the SBO core damage sequence.

b. In the process of calculating the CLERP values for small LOCAs, all sequences are assessed. This includes both high and low pressure core damage sequences. The development of this model was performed using the guidance outlined in numerous source documents such as NUREG–1150, NUREG/CR–4551, NUREG/CR–6213, NUREG/CR–6427, and NUREG/CR-6595.

Response Date/Time	2/5/2015 1:15 PM
Closure Statement	
Question Closure Date	
Notification	Scott Bowman Michelle Conner Khadijah Hemphill Andrew Hon Ray Schiele
Added By	Scott Bowman
Date Added	2/5/2015 12:11 PM
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**451**
NRC Question Number	**KNH-010**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	

Response Statement

NRC Question
The peer review F&O 1-15 finding included a possible resolution to explicitly model the SBO sequences to ensure that the necessary mitigation systems are addressed following power recovery. The NRC staff notes that these undeveloped SBO sequences may involve modeling TSTF-425 related equipment if they were to be developed. Furthermore, it is not clear whether their risk contribution for potential surveillance test interval (STI) increases is negligible.

a. Explain how the STI increase risk contribution, including CDF and LERF, from these undeveloped sequences will be considered for the TSTF-425 program, including the applicable guidance in NEI 04-10.

b. Explain whether the high pressure LERF sequences associated with these undeveloped sequences will be considered in the STI increase evaluation, and that the conditional LERP for these high pressure sequences is consistent with technical studies and guidance for ice condensers.

Please identify the technical document(s) that were used to evaluate the LERF high pressure sequences, or provide the rational for the approach used in the PRA model.

SQN Response to Part a.

The STI increase risk contribution, including CDF and LERF, from undeveloped sequences (sequences involving SBO with successful recovery of offsite power prior to core damage) will be considered for the TSTF-425 program. The following approach will be employed.

For the SQN PRA model, all sequences associated with a station blackout (SBO) are ended at the point of offsite power recovery (i.e., once power is recovered prior to core damage, it is assumed that the mitigation equipment is successful). The potential contribution associated with additional hardware failures leading to core damage following offsite power recovery will be directly

calculated if a future version of the SQN PRA model supports the calculation; otherwise, the following bounding approach will be used for each surveillance frequency extension for equipment that is credited in SBO sequences.

1. **Station blackout cutsets, where a probability of non-recovery of offsite power occurs, will be evaluated to determine what is the probability of successful recovery of offsite power by adjusting the non-recovery of offsite power probability to one minus the calculated probability. This value gives the total frequency of cutsets that represents the successful recovery of offsite power, without the subsequent failures that are assumed to not occur in the SQN PRA model.**

2. **To estimate the additional hardware failures, the Conditional Core Damage Probability (CCDP)/Conditional Large Early Release Probability (CLERP) will be calculated for small loss of coolant accidents (LOCAs). This was done because all SBO events result in a small LOCA either through the seals of the reactor coolant pumps or from a stuck open pressurizer safety valve.**

3. **The probability of the recovery of offsite power (from Step 1) will then be multiplied by the CCDP/CLERP for small LOCAs (from Step 2) to estimate the contribution of modeling the additional failures following offsite power recovery.**

The results are conservative and bounding with respect to the potential outcomes because the calculation of a CCDP/CLERP for the additional hardware failures "double counts" potential failures that are already assessed in the calculation of the SBO core damage sequence.

SQN Response to Part b.

Yes, the high pressure LERF sequences associated with these undeveloped sequences will be considered in the STI increase evaluation via the same bounding approach described in part (a). The conditional LERP for these high pressure sequences is consistent with technical studies and guidance for ice condensers. In the process of calculating the CLERP values for small LOCAs, all sequences are assessed. The development of this model was performed using the guidance outlined in numerous source documents such as those identified below.

NUREG/CR-6595, section 1.4, "Scope and Limitations" indicates the following:

The simplified CETs [Containment Event Trees] presented in this

report use information provided in a Level-1 PRA to estimate LERF. The simplified CETs are based on results of severe accident research projects performed over the last several years. This research has been incorporated into Level-2 PRAs for numerous nuclear power plants... [T]he CETs are somewhat bounding in nature and should only be used as a first step scoping study to determine the proximity of LERF to the decision criteria established in [Reg. Guide 1.174]. If the estimated LERF is significantly below (about an order of magnitude or more) the acceptance guideline, then expenditure of additional resources to obtain a detailed Level-2 model and a more accurate estimate of LERF is not warranted. However, if the LERF estimated from this simplified approach is close to or larger than the acceptance guideline, further analysis may be necessary to obtain a more accurate LERF for the purpose of risk-informed decision making.

As suggested in the paragraph above from NUREG/CR-6595, a detailed Level-2 model has been developed for Sequoyah Nuclear Plant. This more detailed model will be used for further analysis to obtain a more accurate LERF instead ofusing the bounding NUREG/CR-6595 model to estimate the risk significance of proposed surveillance frequency changes (including risk associated with LERF high pressure sequences). This approach is not a deviation from NUREG/CR-6595 but is an implementation of its guidance. The Sequoyah Level-2 model is documented in calculationMDN-000-000-2010-0206, R3.

NUREG/CR-6595 provides a conservative and bounding approach to estimating LERF, including effects from hydrogen combustion before and after vessel failure which could lead to containment failure. Specific failure probabilities are provided in the NUREG but the NUREG indicates that alternative approaches are acceptable with justification. See Section 1.4 of NUREG/CR-6595, also Section 2.2, pg. 2-9. This is the approach taken in the Sequoyah Nuclear Plant PRA in developing the Level-2 analysis, and is documented in Sections 6.14 and 6.15 of the Sequoyah Level-2 calculation.

With respect to Direct Containment Heating (DCH) and potential concurrent hydrogen combustion, NUREG/CR-6595 indicates that for high pressure SBO sequences a screening containment failure probability of 1.0 could be used or alternately that a failure probability of 0.998 could be used. See Section 2.2, pg. 2-9 of NUREG/CR-6595 and Table 4.21 in NUREG/CR-6427. However NUREG/CR-6595 indicates that alternate split fractions are acceptable with justification. See Section 2.2, pg. 2-9 of NUREG/CR-6595.

For the Sequoyah PRA Level-2 analysis, this is the approach that was taken. In order to ensure that the PRA was realistic, plant-specific thermal hydraulic analyses were performed using the Modular Accident Analysis Program (MAAP)

code (which was developed by Fauske Associates for EPRI) to determine the hydrogen concentrations, steam concentrations and peak containment pressures expected under a variety of conditions. A containment capacity curve was developed using information from the report, "Containment Overpressure Capacity for the Sequoyah Nuclear Plant," (EQE 1992). The realistically detailed calculated effects of DCH and H2 combustion were compared to the containment capacity curve to determine the likelihood of containment failure. As a result of those analyses, alternate split fractions were developed and incorporated into the Sequoyah Level-2 model. A limiting MAAP case with respect to peak containment pressure was identified, and then a value slightly higher than the calculated value was used for conservatism. This value was then used in conjunction with the containment capacity curve to determine the likelihood of containment failure for DCH failure in high pressure sequences which was utilized in the Sequoyah Level-2/ LERF model. This is documented in the SQN Level-2 calculation, MDN-000-000-2010-0206, R3, Sections 6.14 and 6.15. This methodology was reviewed as part of the SQN PRA Peer Review and there were no related findings.

Response Date/Time	**5/13/2015 1:45 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Michelle Conner**
Date Added	**5/13/2015 12:44 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**455**
NRC Question Number	**KNH-010**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**5/15/2015**
Notification	**Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**5/15/2015 1:04 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**101**
NRC Question Number	**KNH-011**
Category	**Technical**
ITS Section	**TSTF-425 PRA**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Hossein Hamzehee**
Technical Branch POC	**Jonathan Evans**
Conf Call Requested	**N**
NRC Question	**In the F&O 1-14, the licensee includes credit for post-maintenance test events with the number of plant-specific demands on standby components. SR DA-C6 explicitly states that additional demands from post-maintenance testing shall not be counted. The licensee references "Table 15" where they document the tests that have been removed from the analysis. Please confirm that the credit for all post-maintenance tests has been removed from the analysis.**
Attach File 1	
Attach File 2	
Issue Date	**5/28/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**5/28/2014 3:43 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**153**
NRC Question Number	**KNH-011**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**It has been confirmed that the post maintenance testing information has been removed from the success data credited as part of the data analysis calculation. The post maintenance testing totals were subtracted from the actual demand totals obtained from the plant process computer and documented per type code in the SQN Data Analysis calculation.**
Response Date/Time	**6/27/2014 8:00 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**6/27/2014 7:01 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**314**
NRC Question Number	**KNH-011**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/3/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**9/3/2014 7:29 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**102**
NRC Question Number	**KNH-012**
Category	**Technical**
ITS Section	**TSTF-425 PRA**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Hossein Hamzehee**
Technical Branch POC	**Jonathan Evans**
Conf Call Requested	**N**
NRC Question	**In the F&O 4-3, the licensee excluded non-water flood sources from the identification of potential sources of flooding for each flood area on the basis of assumption 11. However, note 1 of the standard explicitly states that other fluid sources, not water, should also be considered. Please describe how the requirements of SR IFSO-A1 were addressed.**
Attach File 1	
Attach File 2	
Issue Date	**5/28/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**5/28/2014 3:44 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**172**
NRC Question Number	**KNH-012**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**There were two non-water sources identified as being potentially relevant to the Internal Flooding analysis, glycol for the ice condenser and electrohydraulic control system (EHC) fluid for the turbine controls. Based on walkdown data, the EHC system's only impact on the model is to cause a turbine trip initiating event. The glycol system however was retained in the internal flooding analysis.** **Glycol only routed in flood areas 759.0-A01 and 759.0-A03 on the Auxiliary Building was considered. This system is of limited volume and will not cause any failures due to accumulation of glycol (submergence). However, flood areas 759.0-A01 and 759.0-A03 contain the control rod drive motor generator sets and related Solid State Protection System cabinets for each unit. These components have the potential to be spray impacted by the glycol system and cause a reactor trip. These flood areas were both screened from inclusion within the PRA model because the entire contribution of the flood areas have a CDF less than 10^{-9}, which is the criteria for screening from IFQU-A3 of the ASME/ANS PRA Standard. Glycol located in other areas was screened due to insufficient volume to cause impact to PRA components.**
Response Date/Time	**7/7/2014 6:30 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/7/2014 5:29 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**315**
NRC Question Number	**KNH-012**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/3/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**9/3/2014 7:30 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**103**
NRC Question Number	**KNH-013**
Category	**Technical**
ITS Section	**TSTF-425 PRA**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Hossein Hamzehee**
Technical Branch POC	**Jonathan Evans**
Conf Call Requested	**N**
NRC Question	**According to the LAR Enclosure 10, section 5, the rare event approximation received a CCI/II/III in the quantification technical element. A rare event approximation may result in an overly conservative baseline risk. Please clarify if the minimal cutset upper bound is typically used and when the rare event approximation is used.**
Attach File 1	
Attach File 2	
Issue Date	**5/28/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**5/28/2014 3:45 PM**
Notification	**Scott Bowman Michelle Conner Khadijah Hemphill Andrew Hon Lynn Mynatt Ray Schiele Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**154**
NRC Question Number	**KNH-013**
Select Application	**Licensee Response**
Attachment 1	**KNH-013 RAI Response.pdf** (79KB)
Attachment 2	
Response Statement	**See Attachment 1 for the response to RAI KNH-013.**
Response Date/Time	**6/27/2014 8:05 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**6/27/2014 7:04 AM**
Date Modified	
Modified By	

KNH-013

Min Cut Upper Bound

The top event probability for the PRA risk metric (CDF or LERF) is calculated using the Min Cut Upper Bound calculation, via the following equation (Reference 1)

$$P(Top) = \left(1 - \prod_{i=1}^{n}\left(1 - P(C_i)\right)\right)$$

As stated in the user's manual for CAFTA, "This calculation is better than a simple sum as it will never be higher than 1.0 but will give a conservative upper limit (Reference 1)."

Rare Event Approximation

The rare event approximation $P = \lambda T$ was used on 1932 different basic events. The calculation type for each of these components was set to $P = 1 - e^{-\lambda T}$. The probability calculation for these two methods was compared for these basic events; 223 of these items had a higher probability when using the rare event approximation.

The basic events with the biggest increase between the two calculation methodologies (pressurizer safety relief valves fail to reseat following water relief) had a 3.14% increase in failure probability when using the rare event approximation. All other events that had an overestimation via the rare event approximation had a change in probability of less than 1%.

References

1. Electric Power Research Institue. *CAFTA Fault Tree Analysis System*. Product ID # 1024831. Version 6.0.

Licensee Response/NRC Response/NRC Question Closure

Id	**316**
NRC Question Number	**KNH-013**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/3/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**9/3/2014 7:30 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**104**
NRC Question Number	**KNH-014**
Category	**Technical**
ITS Section	**TSTF-425 PRA**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Hossein Hamzehee**
Technical Branch POC	**Jonathan Evans**
Conf Call Requested	**N**
NRC Question	**Please clarify if the TSTF-425 portion of the LAR includes any deviations from TSTF-425 Program. For example, the definition of staggered test basis could be retained in the TS Section 1.1, "Definitions," because this term is used in an Administrative TS Section. It is an existing program and therefore, may not be proposed to be changed. This is considered an administrative deviation from TSTF-425 with no impact on the NRC's model safety evaluation dated July 6, 2009 (74 FR 31996). This is an example of an administrative deviation and there could be others.**
Attach File 1	
Attach File 2	
Issue Date	**5/28/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**5/28/2014 3:47 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**171**
NRC Question Number	**KNH-014**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	

Response Statement

In response to KNH-014, SQN has reviewed the TSTF-425 portion of the ITS submittal for possible deviations from TSTF-425, Revision 3. SQN has verified that:

1. **All Surveillance Frequencies are relocated except:**
   a. **Frequencies that reference other approved programs for the specific interval;**
   b. **Frequencies that are purely event driven;**
   c. **Frequencies that are event-driven but have a time component for performing the surveillance on a one time basis once the event occurs; and**
   d. **Frequencies that are related to specific conditions or conditions for the performance of a surveillance requirement.**
2. **SQN has added a new Administrative Controls Program as ITS Specification 5.5.17. The program is called the Surveillance Frequency Control Program (SFCP) and describes the requirements for a program to control changes to the relocated Surveillance Frequencies.**
3. **SQN has proposed revisions to the Bases, for each Surveillance, to state that the Frequency is set in accordance with the Surveillance Frequency Control Program.**
4. **TSTF-425, Revision 3, has the definition of "Staggered Test Basis" in Section 1.1, "Definitions," placed in brackets. TSTF-425 requires plants that adopt TSTF-425 to no longer use this defined term in the Technical Specifications and it should be removed from Section 1.1. However, SQN is deviating from this administrative requirement and leaving the definition in Section 1.1 of the Technical Specifications. This is directly associated with supporting language in ITS Section 5.5.16.d, Control Room Envelope (CRE) Habitability Program.**

Additionally, SQN has identified eight CTS surveillance requirements (SRs) that are not specified in NUREG−1431, but are being retained in the SQN ITS. These SRs have been reformatted in the ISTS template for TSTF-425 and, where applicable, have been annotated for relocation to the SQN SFCP. The following SQN CTS SRs have been added to the proposed SFCP:

SR	SURVEILLANCE REQUIREMENT	ENCLOSURE	VOLUME	PAGE
3.2.1.2	Verify AFD min margin > 0.	2	7	35, 47
3.2.1.3	Verify $f_2(\Delta I)$ min margin > 0.	2	7	37, 49
3.2.2.2	Verify $f_1(\Delta I)$ min margin > 0.	2	7	129, 137
3.3.6.8	Verify ESF RESPONSE TIME is	2	8	920, 929

	within limit.			
3.6.6.6	Verify each RHR spray train manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, is in the correct position.	2	11	296, 300
3.6.6.8	Verify each RHR spray train spray nozzle is unobstructed.	2	11	296, 300
3.7.10.1	Verify each tornado damper that is not locked, sealed, or otherwise secured in place, is in the correct position.	2	12	357, 363
3.8.6.7	Verify DG battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	2	13	444, 452

Response Date/Time **7/3/2014 12:25 PM**

Closure Statement

Question Closure Date

Notification **Scott Bowman**
Michelle Conner
Khadijah Hemphill
Andrew Hon
Ray Schiele

Added By **Scott Bowman**

Date Added **7/3/2014 11:20 AM**

Date Modified

Modified By

Licensee Response/NRC Response/NRC Question Closure

Id	**317**
NRC Question Number	**KNH-014**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/3/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**9/3/2014 7:31 AM**
Date Modified	**9/9/2014 2:21 PM**
Modified By	**Ray Schiele**

ITS NRC Questions

Id	**105**
NRC Question Number	**KNH-015**
Category	**Technical**
ITS Section	**TSTF-425 PRA**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Hossein Hamzehee**
Technical Branch POC	**Jonathan Evans**
Conf Call Requested	**N**
NRC Question	**Please provide a table which includes the following comparisons between NUREG-1431 and TSTF-425:** **A. NUREG-1431 surveillances included in TSTF-425 and provide corresponding Sequoyah surveillance numbers** **B. NUREG-1431 surveillances included in TSTF-425 but are not contained in the Sequoyah TS** **C. Surveillances in the Sequoyah TS but not included in NUREG-1431.**
Attach File 1	
Attach File 2	
Issue Date	**5/28/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**5/28/2014 3:58 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**191**
NRC Question Number	**KNH-015**
Select Application	**Licensee Response**
Attachment 1	**RAI KNH-015 Response.pdf** (80KB)
Attachment 2	
Response Statement	**See Attachment 1 for the response to KNH-015.**
Response Date/Time	**7/17/2014 5:25 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/17/2014 4:21 AM**
Date Modified	
Modified By	

In response to KNH-015, the following information is provided concerning ITS and CTS surveillance requirements (SRs) not in NUREG-1431, Revision 4. Based on a teleconference between SQN and NRC staff on June 4, 2014, it was determined that a table which included comparisons between NUREG-1431 and TSTF-425, as requested in the RAI, was not necessary. Instead, SQN agreed to provide SRs, retained from CTS not in ISTS and SRs that were developed during the conversion, to be included in the Surveillance Frequency Control Program.

ITS SR	CTS	SURVEILLANCE REQUIREMENT	PROPOSED FREQUENCY	PAGES
3.2.1.2	4.2.2.2.c.1	Verify AFD min margin > 0.	Once after each refueling prior to THERMAL POWER exceeding 75% RTP <u>AND</u> Once within 12 hours after achieving equilibrium conditions after exceeding, by ≥ 10% RTP, the THERMAL POWER at which $F_Q^M(X,Y,Z)$ was last verified <u>AND</u> In accordance with the Surveillance Frequency Control Program	35, 36, 47, and 48 Enclosure 2 Volume 7
3.2.1.3	4.2.2.2.c.1	Verify $f_2(\Delta I)$ min margin > 0.	Once after each refueling prior to THERMAL POWER exceeding 75% RTP <u>AND</u> Once within 12 hours after achieving equilibrium conditions after exceeding, by ≥ 10% RTP, the THERMAL POWER at which $F_Q^M(X,Y,Z)$ was last verified <u>AND</u> In accordance with the Surveillance Frequency Control Program	37, 38, 49, and 50 Enclosure 2 Volume 7

3.2.2.2	4.2.3.2.c.1	Verify $f_1(\Delta I)$ min margin > 0.	Once after each refueling prior to THERMAL POWER exceeding 75% RTP <u>AND</u> In accordance with the Surveillance Frequency Control Program	129, 137 Enclosure 2 Volume 7
3.3.6.8	4.3.2.1.3	Verify ESF RESPONSE TIME is within limits.	In accordance with the Surveillance Frequency Control Program	920, 929 Enclosure 2 Volume 8
3.6.6.6	4.5.2.b.2, 4.6.2.1.2.a	Verify each RHR spray train manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program	296, 300 Enclosure 2 Volume 11
3.6.6.8	4.6.2.1.2.b	Verify each RHR spray train spray nozzle is unobstructed.	In accordance with the Surveillance Frequency Control Program	296, 300 Enclosure 2 Volume 11
3.7.10.1	New SR developed during conversion	Verify each tornado damper that is not locked, sealed, or otherwise secured in place, is in the correct position.	In accordance with the Surveillance Frequency Control Program	357, 363 Enclosure 2 Volume 12
3.8.6.7	New SR developed during conversion	Verify DG battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	In accordance with the Surveillance Frequency Control Program <u>AND</u> 12 months when battery shows degradation, or has reached 85% of the expected life with capacity < 100% of manufacturer's rating <u>AND</u> 24 months when battery has reached 85% of the expected life with capacity ≥ 100% of manufacturer's rating	444, 452 Enclosure 2 Volume 13

Licensee Response/NRC Response/NRC Question Closure

Id	**318**
NRC Question Number	**KNH-015**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/3/2014**
Notification	**Scott Bowman Michelle Conner Khadijah Hemphill Andrew Hon Lynn Mynatt Ray Schiele Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**9/3/2014 7:32 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**146**
NRC Question Number	**KNH-016**
Category	**Technical**
ITS Section	**3.5**
ITS Number	**3.5.4**
DOC Number	**LA-2**
JFD Number	
JFD Bases Number	
Page Number (s)	**128, 129, 131 of 204**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	
Conf Call Requested	**N**

NRC Question

CTS LCO 3.5.5a (ITS SR 3.5.4.2) states:

"The refueling water storage tank (RWST) shall be OPERABLE with:
a. A contained borated water volume of between 370,000 and 375,000 gallons."

SQN is proposing to change this to "A contained borated water volume of greater than or equal to 370,00 gallons."

DOC LA02 explains that the maximum value 375,000 will be moved to the UFSAR. However, UFSAR Table 6.3.2-3, "Normal Operating Status of Emergency Core Cooling System Components for Core Cooling," states that the Refueling Water Storage Tank Volume, gals. is 350,000 min/370,000 max.

The CTS doesn't correspond with the UFSAR as stated. Please explain the discrepancy in values.

Attach File 1	
Attach File 2	
Issue Date	**6/6/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**6/6/2014 2:08 PM**
Notification	**Scott Bowman**

Michelle Conner
Khadijah Hemphill
Andrew Hon
Lynn Mynatt
Ray Schiele
Roger Scott

Licensee Response/NRC Response/NRC Question Closure

Id	**279**
NRC Question Number	**KNH-016**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 KNH-016.pdf** (2MB)
Attachment 2	
Response Statement	**As a result of the transition from the CTS to ITS at SQN, there are a number of changes resulting in relocation to the SQN Updated Final Safety Analysis Report (UFSAR). These changes are being identified and incorporated during the Implementation Phase of the SQN ITS Project. Items identified in Enclosure 2 of the SQN ITS License Amendment Request as being relocated to the SQN UFSAR will be incorporated in the SQN UFSAR using the UFSAR update process; TVA's Final Safety Analysis Report management procedure. This process includes developing UFSAR change packages that will include items relocated from the SQN CTS. In accordance with TVA procedures, these UFSAR change packages are processed and incorporated into the SQN UFSAR and transmitted to the NRC in accordance with the requirements of 10 CFR 50.4, "Written communications," and in accordance with the schedule requirements set forth in 10 CFR 50.71(e)(4).** **SQN UFSAR Table 6.3.2-3, "Normal Operating Status of Emergency Core Cooling System Components for Core Cooling," states that the Refueling Water Storage Tank volume is 350,000 gallons, minimum and 370,000 gallons, maximum. The minimum value of 350,000 gallons was determined to be the minimum volume required for the RWST to be able to perform its design function during a large break loss of coolant accident. The maximum value of 370,000 gallons represents the minimum volume required by technical specifications for the RWST to be considered OPERABLE.** **During the implementation process, SQN UFSAR Table 6.3.2-3 will be revised to state that the Refueling Water Storage Tank has a minimum volume of 370,000 gallons and a maximum volume of 375,000 gallons. Attachment 1 provides a draft markup of SQN UFSAR Table 6.3.2−3 to show the relocated and revised information.**
Response Date/Time	**8/21/2014 11:20 AM**
Closure Statement	
Question Closure Date	

Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**8/21/2014 10:19 AM**
Date Modified	
Modified By	

TABLE 6.3.2-3

NORMAL OPERATING STATUS OF EMERGENCY CORE COOLING SYSTEM COMPONENTS FOR CORE COOLING

Number of Safety Injection Pumps Operable	2
Number of Charging Pumps Operable	2
Number of Residual Heat Removal Pumps Operable	2
Number of Residual Heat Exchangers Operable	2
Refueling Water Storage Tank Volume, gals.	370,000 ~~350,000~~ min 375,000 ~~370,000~~ max
Boron Concentration in Refueling Water Storage Tanks, ppm	2,500 min- 2,700 max
Boron Concentration in Cold Leg Accumulator, ppm	2,400 min- 2,700 max
Number of Accumulators	4
Cold Leg Accumulator Pressure, psig	624 - 668
Cold Leg Accumulator Water Volume, gals	7615 min 7960 max
System Valves, Interlocks, and Piping Required for the Above	
Components which are Operable	All

Licensee Response/NRC Response/NRC Question Closure

Id	**327**
NRC Question Number	**KNH-016**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/9/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**9/9/2014 8:34 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**169**
NRC Question Number	**KNH-017**
Category	**Technical**
ITS Section	**3.2**
ITS Number	**3.2.1**
DOC Number	**LA-3**
JFD Number	
JFD Bases Number	
Page Number(s)	**6 of 249**
NRC Reviewer Supervisor	**Sam Miranda**
Technical Branch POC	**Matt Hardgrove**
Conf Call Requested	**N**
NRC Question	**ITS – 3.2.1 Heat Flux Hot Channel Factor** **Page 6 of 249, Surveillance Requirements. According to Removed Detail Changes (LA03), the equations contained in the Surveillance Requirements for calculating % AFD Margin and % $f_2(\Delta I)$ Margin are to be removed to the Improved Standard Technical Specifications (ISTS) Bases. Please provide the context, informational or calculational, for how these equations are used in the Current Technical Specifications (CTS).**
Attach File 1	
Attach File 2	
Issue Date	**7/2/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**7/2/2014 3:24 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott** **Pete Snyder**

Licensee Response/NRC Response/NRC Question Closure

Id	**257**
NRC Question Number	**KNH-017**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	

In response to KNH-017, the following information is provided detailing the use of CTS 3.2.2 (ITS 3.2.1) Heat Flux Hot Channel Factor %AFD Margin and % $f_2(\Delta I)$ Margin formulas used in CTS 4.2.2.2.c.1.

The moveable incore detector system is used to compare the measured power distribution with the designed power distribution at steady-state conditions. For each measured location, if the measured power is within the design, then the AFD limits for the design are applicable. For those locations that are outside the design, a margin calculation is performed to determine whether unacceptable margins exist. AFD and $f_2(\Delta I)$ limits are reduced when unacceptable margins are calculated as described below.

<u>For %AFD Margin:</u>

The $F_Q(X,Y,Z)$ margin supporting AFD operational limits (AFD margin) during transient operations is based on the relationship between $F_Q^M(X,Y,Z)$ and the limiting condition operational limit, BQDES (X,Y,Z).

BQDES(X,Y,Z) is the cycle dependent maximum allowable design peaking factor for fuel assembly X,Y at axial location Z. BQDES(X,Y,Z) ensures that the LOCA limit will be preserved for operation within the LCO limits, including allowances for calculational and measurement uncertainties.

If the reactor core is operating as designed ($F_Q^M(X,Y,Z) \leq BQNOM(X,Y,Z)$), then $F_Q^M(X,Y,Z)$ is less than BQDES(X,Y,Z) and calculation of %AFD margin is not required.

If the AFD margin is less than zero, then $F_Q^M(X,Y,Z)$ is greater than BQDES (X,Y,Z) and the AFD limits may not be adequate to prevent exceeding the peaking criteria for a LOCA if a normal operational transient occurs.

If this occurs, then ITS 3.2.1 Required Actions B.1 and B.2 require reducing the AFD limit lines. The AFD limit reduction is from the full power AFD limits. The adjusted AFD limits must be used until a new measurement shows that a smaller adjustment can be made to the AFD limits, or that no

adjustment is necessary. Completing Required Actions B.1 and B.2 within the allowed Completion Time of 2 hours, restricts the axial flux distribution such that even if a transient occurred, core peaking factor limits are not exceeded.

For %f_2(ΔI) Margin:

The $F_Q(X,Y,Z)$ margin supporting the Overpower ΔT f_2(ΔI) breakpoints (f_2(ΔI) margin) during transient operations is based on the relationship between $F_Q^M(X,Y,Z)$ and the limit, BCDES(X,Y,Z).

BCDES(X,Y,Z) is the cycle dependent maximum allowable design peaking factor for fuel assembly X,Y, at axial location Z. BCDES(X,Y,Z) ensures that the centerline fuel melt limit will be preserved for operation within the LCO limits, including allowances for calculational and measurement uncertainties.

If the reactor core is operating as designed ($F_Q^M(X,Y,Z) \leq BQNOM(X,Y,Z)$), then $F_Q^M(X,Y,Z)$ is less than BCDES(X,Y,Z) and calculation of % f_2(ΔI) margin is not required.

If the f_2(ΔI) margin is less than zero, then $F_Q^M(X,Y,Z)$ is greater than BCDES (X,Y,Z) and there is a potential that the f_2(ΔI) limits are insufficient to preclude centerline fuel melt during certain transients.

If this occurs, then ITS 3.2.1, Required Actions C.1 and C.2 require reducing the f_2(ΔI) breakpoint limits. The f_2(ΔI) breakpoint limit reduction is always from the full power f_2(ΔI) breakpoint limits. The adjusted f_2(ΔI) breakpoint limits must be used until a new measurement shows that a smaller adjustment can be made to the f_2(ΔI) breakpoint limits, or that no adjustment is necessary. Completing Required Actions C.1 and C.2 is a conservative action for protection against the consequences of transients since this adjustment limits the peak transient power level which can be achieved during an anticipated operational occurrence. Completing Required Actions C.1and C.2 within the allowed Completion Time of 48 hours is sufficient considering the small likelihood of a limiting transient in this time period.

BQDES(X,Y,Z), and BCDES(X,Y,Z) data bases are provided for the plant power distribution analysis computer codes on a cycle specific basis and are determined using the methodology for core limit generation described in the references in the COLR.

Response Date/Time	**8/11/2014 5:55 AM**
Closure Statement	

Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele** **Pete Snyder**
Added By	**Scott Bowman**
Date Added	**8/11/2014 4:54 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**319**
NRC Question Number	**KNH-017**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/3/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**9/3/2014 7:45 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**170**
NRC Question Number	**KNH-018**
Category	**Technical**
ITS Section	**3.2**
ITS Number	**3.2.2**
DOC Number	**LA-4**
JFD Number	
JFD Bases Number	
Page Number (s)	**107 of 249**
NRC Reviewer Supervisor	**Sam Miranda**
Technical Branch POC	**Matt Hardgrove**
Conf Call Requested	**N**
NRC Question	**ITS – 3.2.2 Nuclear Enthalpy Rise Hot Channel Factor** **Page 107 of 249, Surveillance Requirements. According to Removed Detail Changes (LA04), the equations contained in the Surveillance Requirements for calculating $F_{\Delta HR}^{M}(X, Y)$, % $F_{\Delta H}$ Margin, and % $f_1(\Delta I)$ Margin are to be removed to the Improved Standard Technical Specifications (ISTS) Bases. Please provide the context, informational or calculational, for how these equations are used in the CTS.**
Attach File 1	
Attach File 2	
Issue Date	**7/2/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**7/2/2014 3:25 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott** **Pete Snyder**

Licensee Response/NRC Response/NRC Question Closure

Id	**258**
NRC Question Number	**KNH-018**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**In response to KNH-018, the following information is provided detailing the use of CTS 3.2.3 (ITS 3.2.2) Nuclear Enthalpy Rise Hot Channel Factor $F\Delta HR^M(X,Y)$, $\%F_{\Delta H}$ Margin and $\%f_1(\Delta I)$ Margin formulas used in CTS 4.2.3.2.b and 4.2.3.2.c.1:**

CTS LCO 3.2.3 requires that $F_{\Delta H}(X,Y)$ shall be less than the limits provided in the COLR. This relationship must be satisfied even if the core is operating at limiting conditions. This requires adjustment to the measured $F_{\Delta H}(X,Y)$ to account for limiting conditions and the differences between design and measured conditions. *The adjustments are accounted for by comparing $F\Delta HR^M(X,Y)$ to the limits BHDES(X,Y) and BRDES(X,Y). Therefore, if the $F_{\Delta H}$ min margin is >0 and $f_1(\Delta I)$ min margin >0 the LCO is satisfied.*

<u>$F\Delta HR^M(X,Y)$</u>

An $F_{\Delta H}(X,Y)$ evaluation requires obtaining an incore flux map in MODE 1. The incore flux map results provide the measured value ($F_{\Delta H}{}^M$ (X,Y) of $F_{\Delta H}$ (X,Y)) for each assembly location (X,Y).
The $F_{\Delta H}$ ratio (FDHR) is used in order to determine the $F_{\Delta H}$ limit for the measured and design power distributions.

The relationship $$F\Delta HR^M(X,Y) = \frac{F_{\Delta H}{}^M(X,Y)}{MAP^M / AXIAL^M\ (X,Y)}$$ **establishes MAP^M as the maximum allowable peak from the COLR for the measured assembly power distribution at assembly location (X,Y) which accounts for calculational and measurement uncertainties, and**
$AXIAL^M$ (X,Y) is the measured ratio of the peak-to-average axial power at assembly location (X,Y).

<u>For % $F_{\Delta H}$ Margin:</u>

The % $F_{\Delta H}$ margin is based on the relationship between $F\Delta HR^M(X,Y)$ and

the limit, BHDES (X,Y). BHDES (X,Y) is a cycle dependent design limit to preserve Departure from Nucleate Boiling (DNB) assumed for initial conditions at the time of limiting transients such as a Loss of Flow Accident (LOFA).

If the reactor core is "operating as designed" ($F\Delta HR^M(X,Y) \leq BHNOM(X,Y)$), then $F\Delta HR^M(X,Y)$ is less than BHDES (X,Y) and calculation of %FΔH margin is not required.

If the %FΔH margin is less than zero, then $F\Delta HR^M(X,Y)$ is greater than BHDES(X, Y) and the $F_{\Delta H}(X,Y)$ limits may not be adequate to prevent exceeding the initial DNB conditions assumed for transients such as a LOFA.

BHDES (X,Y) represents the maximum allowable design radial peaking factors which ensures that the initial conditions DNB will be preserved for operation within the LCO limits, and includes allowances for calculational and measurement uncertainties. The $F_{\Delta H}$ min margin is the minimum for all core locations examined.

For %f_1(ΔI) Margin:

The %f_1(ΔI) margin is based on the relationship between $F\Delta HR^M(X,Y)$ and the limit, BRDES (X,Y). BRDES (X,Y) is a cycle dependent design limit to preserve reactor protection system safety limits for DNB requirements.

If the reactor core is "operating as designed" ($F\Delta HR^M(X,Y) \leq BHNOM(X,Y)$), then $F\Delta HR^M(X,Y)$ is less than BRDES (X,Y) and calculation of %f_1(ΔI) margin is not required.

If the %f_1(ΔI) margin is less than zero, then $F\Delta HR^M(X,Y)$ is greater than BRDES (X, Y) and the OTΔT setpoint limits may not be adequate to prevent exceeding DNB requirements.

BRDES (X,Y) represents the maximum allowable design radial peaking factors which ensure that the steady state DNBR limit will be preserved for operation within the LCO limits, including allowances for calculational and measurement uncertainties. The f_1(ΔI) min margin is the minimum % of f_1(ΔI) margin for all core locations examined.

Response Date/Time	**8/11/2014 6:00 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman**

	Michelle Conner **Khadijah Hemphill** **Andrew Hon** **Ray Schiele** **Pete Snyder**
Added By	**Scott Bowman**
Date Added	**8/11/2014 4:59 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**320**
NRC Question Number	**KNH-018**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/3/2014**
Notification	**Scott Bowman** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**9/3/2014 7:46 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**171**
NRC Question Number	**KNH-019**
Category	**Technical**
ITS Section	**3.2**
ITS Number	**3.2.2**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	**152 of 249**
NRC Reviewer Supervisor	**Sam Miranda**
Technical Branch POC	**Matt Hardgrove**
Conf Call Requested	**N**
NRC Question	**ITS – 3.2.2 Nuclear Enthalpy Rise Hot Channel Factor** **Page 152 of 249, References. The references listed in the Improved Standard Technical Specifications (ISTS) Bases for 3.2.2., Nuclear Enthalpy Hot Rise Hot Channel Factor, do not list NRC-approved topical report BAW-10163PA, "Core Operating Limit Methodology for Westinghouse-Designed PWRS," June 1989. However, it is referenced in ISTS Bases 3.2.1, Heat Flux Hot Channel Factor. Please explain why this reference is not included in ISTS Bases 3.2.2, Nuclear Enthalpy Hot Rise Channel Factor.**
Attach File 1	
Attach File 2	
Issue Date	**7/2/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**7/2/2014 3:27 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott** **Pete Snyder**

Licensee Response/NRC Response/NRC Question Closure

Id	**216**
NRC Question Number	**KNH-019**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 KNH_019 STB.pdf** (86KB)
Attachment 2	
Response Statement	**In response to KNH-019, the ISTS 3.2.2 Bases, Reference Section markup, on pages 152 and 167 of Enclosure 2, Volume 7, will be revised. Specifically, BAW-10163P-A, Revision 0, "Core Operating Limit Methodology for Westinghouse-Designed PWRs," June 1989, will be added as Reference 4. Additionally, ITS 3.2.2 Bases Insert 1 (pages 141 and 156) will be revised to provide a reference to Reference 4.** **See Attachment 1 for revised ITS 3.2.2 Bases pages for Units 1 and 2.**
Response Date/Time	**7/31/2014 12:00 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/31/2014 11:00 AM**
Date Modified	
Modified By	

2 **INSERT 1**

An $F_{\Delta H}(X,Y)$ evaluation requires obtaining an incore flux map in MODE 1. The incore flux map results provide the measured value ($F_{\Delta H}^{M}(X,Y)$ of $F_{\Delta H}(X,Y)$ for each assembly location (X,Y). The $F_{\Delta H}$ ratio (FDHR) is used in order to determine the $F_{\Delta H}$ limit for the measured and design power distributions (Ref. 4). Then,

$$F\Delta HR^{M}(X,Y) = \frac{F_{\Delta H}^{M}(X,Y)}{MAP^{M} / AXIAL^{M}(X,Y)}$$

where MAP^{M} is the maximum allowable peak from the COLR for the measured assembly power distribution at assembly location (X,Y) which accounts for calculational and measurement uncertainties, and $AXIAL^{M}(X,Y)$ is the measured ratio of the peak-to-average axial power at assembly location (X,Y).

BHDES(X,Y) is a cycle dependent design limit to preserve Departure from Nucleate Boiling(DNB) assumed for initial conditions at the time of limiting transients such as a Loss of Flow Accident (LOFA). BRDES(X,Y) is a cycle dependent design limit to preserve reactor protection system safety limits for DNB requirements (Ref. 4).

The expression for BHDES(X,Y) is:

$BHDES(X,Y) = F\Delta HR^{d}(X,Y) * MH(X,Y)$

where: $F\Delta HR^{d}(X,Y) = \dfrac{F_{\Delta H}^{d}(X,Y)}{MAP^{d} / AXIAL^{d}(X,Y)}$

- MAP^{d} is the maximum allowable peak from the COLR for the design assembly power distribution at assembly location (X,Y) which accounts for calculational and measurement uncertainties,

- $AXIAL^{d}(X,Y)$ is the design ratio of the peak-to-average axial power at assembly location (X,Y),

- $F_{\Delta H}^{d}(X,Y)$ is the design $F_{\Delta H}$ assembly location (X, Y), and

- MH(X,Y) is the minimum available margin ratio for initial condition DNB at the limiting conditions at assembly location (X,Y).

Enclosure 2, Volume 7, Rev. 0, Page 141 of 249

BASES

SURVEILLANCE REQUIREMENTS

INSERT 11 4

~~SR 3.2.2.1~~

~~The value of $F^N_{\Delta H}$ is determined by using the movable incore detector system to obtain a flux distribution map. A data reduction computer program then calculates the maximum value of $F^N_{\Delta H}$ from the measured flux distributions. The measured value of $F^N_{\Delta H}$ must be multiplied by 1.04 to account for measurement uncertainty before making comparisons to the $F^N_{\Delta H}$ limit.~~

~~After each refueling, $F^N_{\Delta H}$ must be determined in MODE 1 prior to exceeding 75% RTP. This requirement ensures that $F^N_{\Delta H}$ limits are met at the beginning of each fuel cycle.~~ 1

~~[The 31 EFPD Frequency is acceptable because the power distribution changes relatively slowly over this amount of fuel burnup. Accordingly, this Frequency is short enough that the $F^N_{\Delta H}$ limit cannot be exceeded for any significant period of operation.~~ 6

~~OR~~

INSERT 12 4

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 7
~~---]~~

REFERENCES

1. Regulatory Guide 1.77, Rev. ~~[~~0~~]~~, May 1974.
2. 10 CFR 50, Appendix A, GDC 26.
3. 10 CFR 50.46.

4. BAW-10163P-A, Revision 0, "Core Operating Limit Methodology for Westinghouse-Designed PWRs," June 1989.

2 **INSERT 1**

An $F_{\Delta H}(X,Y)$ evaluation requires obtaining an incore flux map in MODE 1. The incore flux map results provide the measured value ($F^M_{\Delta H}(X,Y)$ of $F_{\Delta H}(X,Y)$ for each assembly location (X,Y). The $F_{\Delta H}$ ratio (FDHR) is used in order to determine the $F_{\Delta H}$ limit for the measured and design power distributions (Ref. 4). Then,

$$F\Delta HR^M(X,Y) = \frac{F^M_{\Delta H}(X,Y)}{MAP^M / AXIAL^M(X,Y)}$$

where MAP^M is the maximum allowable peak from the COLR for the measured assembly power distribution at assembly location (X,Y) which accounts for calculational and measurement uncertainties, and $AXIAL^M(X,Y)$ is the measured ratio of the peak-to-average axial power at assembly location (X,Y).

BHDES(X,Y) is a cycle dependent design limit to preserve Departure from Nucleate Boiling(DNB) assumed for initial conditions at the time of limiting transients such as a Loss of Flow Accident (LOFA). BRDES(X,Y) is a cycle dependent design limit to preserve reactor protection system safety limits for DNB requirements (Ref. 4).

The expression for BHDES(X,Y) is:

$$BHDES(X,Y) = F\Delta HR^d(X,Y) * MH(X,Y)$$

where: $F\Delta HR^d(X,Y) = \dfrac{F^d_{\Delta H}(X,Y)}{MAP^d / AXIAL^d(X,Y)}$

- MAP^d is the maximum allowable peak from the COLR for the design assembly power distribution at assembly location (X,Y) which accounts for calculational and measurement uncertainties,
- $AXIAL^d(X,Y)$ is the design ratio of the peak-to-average axial power at assembly location (X,Y),
- $F^d_{\Delta H}(X,Y)$ is the design $F_{\Delta H}$ assembly location (X, Y), and
- MH(X,Y) is the minimum available margin ratio for initial condition DNB at the limiting conditions at assembly location (X,Y).

Enclosure 2, Volume 7, Rev. 0, Page 156 of 249

BASES

SURVEILLANCE REQUIREMENTS

INSERT 11 4

~~SR 3.2.2.1~~

~~The value of $F^{N}_{\Delta H}$ is determined by using the movable incore detector system to obtain a flux distribution map. A data reduction computer program then calculates the maximum value of $F^{N}_{\Delta H}$ from the measured flux distributions. The measured value of $F^{N}_{\Delta H}$ must be multiplied by 1.04 to account for measurement uncertainty before making comparisons to the $F^{N}_{\Delta H}$ limit.~~

~~After each refueling, $F^{N}_{\Delta H}$ must be determined in MODE 1 prior to exceeding 75% RTP. This requirement ensures that $F^{N}_{\Delta H}$ limits are met at the beginning of each fuel cycle.~~ 1

~~[The 31 EFPD Frequency is acceptable because the power distribution changes relatively slowly over this amount of fuel burnup. Accordingly, this Frequency is short enough that the $F^{N}_{\Delta H}$ limit cannot be exceeded for any significant period of operation.~~ 6

~~OR~~

INSERT 12 4

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 7
~~--]~~

REFERENCES

1. Regulatory Guide 1.77, Rev. ~~[~~0~~]~~, May 1974.

2. 10 CFR 50, Appendix A, GDC 26.

3. 10 CFR 50.46.

4. BAW-10163P-A, Revision 0,"Core Operating Limit Methodology for Westinghouse-Designed PWRs," June 1989.

Licensee Response/NRC Response/NRC Question Closure

Id	**321**
NRC Question Number	**KNH-019**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/3/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**9/3/2014 7:46 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**172**
NRC Question Number	**KNH-020**
Category	**Technical**
ITS Section	**3.2**
ITS Number	**3.2.3**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	**194 and 200 of 249**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

Page B 3.2.3-4 of ITS Bases for LCO 3.2.3, "Axial Flux Difference," provides a listing of references which are relevant to the LCO's Conditions and Surveillance requirements. One of the references concerns the applicability of FSAR, Chapter 15, "Accident Analysis." SQN's LCO Bases mark-up in Enclosure 2, Volume 7, Revision 0, (pdf pages 194 of 249 (Unit 1) and 200 of 249 (Unit 2)) removes the reference. The licensee's Justification For Deviations #2 on page 100 explains the deletion as follows:

> **"Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description."**

Since the specific LCO Bases address various accident conditions, the staff believes that SQN FSAR's specific section which discusses such accident analyses, should be referenced in the Bases, as bracketed in the ITS. Please explain the basis for removal of this reference.

Attach File 1	
Attach File 2	
Issue Date	**7/8/2014**
Added By	**Pete Snyder**
Date Modified	

Modified By	
Date Added	**7/8/2014 8:06 AM**
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele** **Roger Scott** **Pete Snyder**

Licensee Response/NRC Response/NRC Question Closure

Id	**264**
NRC Question Number	**KNH-020**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 KNH-020 STB.pdf** (1008KB)
Attachment 2	

Response Statement

In response to KNH-020, the ITS 3.2.3 Bases Reference Section, on pages 194 and 200 of Enclosure 2, Volume 7, will be revised to retain the reference to UFSAR, Chapter 15. Based on the response to RAI CSS-007, the ITS 3.2.3 Bases will be revised to include the Applicable Safety Analyses (ASA) discussion concerning Condition 4, 3, and 2 events. As a result of this RAI and the response to CSS-007, the following changes will be made to the ITS 3.2.3 Bases.

1. **Following the discussion of the Condition 4, 3, and 2 events, an insert "(Ref. 1)" will be added in the ASA Section.**

2. **In the LCO section, where reference is made to "(Refs. 1 and 2)" the References will be renumbered as "(Refs. 1 and 3)".**

3. **In the References section, the order of the References will be revised to coincide with the Reference number in previous Sections of the Bases.**

4. **Also, in the Reference section, BAW 10163P-A, Core Operating Limit Methodology for Westinghouse-Designed PWRs, June 1989, will be revised to BAW-10163P-A, Revision 0, "Core Operating Limit Methodology for Westinghouse-Designed PWRs," June 1989. This change is consistent with the proposed Reference 4 insert for the ITS 3.2.2 Bases (See the response to RAI KNH-019 concerning this insert).**

See Attachment 1 for the draft revised ITS 3.2.3 Bases.

Response Date/Time	**8/14/2014 6:25 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele** **Pete Snyder**
Added By	**Scott Bowman**

Date Added	**8/14/2014 5:19 AM**
Date Modified	
Modified By	

BASES

APPLICABLE SAFETY ANALYSES

The AFD is a measure of the axial power distribution skewing to either the top or bottom half of the core. The AFD is sensitive to many core related parameters such as control bank positions, core power level, axial burnup, axial xenon distribution, and, to a lesser extent, reactor coolant temperature and boron concentration.

The allowed range of the AFD is used in the nuclear design process to confirm that operation within these limits produces core peaking factors and axial power distributions that meet safety analysis requirements. (Ref. 1)

~~The RAOC methodology (Ref. 2) establishes a xenon distribution library with tentatively wide AFD limits. One dimensional axial power distribution calculations are then performed to demonstrate that normal operation power shapes are acceptable for the LOCA and loss of flow accident, and for initial conditions of anticipated transients. The tentative limits are adjusted as necessary to meet the safety analysis requirements.~~ 1

The limits on the AFD ensure that the Heat Flux Hot Channel Factor (F_Q(X, Y, Z)) is not exceeded during either normal operation or in the event of xenon redistribution following power changes. The limits on the AFD also restrict the range of power distributions that are used as initial conditions in the analyses of Condition 2, 3, or 4 events. This ensures that the fuel cladding integrity is maintained for these postulated accidents. ~~The most important Condition 4 event is the LOCA. The most important Condition 3 event is the loss of flow accident. The most important Condition 2 events are uncontrolled bank withdrawal and boration or dilution accidents.~~ 2 6

A Condition 4 event significantly affected by the initial axial power distribution, as indicated by AFD, is the LOCA. A Condition 3 event significantly affected by AFD is the Complete Loss of RCS Flow event. A Condition 2 event significantly affected by AFD is the Uncontrolled RCCA Bank Withdrawal at Power event. (Ref. 2)

Condition 2 accidents, simulated to begin from within the AFD limits are used to confirm the adequacy of the Overpower ΔT and Overtemperature ΔT trip setpoints.

The limits on the AFD satisfy Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

The shape of the power profile in the axial (i.e., the vertical) direction is largely under the control of the operator through the manual operation of the control banks or automatic motion of control banks. The automatic motion of the control banks is in response to temperature deviations resulting from manual operation of the Chemical and Volume Control System to change boron concentration or from power level changes.

Signals are available to the operator from the Nuclear Instrumentation System (NIS) excore neutron detectors (Refs. ~~3~~ ~~1 and 2~~ 1 and 3). Separate signals are taken from the top and bottom detectors. The AFD is defined as the difference in normalized flux signals between the top and bottom excore detectors in each detector well. For convenience, this flux difference is converted to provide flux difference units expressed as a percentage and labeled as %Δ flux or %ΔI. 2 6

BASES

REFERENCES

3 ~~1.~~ ~~WCAP-8403 (nonproprietary),~~ UFSAR, Section 4.3.2. ~~"Power Distribution Control and Load Following Procedures," Westinghouse Electric Corporation, September 1974.~~ 2

1 ~~2.~~ ~~R. W. Miller et al.,~~ BAW-10163P-A, Revision 0, "Core Operating Limit Methodology for Westinghouse-Designed PWRs," June 1989. ~~"Relaxation of Constant Axial Offset Control: F_Q Surveillance Technical Specification," WCAP-10217(NP), June 1983.~~ 2

2. ~~3.~~ ~~FSAR, Chapter [15].~~ UFSAR, Chapter 15. 2

1

BASES

APPLICABLE SAFETY ANALYSES

The AFD is a measure of the axial power distribution skewing to either the top or bottom half of the core. The AFD is sensitive to many core related parameters such as control bank positions, core power level, axial burnup, axial xenon distribution, and, to a lesser extent, reactor coolant temperature and boron concentration.

A Condition 4 event significantly affected by the initial axial power distribution, as indicated by AFD, is the LOCA. A Condition 3 event significantly affected by AFD is the Complete Loss of RCS Flow event. A Condition 2 event significantly affected by AFD is the Uncontrolled RCCA Bank Withdrawal at Power event.

(Ref. 2)

The allowed range of the AFD is used in the nuclear design process to confirm that operation within these limits produces core peaking factors and axial power distributions that meet safety analysis requirements. (Ref. 1)

~~The RAOC methodology (Ref. 2) establishes a xenon distribution library with tentatively wide AFD limits. One dimensional axial power distribution calculations are then performed to demonstrate that normal operation power shapes are acceptable for the LOCA and loss of flow accident, and for initial conditions of anticipated transients. The tentative limits are adjusted as necessary to meet the safety analysis requirements.~~ 1

The limits on the AFD ensure that the Heat Flux Hot Channel Factor (F_Q(X, Y, Z)) is not exceeded during either normal operation or in the event of xenon redistribution following power changes. The limits on the AFD also restrict the range of power distributions that are used as initial conditions in the analyses of Condition 2, 3, or 4 events. This ensures that the fuel cladding integrity is maintained for these postulated accidents. ~~The most important Condition 4 event is the LOCA. The most important Condition 3 event is the loss of flow accident. The most important Condition 2 events are uncontrolled bank withdrawal and boration or dilution accidents.~~ 2 2 6
Condition 2 accidents, simulated to begin from within the AFD limits are used to confirm the adequacy of the Overpower ΔT and Overtemperature ΔT trip setpoints.

The limits on the AFD satisfy Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

The shape of the power profile in the axial (i.e., the vertical) direction is largely under the control of the operator through the manual operation of the control banks or automatic motion of control banks. The automatic motion of the control banks is in response to temperature deviations resulting from manual operation of the Chemical and Volume Control System to change boron concentration or from power level changes.

Signals are available to the operator from the Nuclear Instrumentation System (NIS) excore neutron detectors (Refs. ~~3~~ ~~1 and 2~~ 1 and 3). Separate signals are taken from the top and bottom detectors. The AFD is defined as the difference in normalized flux signals between the top and bottom excore detectors in each detector well. For convenience, this flux difference is converted to provide flux difference units expressed as a percentage and labeled as %Δ flux or %ΔI. 2 6

BASES

REFERENCES 3 ~~1.~~ ~~WCAP-8403 (nonproprietary),~~ UFSAR, Section 4.3.2. ~~"Power Distribution Control and Load Following Procedures," Westinghouse Electric Corporation, September 1974.~~ 2

1 ~~2.~~ ~~R. W. Miller et al.,~~ BAW-10163P-A, Revision 0, "Core Operating Limit Methodology for Westinghouse-Designed PWRs," June 1989. ~~"Relaxation of Constant Axial Offset Control: F_Q Surveillance Technical Specification," WCAP-10217(NP), June 1983.~~ 2

2. ~~3.~~ ~~FSAR, Chapter [15].~~ UFSAR, Chapter 15. 2

Licensee Response/NRC Response/NRC Question Closure

Id	**326**
NRC Question Number	**KNH-020**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/9/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott** **Pete Snyder**
Added By	**Khadijah Hemphill**
Date Added	**9/9/2014 8:20 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**173**
NRC Question Number	**KNH-021**
Category	**Technical**
ITS Section	**3.5**
ITS Number	**3.5.2**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Sam Miranda**
Technical Branch POC	**Matt Hardgrove**
Conf Call Requested	**N**

NRC Question

In Enclosure 2, Volume 10, Revision 0, regarding Limiting Condition for Operation (LCO) 3.5.2, "ECCS – OPERATING," an edit for Note 1 is proposed as follows, "In MODE 3, both Emergency Core Cooling System (ECCS) pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valves (PIVs) testing per ITS Surveillance Requirement (SR) 3.4.14.1." Surveillance testing of the pressure isolation valves required the Safety Injection (SI) Pump and Residual Heat Removal (RHR) Pump flow paths to be isolated. ITS LCO 3.5.2 Note 1 will allow for isolating both SI pump paths and RHR pump flow paths for two hours allowing for required testing of the PIVs. TVA states that this change permits the isolation of the ECCS (SI pump and RHR pump) flow paths provided that the flow paths are readily restorable from the control room. TVA further states that the acceptability of this testing allowance is based, in part, on the operability of the centrifugal charging system and the cold leg injection accumulators and the low probability of an accident occurring during the isolation time to support PIV testing.

Please provide an analysis demonstrating acceptable ECCS performance in the event of a MODE 3 loss-of-coolant accident when only the accumulators and charging pumps are available for emergency core cooling.

Please provide justification that will ensure that simultaneous PIV surveillance on both RHR and ECCS will not be performed in the event of being in an action statement for failure to meet LCO 3.5.1, "Accumulators," or in the event that the centrifugal charging system is not fully operable.

Attach File

1	
Attach File 2	
Issue Date	**7/14/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**7/14/2014 3:16 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**338**
NRC Question Number	**KNH-021**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 KNH-021 R1.pdf** (1000KB)
Attachment 2	
Response Statement	**mmm**

In response to KNH-021, SQN is withdrawing the proposed change to ITS 3.5.2 ECCS- Operating. Specifically, SQN had proposed to change ITS LCO NOTE 1 to state "In MODE 3, both ECCS pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 3.4.14.1" and to change the ITS LCO NOTE 1 bases to state "As indicated in Note 1, the ECCS (SI Pump and RHR pump) flow paths may be isolated for 2 hours in MODE 3, under controlled conditions, to perform pressure isolation valve testing per SR 3.4.14.1. The flow path is readily restorable from the control room." SQN will remove the associated changes from the ITS 3.5.2 Specification and Bases.

Additionally, during review for KNH-021, the following issue was identified. At the bottom of each page, where "Westinghouse STS" and "Rev. 4.0" are marked out and SQN specific information is inserted, the justification for deviation (JFD) indicator is incorrect. The JFD indicator will be revised to JFD 3 and JFD 3 will be revised to state, "Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description." (Pages 57, 58, 60, 62, 63, 64, 66, 68, and 69)

See Attachment 1 for the related changes associated with Enclosure 2, Volume 10:

1. **CTS markups removing the addition of "ECCS" to NOTE 1 and removing Discussion of Change (DOC) L01 pointers, pages 48 and 50;**
2. **DOC L01 deletion, pages 54 and 55;**
3. **ITS 3.5.2 Specification markups removing the addition of "ECCS" to NOTE 1 and removing the JFD 4 pointer, pages 57 and 63;**
4. **JFD 4 deletion, page 69;**
5. **ITS 3.5.2 Bases markups removing the addition of "ECCS (SI Pump and RHR Pump)" to LCO NOTE 1 and deleting JFD 7 pointers, pages 76 and page 88; and**

6. JFD ITS 3.5.2 Bases, deleting JFD 7 page 95.

Response Date/Time	**9/19/2014 9:50 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**9/19/2014 8:49 AM**
Date Modified	
Modified By	

ITS A01 ITS 3.5.2

EMERGENCY CORE COOLING SYSTEMS (ECCS)

3/4.5.2 ECCS - OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.5.2 3.5.2 Two ECCS trains shall be OPERABLE.

STET ~~ECCS~~ L01

---NOTES---

LCO 3.5.2 Note 1 1. In MODE 3, both ~~safety injection (SI)~~ pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 4.4.6.3.

LCO 3.5.2 Note 2 2. In MODE 3, ECCS pumps may be made incapable of injecting to support transition into or from the APPLICABILITY of LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System," for up to 4 hours or until the temperature of all RCS cold legs exceeds LTOP arming temperature ~~(350°F)~~ specified in the PTLR plus 25°F, whichever comes first.

-- LA01

Applicability APPLICABILITY: MODES 1, 2 and 3.

ACTION:

ACTION A a. With one or more trains inoperable ~~and with at least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available~~, restore the inoperable train(s) to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT M01

ACTION B SHUTDOWN within the following 6 hours.

ACTION C b. With less than 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available, immediately enter LCO 3.0.3.

SURVEILLANCE REQUIREMENTS

4.5.2 Each ECCS train shall be demonstrated OPERABLE:

In accordance with the Surveillance Frequency Control Program LA02

SR 3.5.2.1 a. ~~At least once per 12 hours~~ by verifying that the following valves are in the indicated positions with power to the valve operators removed:

Enclosure 2, Volume 10, Rev. 0, Page 48 of 204

ITS A01 ITS 3.5.2

EMERGENCY CORE COOLING SYSTEMS

3/4.5.2 ECCS - OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.5.2 3.5.2 Two ECCS trains shall be OPERABLE.

STET ECCS L01

------------------------------------NOTES------------------------------------

LCO 3.5.2 Note 1 1. In MODE 3, both ~~safety injection (SI)~~ pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 4.4.6.3.

LCO 3.5.2 Note 2 2. In MODE 3, ECCS pumps may be made incapable of injecting to support transition into or from the APPLICABILITY of LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System," for up to 4 hours or until the temperature of all RCS cold legs exceeds LTOP arming temperature ~~(350°F)~~ specified in the PTLR plus 25°F, whichever comes first.

-- LA01

Applicability APPLICABILITY: MODES 1, 2 and 3.

ACTION:

ACTION A / ACTION B a. With one or more trains inoperable ~~and with at least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available~~, restore the inoperable train(s) to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. M01

ACTION C b. With less than 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available, immediately enter LCO 3.0.3.

SURVEILLANCE REQUIREMENTS

4.5.2 Each ECCS train shall be demonstrated OPERABLE:

In accordance with the Surveillance Frequency Control Program LA02

SR 3.5.2.1 a. ~~At least once per 12 hours~~ by verifying that the following valves are in the indicated positions with power to the valve operators removed:

Valve Number	Valve Function	Valve Position
a. FCV-63-1	RHR Suction from RWST	open
b. FCV-63-22	SIS Discharge to Common Piping	open

DISCUSSION OF CHANGES
ITS 3.5.2, ECCS - OPERATING

control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LA03 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.5.2.b.1 requires verifying ECCS piping is full of water by venting the ECCS pump casing and accessible piping high points. ITS SR 3.5.2.3 requires verifying ECCS piping is full of water. This changes the CTS by moving the details of how to vent the ECCS piping "by venting the ECCS pump casings and accessible piping high points" from the CTS to the Bases.

The removal of these details related to system design from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. Also, this change is acceptable, because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to the Bases to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change, because information relating to system design is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

~~L01~~ ~~*(Category 1 – Relaxation of LCO Requirements)* CTS LCO 3.5.2 requires, two ECCS trains to be OPERABLE. CTS LCO 3.5.2 Note 1 states, in MODE 3, both safety injection SI pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 4.4.6.3. ITS LCO 3.5.2 requires two ECCS trains to be OPERABLE. ITS LCO 3.5.2 Note 1 states In MODE 3, both ECCS pump flow paths may be isolated for 2 hours to perform pressure isolation valve (PIV) testing per SR 3.4.14.1. This changes the CTS by allowing the RHR pump flow paths to be isolated in addition to the SI pump flow paths for Surveillance testing of the pressure isolation valves.~~

~~The purpose of CTS LCO 3.5.2 is to ensure that two ECCS trains are OPERABLE in MODES 1, 2, and 3. The purpose of ITS SR 3.4.14.1 is to prevent overpressure failure of the low pressure portions of connecting systems. PIV leakage could lead to overpressure of the low pressure piping or components. Failure consequences could be a loss of coolant accident (LOCA) outside of containment, or an unanalyzed accident that could degrade the ability for low pressure injection. PIV testing must be performed once after the valve has been opened by flow or exercised to ensure tight reseating. Thus ITS SR 3.4.14.1 supports ITS LCO 3.5.2 to ensure that two ECCS trains are OPERABLE. Surveillance testing of the pressure isolation valves requires the SI Pump and RHR Pump flow paths to be isolated. CTS LCO 3.5.2 Note 1 allows~~

DISCUSSION OF CHANGES
ITS 3.5.2, ECCS - OPERATING

~~both SI pump flow paths to be isolated for two hours provided that the flow paths are readily restorable from the control room. In addition to isolating the SI pump flow paths, ITS LCO 3.5.2 Note 1 will allow both RHR pump flow paths to be isolated for two hours allowing for the required testing of the PIVs. This change permits the isolation of the ECCS (SI pump and RHR pump) flow paths provided that the flow paths are readily restorable from the control room. The acceptability of this testing allowance is based on the operability of the centrifugal charging system and the cold leg injection accumulators and the low probability of an accident occurring during the isolation time to support PIV testing. This change is acceptable because the LCO requirements continue to ensure that the system is maintained consistent with the safety analysis and licensing basis. This change is designated as less restrictive because the RHR pump flow path may be isolated to support testing of the PIVs.~~

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CTS

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS - Operating

3.5.2 LCO 3.5.2 Two ECCS trains shall be OPERABLE.

STET ECCS ~~4~~

-----NOTES-----

3.5.2 Note 1 ~~[~~ 1. In MODE 3, both ~~safety injection (SI)~~ ECCS pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 3.4.14.1. 1

3.5.2 Note 2 2. In MODE 3, ECCS pumps may be made incapable of injecting to support transition into or from the Applicability of LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System," for up to 4 hours or until the temperature of all RCS cold legs exceeds ~~[375°F]~~ ~~[~~Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR plus ~~[~~25~~]~~°F~~]~~, whichever comes first. ~~]~~ 1

Applicability APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION a DOC M01	A. One or more trains inoperable.	A.1 Restore train(s) to OPERABLE status.	72 hours
ACTION a	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours 12 hours
ACTION b	C. Less than 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available.	C.1 Enter LCO 3.0.3.	Immediately

3

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SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.5.2.a	SR 3.5.2.1	[Verify the following valves are in the listed position with power to the valve operator removed. INSERT 1 Number / Position / Function [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program]	2 1 2
4.5.2.b.2	SR 3.5.2.2	Verify each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program]	2 2
4.5.2.b.1	SR 3.5.2.3	[Verify ECCS piping is full of water.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program]]	2 2
4.5.2.f	SR 3.5.2.4	Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program	

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.5.2.e.1	SR 3.5.2.5	Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	2 2
4.5.2.e.2	SR 3.5.2.6	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	2 2
4.5.2.g	SR 3.5.2.7	~~[~~ Verify, for each ECCS throttle valve listed below, each ~~position~~ mechanical stop is in the correct position. INSERT 2 ~~Valve Number~~ ~~[ ]~~ ~~[ ]~~ ~~[ ]~~	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]]~~	2 1 1 2

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.5.2.d	SR 3.5.2.8	Verify, by visual inspection, each ECCS train containment sump suction inlet is not restricted by debris and the suction inlet trash racks and screens show no evidence of structural distress or abnormal corrosion.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	2 2

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3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS - Operating

3.5.2 LCO 3.5.2 Two ECCS trains shall be OPERABLE.

STET ECCS

---NOTES--- ~~4~~

3.5.2 Note 1 ~~[~~ 1. In MODE 3, both ~~safety injection (SI)~~ pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 3.4.14.1. 1

3.5.2 Note 2 2. In MODE 3, ECCS pumps may be made incapable of injecting to support transition into or from the Applicability of LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System," for up to 4 hours or until the temperature of all RCS cold legs exceeds ~~[375°F]~~ ~~[~~Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR plus ~~[~~25~~]~~°F~~]~~, whichever comes first. ~~]~~ 1

Applicability APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CTS	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION a DOC M01	A. One or more trains inoperable.	A.1 Restore train(s) to OPERABLE status.	72 hours
ACTION a	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours 12 hours
ACTION b	C. Less than 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available.	C.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.5.2.a	SR 3.5.2.1	[Verify the following valves are in the listed position with power to the valve operator removed. INSERT 1 Number / Position / Function [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program]	2 1 2
4.5.2.b.2	SR 3.5.2.2	Verify each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program]	2 2
4.5.2.b.1	SR 3.5.2.3	[Verify ECCS piping is full of water.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program]]	2 2
4.5.2.f	SR 3.5.2.4	Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program	

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.5.2.e.1	SR 3.5.2.5	Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	2 2
4.5.2.e.2	SR 3.5.2.6	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	2 2
4.5.2.g	SR 3.5.2.7	~~[~~ Verify, for each ECCS throttle valve listed below, each ~~position~~ mechanical stop is in the correct position. INSERT 2 ~~Valve Number~~ ~~[ ]~~ ~~[ ]~~ ~~[ ]~~	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]]~~	2 1 1 2

3

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY
4.5.2.d	SR 3.5.2.8	Verify, by visual inspection, each ECCS train containment sump suction inlet is not restricted by debris and the suction inlet trash racks and screens show no evidence of structural distress or abnormal corrosion.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 2

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JUSTIFICATION FOR DEVIATIONS
ITS 3.5.2, ECCS - OPERATING

1. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

2. ISTS SR 3.5.2.1 (ITS SR 3.5.2.1), ISTS SR 3.5.2.2 (ITS SR 3.5.2.2), ISTS SR 3.5.2.3 (ITS SR 3.5.2.3), ISTS SR 3.5.2.5 (ITS SR 3.5.2.5), ISTS SR 3.5.2.6 (ITS SR 3.5.2.6), ISTS SR 3.5.2.7 (ITS SR 3.5.2.7) and ISTS SR 3.5.2.8 (ITS SR 3.5.2.8) provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies for these SRs under the Surveillance Frequency Control Program.

3. ~~Editorial correction made for clarity.~~

~~4. Changes made to reflect changes made to the Specification.~~

Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

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BASES

LCO (continued)

In MODES 1, 2, and 3, an ECCS train consists of a centrifugal charging subsystem, an SI subsystem, and an RHR subsystem. Each ECCS train includes the piping, instruments, and controls to ensure an OPERABLE flow path capable of taking suction from the RWST upon an SI signal and automatically transferring RHR suction to the containment sump. 1 1

During an event requiring ECCS actuation, a flow path is required to provide an abundant supply of water from the RWST to the RCS via the ECCS pumps and their respective supply headers to each of the four cold leg injection nozzles. In the long term, this flow path may be switched to take its supply from the containment sump and to supply its flow to the RCS hot and cold legs.

The flow path for each ECCS train must maintain its designed independence to ensure that no single failure can disable both ECCS trains. 1

As indicated in Note 1, the SI ~~ECCS (SI Pump and RHR Pump)~~ flow paths may be isolated for 2 hours in MODE 3, under controlled conditions, to perform pressure isolation valve testing per SR 3.4.14.1. The flow path is readily restorable from the control room. STET ~~7~~

As indicated in Note 2, operation in MODE 3 with ECCS trains made incapable of injecting in order to facilitate entry into or exit from the Applicability of LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System," is necessary for plants with an LTOP arming temperature at or near the MODE 3 boundary temperature of 350°F. LCO 3.4.12 requires that certain pumps be rendered incapable of injecting at and below the LTOP arming temperature. When this temperature is at or near the MODE 3 boundary temperature, time is needed to make pumps incapable of injecting prior to entering the LTOP Applicability, and provide time to restore the inoperable pumps to OPERABLE status on exiting the LTOP Applicability.

APPLICABILITY

In MODES 1, 2, and 3, the ECCS OPERABILITY requirements for the limiting Design Basis Accident, a large break LOCA, are based on full power operation. Although reduced power would not require the same level of performance, the accident analysis does not provide for reduced cooling requirements in the lower MODES. The centrifugal charging pump performance is based on a small break LOCA, which establishes the pump performance curve and has less dependence on power. The SI pump performance requirements are based on a small break LOCA. MODE 2 and MODE 3 requirements are bounded by the MODE 1 analysis.

BASES

LCO (continued)

In MODES 1, 2, and 3, an ECCS train consists of a centrifugal charging subsystem, an SI subsystem, and an RHR subsystem. Each ECCS train includes the piping, instruments, and controls to ensure an OPERABLE flow path capable of taking suction from the RWST upon an SI signal and automatically transferring RHR suction to the containment sump. 1 1

During an event requiring ECCS actuation, a flow path is required to provide an abundant supply of water from the RWST to the RCS via the ECCS pumps and their respective supply headers to each of the four cold leg injection nozzles. In the long term, this flow path may be switched to take its supply from the containment sump and to supply its flow to the RCS hot and cold legs.

The flow path for each ECCS train must maintain its designed independence to ensure that no single failure can disable both ECCS trains. 1

As indicated in Note 1, the ~~SI~~ ~~ECCS (SI Pump and RHR Pump)~~ STET flow paths may be isolated for 2 hours in MODE 3, under controlled conditions, to perform pressure isolation valve testing per SR 3.4.14.1. The flow path is readily restorable from the control room. ~~7~~

As indicated in Note 2, operation in MODE 3 with ECCS trains made incapable of injecting in order to facilitate entry into or exit from the Applicability of LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System," is necessary for plants with an LTOP arming temperature at or near the MODE 3 boundary temperature of 350°F. LCO 3.4.12 requires that certain pumps be rendered incapable of injecting at and below the LTOP arming temperature. When this temperature is at or near the MODE 3 boundary temperature, time is needed to make pumps incapable of injecting prior to entering the LTOP Applicability, and provide time to restore the inoperable pumps to OPERABLE status on exiting the LTOP Applicability.

APPLICABILITY

In MODES 1, 2, and 3, the ECCS OPERABILITY requirements for the limiting Design Basis Accident, a large break LOCA, are based on full power operation. Although reduced power would not require the same level of performance, the accident analysis does not provide for reduced cooling requirements in the lower MODES. The centrifugal charging pump performance is based on a small break LOCA, which establishes the pump performance curve and has less dependence on power. The SI pump performance requirements are based on a small break LOCA. MODE 2 and MODE 3 requirements are bounded by the MODE 1 analysis.

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.2 BASES, ECCS OPERATING

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. The listed LCOs concern the shutdown cooling function of the RHR System, not the ECCS function. The Applicability Section has adequately described why ECCS is not needed in MODES 5 and 6, and it is not necessary to describe why normal shutdown cooling is required. Therefore, this inappropriate information has been deleted.

3. ISTS SR 3.5.2.1, ISTS SR 3.5.2.2, ISTS SR 3.5.2.3, ISTS SR 3.5.2.5, ISTS SR 3.5.2.6, ISTS SR 3.5.2.7 and ISTS SR 3.5.2.8 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Therefore, the Frequency for ITS SR 3.5.2.1, SR 3.5.2.2, SR 3.5.2.3, SR 3.5.2.5, SR 3.5.2.6, SR 3.5.2.7 and SR 3.5.2.8 is "In accordance with the Surveillance Frequency Control Program."

4. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

5. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

6. Editorial changes made to enhance clarity/consistency.

~~7. Changes are made to reflect changes made to the Specification.~~

Licensee Response/NRC Response/NRC Question Closure

Id	**340**
NRC Question Number	**KNH-021**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/22/2014**
Notification	**Scott Bowman Michelle Conner Khadijah Hemphill Andrew Hon Lynn Mynatt Ray Schiele Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**9/22/2014 10:07 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**187**
NRC Question Number	**KNH-022**
Category	**Technical**
ITS Section	**TSTF-425**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Hossein Hamzehee**
Technical Branch POC	**Jonathan Evans**
Conf Call Requested	**N**

NRC Question

In response to the Request for Additional Information 4, the licensee indicated that they will use the Individual Plant Examination for External Events (IPEEE) for Surveillance Test Interval Changes with respect to external events until they have a completed external hazard PRA. The licensee also stated that their PRA models are "living models," as they reflect the as-built, as-operated plant configuration. In addition, with respect to bounding analyses, surrogate basic events will be used as appropriate, which will represent the as-built, as-operated plant. The NRC staff requests the following:

1. **Please explain the relationship between the PRA "living models" and the IPEEE studies to be used for bounding analyses.**

2. **Please explain whether the bounding analyses performed using the IPEEE studies consider other factors, including 1) the determination of the applicability of the IPEEE study for a bounding analysis that reflects the current plant operating configuration and 2) consideration of new risk insights obtained since the IPEEE study.**

Attach File 1	
Attach File 2	
Issue Date	**8/22/2014**
Added By	**Khadijah Hemphill**
Date Modified	

Modified By	
Date Added	**8/22/2014 11:37 AM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**339**
NRC Question Number	**KNH-022**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	

1. Please refer to previously docketed correspondence (ML13024A010, Attachment E), "Evaluation of SQN PRA Model," submitted as part of SQN's license renewal for discussion on the relationship between the PRA "living model" and the IPEEE studies used for bounding analyses. Additionally, please refer to previously docketed correspondence (ML13227A003), "Response to NRC Request for Additional Information Regarding the Environmental Review of the Sequoyah Nuclear Plant, Units 1 and 2, License Renewal Application" for treatment and applicability of the IPEEE results.

The "external events multiplier" described in ML13024A010 will be used for the characterization of the external events contribution, where appropriate, when performing risk analyses associated with surveillance test interval calculations. An input to the multiplier is the Internal Events CDF of which the Model of Record value will be used and the multiplier recalculated as new revisions to the model are issued.

The discussion on external events can be found in the applicable section of Attachment E as follows:

Seismic –	**§1.3.1**
Internal Fires –	**§1.3.2**
Other External Hazards	**§1.3.3**

2. The SQN IPEEE is similar to other PRAs in the U.S. nuclear fleet with respect to treatment and analysis of external events contribution to plant risk in absence of PRA models for a given initiator. The methods employed in support of the IPEEE to assess seismic, fire and other external hazards were conservative and are judged to be applicable in support of bounding analyses for Risk-Informed Technical Specification Task Force Initiative 5b at SQN. Proposed surveillances for consideration of a risk-informed test interval will be assessed in accordance with the requirements of SQN's owner controlled program which will contain language that requires a reassessment and documentation of risk-informed surveillance frequencies as new risk insights for external event initiators are available to industry.

The Owner Controlled Program will also include language that requires a determination on the applicability of a bounding analysis for each

proposed surveillance frequency calculation. The documentation for the analysis will justify use of bounding analyses with respect to treatment of external events contribution to risk. The process described in NEI 04-10 Rev. 1, "Risk-Informed Method for Control of Surveillance Frequencies" Step 10 will be followed for bounding analyses and applicability. Figure 2 "Evaluation of Total and Cumulative Effect on CDF and LERF" is the process SQN will follow in evaluating proposed surveillance test interval (STI) changes. As can be seen in the diagram, there is a requirement to assess the contribution from each contributor (Seismic, Fire, Flood, etc.) as well as the metrics/criteria for bounding analyses. In accordance with the requirements of Section 10, a person knowledgeable in the scope, level of detail and assumptions used in the Fire Induced Vulnerability Evaluation (FIVE), the Seismic Margins Analysis (SMA), and screening of other hazards, etc., will make the determination of whether those evaluations are applicable to support the STI analysis.

Seismic risk was considered in the IPEEE by development of a Seismic Margins Assessment (SMA). Risk insights identified post-IPEEE including the Fukushima Near-Term Task Force Report Recommendation 2.3: Seismic Response Report (refer to TVA's response to NRC RAI 7.e.ii, ML13227A003) concluded that all components have a High Confidence, Low Probability of Failure (HCLPF) above the 0.3g requirement. As such, SQN is judged to be seismically robust based on the current state of knowledge. Refer to ML13024A010, §E.1.3.1 for additional information with respect to the SQN seismic analysis. The seismic design of SQN will be further evaluated by the ongoing Fukushima project requirements and any additional risk insights subsequent to the IPEEE submittal will be considered in the STI evaluations.

Fire risk at SQN was determined by the successive screening methodology referred to as FIVE. The risk impact associated with this analysis is judged to be conservative as it was a screening process and given the fact that design modifications have since been performed; such as hot-short probability mitigation, Appendix R modifications (e.g., cable tray covers, fire wraps, and others) that mitigate the risk of damage due to internal fires. These additional modifications, as well as any other risk insights subsequent to the IPEEE submittal, will be considered a part of the STI evaluations. Refer to ML13024A010, §E.1.3.2 for additional information with respect to the SQN fire analysis.

Other external hazards including, high winds, tornados, external flooding, transportation, and nearby industrial facilities were evaluated and documented in the IPEEE. These initiators were screened as less than the threshold of the Standard Review Plan (SRP), therefore, they are not significant contributors to external risk. Any risk insights subsequent to the IPEEE submittal with respect to other external hazards will be considered as part of the STI evaluation. Refer to ML13024A010, §E.1.3.3 for additional information with respect to other SQN external hazards analysis.

Date/Time	**9/19/2014 12:05 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**9/19/2014 11:03 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**341**
NRC Question Number	**KNH-022**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/22/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**9/22/2014 10:09 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**198**
NRC Question Number	**KNH-023**
Category	**Technical**
ITS Section	**3.6**
ITS Number	**3.6.3**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Hossein Hamzehee**
Technical Branch POC	**Jonathan Evans**
Conf Call Requested	**N**

NRC Question

For Changes related to TSTF-446:

1. **In the submittal, the licensee states that they will use TVA procedure NPG-SPP-07.1, "On-Line Risk Management" to meet the Tier 2 requirement to avoid risk-significant plant configurations. However, the licensee does not indicate if this process confirms the conclusions of WCAP-15791. The purpose of Tier 2 evaluation is to ensure that appropriate restrictions will be in place to prevent the occurrence of high-risk configurations. Specifically, the licensee must provide reasonable assurance that risk-significant plant equipment outage configurations will not occur when specific plant equipment is out of service in accordance with the proposed extended CIV CT changes. The licensee would also need to confirm that the assumptions of the Topical Report (TR), addressed by the Tier 2 restrictions listed below, will be validated as part of their program:**

   - **Only one CIV will be in maintenance with an extended completion time at any given time, unless the licensee has proposed the additional ISTS LCO 3.6.3 Condition**

D in its plant-specific application.

- Other CIVs in the penetration flow path shall be checked for proper position before any maintenance or corrective action is performed.

Please explain whether the conclusions and assumptions of the Topical Report concerning Tier 2 requirements will be included the licensee's plant-specific Tier 2 Requirements.

Attach File 1	
Attach File 2	
Issue Date	**11/18/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**11/18/2014 5:44 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott** **Caroline Tilton**

Licensee Response/NRC Response/NRC Question Closure

Id	**401**
NRC Question Number	**KNH-023**
Select Application	**Licensee Response**
Attachment 1	**RAI KNH-023 Attachment 1.pdf** (21KB)
Attachment 2	
Response Statement	**In response to RAI KNH-023, regarding the conclusions and assumptions of the Tier 2 requirements in WCAP-15791, the following information is provided:** **1. ISTS 3.6.3 Condition D has been retained in the SQN ITS submittal as ITS 3.6.3 Condition C. ITS 3.6.3 Condition C states, "Two or more penetration flow paths with one containment isolation valve inoperable for reasons other than Conditions E, F, and G." ITS 3.6.3 Required Action C.1 requires isolating all but one penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange within 4 hours. (Pages 119 and 133 of Enclosure 2, Volume 11)** **2. ITS 3.6.3, Containment Isolation Valves, Discussion of Change, L03 (page 106 of Enclosure 2, Volume 11) Item 3.2.2, Demonstration (Tier 2 Evaluation), states, "TVA has confirmed the conclusion in the TR that no Tier 2 requirements are needed other than a requirement to ensure that before maintenance or corrective maintenance (repair) is performed on a CIV, any other CIVs in the penetration flow path have been checked to ensure that they are in their proper position.** **3. SQN ITS submittal, Enclosure 5, Section 4.7.2, Tier 2 Avoidance of Risk-Significant Plant Configurations, states in part, "TVA procedure NPG-SPP-07.3, 'Work Activity Risk Management Process' provides an integrated process for assessing and reducing the likelihood and/or consequences of an adverse event. SQN employs a work management process that utilizes Functional Equipment Groups (FEGs). The grouping qualitatively assessed work activities and components and made logic ties that prevent certain risk-significant plant configurations for being scheduled simultaneously."** **Additionally, during review a typographical error was identified in Enclosure 5, Section 4.7.2. The reference to NPG-SPP-07.1, \"On-Line Risk Management.\" should be \"On-Line Work Management.\" See Attachment 1 for the correction of the title of NPG-SPP-07.1.**
Response Date/Time	**12/16/2014 3:00 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Caroline Tilton**
Added By	**Scott Bowman**
Date Added	**12/16/2014 1:55 PM**
Date Modified	
Modified By	

5. Assurance that there is PRA adequacy, completeness, and applicability with respect to evaluating the risk associated with the proposed CIV CT extensions.

   SQN specific parameters and PRA results applicable to the proposed risk-informed application of CIV completion time extensions are well documented in references 7 through 10. The PRA has been subjected to a Peer Review in early 2011 that assessed the technical adequacy of the SQN PRA.

6. Assurance that plant design or operational modifications that are related to or could impact the proposed CT extensions are reflected in the PRA revision used in the plant-specific application, or a justification for not including those modifications in the PRA.

   In accordance with TVA procedure NPG-SPP-09.11, "Probabilistic Risk Assessment (RPA) Program," plant modifications or design changes that result in new configurations, alignments, and capabilities of plant system are assessed for inclusion in model updates. Furthermore TVA procedure NEDP-26 "Probabilistic Risk Assessment (PRA)" provides the requirements for the cumulative impact of plant configuration changes, including plant-specific design, procedure and operational changes that require an update to the Model of Record.

4.7.2 Tier 2 Avoidance of Risk-Significant Plant Configurations

The process SQN uses to avoid risk-significant plant configurations is governed by TVA procedure NPG-SPP-07.1, "On-Line ~~Risk~~ Work Management." The procedure applies to all work activities that affect or have the potential to affect a plant component, system, or unit configuration. A risk assessment methodology is used for on-line maintenance and shutdown operations. For on-line maintenance, a risk assessment is performed prior to implementation and emergent work is evaluated against the assessed scope. Shutdown risk is assessed in accordance with TVA procedure NPG-SPP-07.2, "Outage Management." Furthermore, TVA procedure NPG-SPP-07.3, "Work Activity Risk Management Process" provides an integrated process for assessing and reducing the likelihood and/or consequences of an adverse event. SQN employs a work management process that utilizes Functional Equipment Groups (FEGs). The grouping qualitatively assessed work activities and components and made logic ties that prevent certain risk-significant plant configurations for being scheduled simultaneously.

4.7.3 Tier 3 Risk-Informed Configuration Risk Management

In accordance with the requirements of 10CFR50.65(a)(4) SQN assesses and manages plant configurations prior to taking the maintenance configuration. The proposed plant configuration is modeled in the computer code EOOS (Equipment Out Of Service) to determine the change in the core damage frequency (CDF) and the large early release frequency (LERF). The initial risk assessment is performed six - nine weeks prior to implementation to allow for risk-informed sequencing of activities as necessary and for other actions determined based on risk insights gleaned from the initial assessment. The well defined process is governed by TVA procedure NPG-SPP-07.1, "On-Line ~~Risk~~ Work Management." The quantified change in risk is used as one input with respect to configuration risk management. Furthermore, the process prescribes successive higher levels of management approval for plant configurations resulting in an increase in risk at various levels. Although not quantified, work management compensatory measures are prescribed as the risk level increases to limit the likelihood of entering an unplanned configuration (i.e., protected trains/equipment) or to limit the consequences of an

Licensee Response/NRC Response/NRC Question Closure

Id	**412**
NRC Question Number	**KNH-023**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**12/30/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**12/30/2014 10:58 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**199**
NRC Question Number	**KNH-024**
Category	**Technical**
ITS Section	**3.6**
ITS Number	**3.6.3**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Hossein Hamzehee**
Technical Branch POC	**Jonathan Evans**
Conf Call Requested	**N**

NRC Question

For changes related to TSTF-446:

The submittal states that "Group/Calc # III-A-12BC, III-A-13, III-A-14, II-A-X17, II-B-X44, II-A-BOUNDING do not match generic configurations of the WCAP and have been analyzed and CT times determined using SQN specific configurations and SQN specific PRA values." It is not clear how the plant-specific analysis was performed for the Group/Calc # that did not match generic configurations of the WCAP.

Please explain how the licensee performed plant-specific Completion Time calculations for the CIV configurations.

Attach File 1	
Attach File 2	
Issue Date	**11/18/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**11/18/2014 5:48 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott** **Caroline Tilton**

Licensee Response/NRC Response/NRC Question Closure

Id	**418**
NRC Question Number	**KNH-024**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**RAI-KNH-024**

The submittal states that "Group/Calc # III-A-12BC, III-A-13, III-A-14, II-A-X17, II-B-X44, II-A-BOUNDING do not match generic configurations of the WCAP and have been analyzed and CT times determined using SQN specific configurations and SQN specific PRA values." It is not clear how the plant-specific analysis was performed for the Group/Calc # that did not match generic configurations of the WCAP.

Please explain how the licensee performed plant-specific Completion Time calculations for the CIV configurations.

TVA Response

SQN followed a similar process as the penetration classification methodology used for the generic analyses described by WCAP-15791, "Risk-Informed Evaluation of Extension to Containment Isolation Valve Completion Times," that was endorsed by the NRC staff as documented in the Safety Evaluation of WCAP–15791–P-A, Revision 2 (ADAMS Accession No. ML080170680). The NRC Safety Evaluation concluded that the topical report provides guidance to assist licensees in evaluating changes to containment isolation valve (CIV) completion times (CTs) and includes methodologies for generic and plant-specific analyses.

The following explains the process employed for SQN:

SQN specific parameters and/or updated industry data were used for the valve types in consideration. The Tier 1 approach used in the generic analysis was conservative, and therefore, applicable to Westinghouse Owner's Group plants, including SQN, Units 1 and 2. Where appropriate, the plant–specific

analysis removed over-conservatisms. The analysis of the penetrations listed in RAI KNH-024 followed the approach described in Sections 8.2 and 8.3 of WCAP–15791. The generic analysis data provided in WCAP–15791 was replaced by SQN specific data to potentially justify an increase in the CT provided for the generic calculation similar to the lead plant analysis in Section 10.

The data used is documented in Enclosure 5 of the ITS license amendment request (LAR) in the following tables:

- **Table 4-1 Core Damage Frequencies**
- **Table 4-2 Valve Fail-to-Close and Valve Fail-to-Reseat Probabilities**
- **Table 4-3 Generic and SQN Specific Beta, Gamma Factors**
- **Table 4-4 Spurious Open and Beta Factor Values**
- **Table 4-5 Additional Inputs**

The plant–specific approach is described in Section 4.5 of Enclosure 5 of the ITS LAR and is summarized as follows:

A determination is made with respect to the penetration class applicable to the given penetration.

- **Class I – flow paths connected to the containment atmosphere**
- **Class II – flow paths connected to the Reactor Coolant System**
- **Class III – flow paths connected to the steam generators**

Secondly, the grouping for the system applicable to the penetration of interest is determined, e.g., standby or normally running.

Based on the class and grouping, the potential release paths considered in the analysis are determined, e.g., non-seismic, seismic, random pipe break, etc. Section 4.8.2, "Calculations/Inputs," of Enclosure 5 to the ITS LAR describes the release types to consider and the inputs for each class and group. For each penetration, the type and number of valves are defined and a determination whether common cause failure (CCF) should be included. Characterization of whether the pressure boundary is maintained or not-maintained is considered. The pressure boundary "not-maintained" configuration bounds the pressure boundary "maintained"

configuration.

An incremental conditional large early release probability (ICLERP) is calculated for each of the release types associated with the penetration class. The generic core damage frequency (CDF) associated with each release type is multiplied by the probability of the event and the valve failure probability. The result for each release type is summed to obtain an overall probability. Initially, a 168–hour window of vulnerability is used and if the sum of the release types meets the ICLERP acceptance criterion of ≤ 5.0E-08 from Regulatory Guide (RG) 1.177, Revision 0, the 168–hour window is then used in the delta large early release frequency (ΔLERF) calculation. If 168 hours results in > 5.0E-08, the process is repeated using successively less hours, e.g., 72-hr, 48-hr, etc., until the acceptance criterion is met.

The ΔLERF is calculated to determine the limiting CT for meeting the acceptance criteria from RG 1.174, Revision 0. For ΔLERF, the configuration is modeled using computer–aided fault tree analysis (CAFTA) to determine the probability that a penetration is not isolated based on the number of isolation valves, their type, position, etc. and given failure likelihoods taken from plant–specific data. CCF is included when applicable to the configuration. The model is solved for the CT of interest (based on the ICLERP) and the current licensing basis CT of 4 hours. The delta represents the increase in risk associated with the proposed CT over the current 4–hour CT.

The maximum CT to isolate a penetration is selected based on the more limiting of the ICLERP and the ΔLERF.

The following explains the analyses of the penetrations listed in the RAI.

Penetrations III-A-X12BC and III-A-X13 are connected to the secondary side of the steam generator; therefore they are characterized as Class III. Also, these penetrations are connected to the outside environment thus are categorized as Group A. The balance of the penetration nomenclature represents the penetration numbers.

The Class III, Group A penetrations were analyzed for release types; seismic, random pipe break, and steam generator tube

rupture (SGTR). If an analysis does not take credit for isolation capability for a given release type, a bounding valve failure probability of 1.0 was used; otherwise, the probability associated with the specific valve type is used. A bounding calculation is represented by the sum of the three individual release types and based on the duration to obtain a ICLERP less than the RG 1.177 acceptance criterion of 5.0E-08. The result of the analysis for Class III Group A penetrations is 4.69E-08 and meets the acceptance criterion based on an 8 hour CT.

The change in risk (ΔLERF) for extending the CT from the current licensing basis of 4 hours to the proposed CT of 8 hours is determined by modeling the penetration configuration in CAFTA and solving the top gate for both durations. The delta is multiplied by the CDF associated with each release type and probability of the release. For Class III Group A, the seismic, random pipe break, and SGTR release types are calculated individually and then summed to obtain the overall ΔLERF. The sum of the release types, based on an 8–hour CT for Class III Group A is 1.5E-10/yr, which meets the RG 1.174 acceptance criterion of < 1.0E-07/yr.

Penetrations II-A-X17, II-A-BOUNDING and II-B-X44 are connected to the Reactor Coolant System; therefore, they are characterized as Class II. Group A represents standby system CIVs and Group B represents CIVs for normally operating systems. The balance of the penetration nomenclature represents the penetration number.

Class II penetrations were analyzed for seismic, non-seismic, random pipe break, and Interfacing System Loss of Coolant Accident release paths. The same process as described for the Class III penetrations was used for determination of ICLERP and ΔLERF.

The II-A-BOUNDING analysis differs only in that the valve failure probability is assumed as 1.0 to bound all possible valve types.

Note: At the time of the SQN ITS LAR submittal, more recent revisions of RGs 1.174 and 1.177 were approved for use; however, the RG revisions referenced in WCAP–15791–P–A were both Revision 0 of the guides. In terms of the metrics

used, the Revision 0 values are the same or more restrictive than the values in the currently approved revisions of these RGs; and therefore, the calculated ICLERP and ΔLERF are bounded.

Response Date/Time	**1/9/2015 12:30 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Caroline Tilton**
Added By	**Scott Bowman**
Date Added	**1/9/2015 11:31 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**420**
NRC Question Number	**KNH-024**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**1/20/2015**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**1/20/2015 6:50 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**200**
NRC Question Number	**KNH-025**
Category	**Technical**
ITS Section	**3.6**
ITS Number	**3.6.3**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Hossein Hamzehee**
Technical Branch POC	**Jonathan Evans**
Conf Call Requested	**N**

NRC Question

For changes related to TSTF-446:

In the submittal, the licensee did not fully describe the scope of the plant-specific PRA and its technical adequacy for performing a Tier 3 evaluation. In Regulatory Position 4.2 of RG 1.200, the NRC staff stated that it expects licensees to submit a discussion of the resolution of the peer review findings that are applicable to the parts of the PRA required for the application.

a. **Please provide the Facts and Observations and their resolutions that are applicable to the generic analysis and associated completion times included in this submittal.**

b. **Explain whether the licensee has a PRA configuration control and updating process (including PRA quality assurance program, associated procedures, and PRA revision schedules).**

Attach File 1	
Attach File 2	
Issue Date	**11/18/2014**

Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**11/18/2014 5:50 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott** **Caroline Tilton**

Licensee Response/NRC Response/NRC Question Closure

Id	**422**
NRC Question Number	**KNH-025**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	

RAI KNH-025

In the submittal, the licensee did not fully describe the scope of the plant-specific PRA and its technical adequacy for performing a Tier 3 evaluation. In Regulatory Position 4.2 of RG 1.200, the NRC staff stated that it expects licensees to submit a discussion of the resolution of the peer review findings that are applicable to the parts of the PRA required for the application.

a. Please provide the Facts and Observations and their resolutions that are applicable to the generic analysis and associated completion times included in this submittal.

b. Explain whether the licensee has a PRA configuration control and updating process (including PRA quality assurance program, associated procedures, and PRA revision schedules).

TVA Response

a. The aspect of the PRA applicable to the generic analysis and associated completion times is the SQN data used in the analyses or used to bound the generic analysis. Facts and Observations (F&Os) associated with this aspect of the SQN PRA are 2-4, 2-5, 2-6, 2-7, 4-9, 4 10, 4-11, 4-12 and 4-13. Another attribute of the generic analysis is the selection of the

containment hole size with respect to characterizing postulated leakage, for this attribute, F&O 3-1 applies.

Following are the F&Os discussed above, as well as, their resolutions.

F&O 2-4 (Finding)
Appendix F of the Data Analysis notebook provides graphs that show the prior and posterior distributions. Table 19 lists generic and Bayesian-updated mean values, along with a ratio of the posterior to prior mean value. However, there are no conclusions drawn about whether or not the posterior distributions are reasonable given the relative weight of evidence provided by the prior and the plant-specific data. (Note: the statement that "There are no significant differences between the industry data from NUREG/CR-6928 and the posterior distributions for the SQN failure rates" in section 11.0 is not judged to be sufficient. For example, the ratio of the posterior to prior mean for the AHUFR [air handling unit (standby) fails to run] type code in Table 19 is 10.6. For type code LSTFR [level sensor/level transmitter fails to operate], the ratio is 4.3. The significance of these differences should be discussed.)

(This F&O originated from SR [supporting requirement] DA-D4)

Associated SRs:DA-D4, DA-E2

Basis for Significance
The reasonableness check needs to assess whether the Bayesian updates yield expected results given the relative weight of evidence provided by the prior and the plant-specific data.

Possible Resolution

Discuss the observed differences in the prior and posterior distributions and draw conclusions on the significance associated with those differences.

F&O 2-4 SQN Response/Resolution
The posterior distributions were validated using the following process. Using a Monte Carlo simulation, the posterior distributions were sample[d] to see the probability of having a recurrence in the number of events observed in the data window given the number of successes in the data window. If the mean value was within 0.05 to 0.95 the resultant distribution was used within the model.

Appendix F of the Data Analysis notebook was re-written to address this analysis as well as to present the prior, posterior, and plant specific distributions.

F&O 2-5 (Finding)
The method from NUREG/CR-6823 is used to Bayesian-update a Jeffreys noninformative prior distribution with plant-specific experience. However, there is no comparison of the posterior means to plant-specific means. (See the last sentence in NUREG/CR-6823, section 6.7.1.2.).

(This F&O originated from SR DA-D4)

Associated SRs: DA-D4, DA-E2

Basis for Significance
A reasonableness check should be performed to assure the Bayesian-updated maintenance unavailabilities yield expected results when compared to plant-specific mean values given the amount of plant-specific data.

Possible Resolution
Compare the Bayesian-updated maintenance

unavailabilities to plant-specific mean values, discuss the observed differences and draw conclusions on the significance associated with those differences.

F&O 2-5 SQN Response/Resolution
The fundamental assumption used in the Bayesian update process described in the Data Analysis notebook for unavailability calculations is that there is no prior information from which to Bayesian update. Therefore, the methodology used a Jefferys non-informative prior (0.5) as the foundation for the update process. All of the available data that was used was from plant specific data collection, therefore the posterior mean and plant specific mean are directly correlated. The following assumption was added to Section 3.0 to address the non-informative prior.

"For unavailability calculations, a Jefferys non-informative prior was used as there was no informative prior information available."

F&O 2-6 (Suggestion)
No modifications to plant design or operating practices were identified that lead to a condition where past data are no longer representative of current performance. Thus limiting the use of old data was not required. However, for completeness, it is suggested that the data analysis document the consideration of this supporting requirement.

(This F&O originated from SR DA-D8)

Associated SRs:DA-D8, DA-E2

Basis for Significance
No documentation addressing this supporting requirement was identified.

Possible Resolution
Document a consideration of modifications to plant design or operating practices that could lead to a condition where past data are no longer representative of current performance in the Data Analysis notebook.

F&O 2-6 SQN Response/Resolution

Section 7.2.1 was added to the data analysis notebook to address plant design changes.

F&O 2-7 (Suggestion)
The data analysis aligns well with the PRA Standard requirements and is generally well-documented. Adding a 'roadmap' to the PRA Standard data SRs - as was done elsewhere in the PRA documentation - would enhance the performance of PRA applications, upgrades, and peer review.

(This F&O originated from SR DA-E1)

Associated SR: DA-E1

Basis for Significance
Adding a 'roadmap' to the PRA Standard data SRs would enhance the performance of PRA applications, upgrades, and peer review.

Possible Resolution
In the Data Analysis notebook, add a 'roadmap' to the PRA Standard data SRs.

F&O 2-7 SQN Response/Resolution
Appendix K was added to the Data Analysis notebook to address the ASME/ANS standard sections.

F&O 3-1 (Finding)

Section 4.5, "The calculation above provides that the containment 'hole' size must lie between a 1 inch equivalent path and a 4 inch path. Therefore, it is acceptable to use the NRC value of 2 inches." Based on the statement, the 1" equivalent hole should have been considered.

(This F&O originated from SR LE-D7)

Associated SRs:LE-D7

Basis for Significance
It is unknown what the applicable break size is between 1" and 4," therefore the conservative approach is to use 1."

Possible Resolution
Perform detailed analysis to ensure the use of the 2" equivalent hole is allowable or use 1" and include the additional penetrations in the containment isolation analysis.

F&O 3-1 SQN Response/Resolution
Section 4.4 of the Level 2 Analysis discusses the reasoning for concluding that the 2" hole size is acceptable for use in the Sequoyah level 2 analysis. The calculation shows that the release rate represented by a vent line diameter greater than 1" and slightly less than 2" corresponds to a pressure approximately half of the assumed severe containment challenge pressure that is slightly below the 2" contour line shown in the Severe Accident Management Guidelines (SAMG) Setpoints and Computational Aids calculation. There is conservatism built into both the assumed containment failure pressure and the assumed leak rates at that pressure; therefore, it is judged appropriate to use 2" as the bounding value for a large leak rate.

F&O 4-9 (Suggestion)
Appropriate generic data sources appear to be used in the SN PRA, as documented in the data analysis notebook (MDN-000-000-2010-0202). Component failure rates are taken primarily from NUREG/CR-6928 (with other sources used in cases in which data for specific component types are not available). Common cause data is obtained from recent NRC (INEL) and PWROG [Pressurized Water Reactor Owners Group] data sources. Offsite power recovery data is obtained from NUREG/CR-6890. Component recovery is not used. Table 2 and Appendix A describe the boundaries assumed for each major component type.

The SQN PRA makes use of generic unavailability data from NUREG/CR-6928 for components for which plant-specific data is unavailable (as noted in Table 8). It is assumed (see Assumption 1 in the data notebook) that all generic data is applicable to SQN; however, since this SR requires that the consistency of the SQN practices and philosophies be checked against the generic data source assumptions, additional documentation needs to be provided to better meet the requirements of this SR. It is recognized that assumption 1 is listed as an important uncertainty and is discussed in the Uncertainties notebook (MDN-000-000-2010-0209). However, since the unique attributes concerning the use of generic unavailability data are not discussed, adding an additional assumption item for this issue may be appropriate.

(This F&O originated from SR DA-C1)

Associated SRs: DA-C1, DA-E2

Basis for Significance
This is considered to be a suggestion as it pertains primarily to a documentation enhancement. The use

of generic unavailability estimates for some plant components is probably acceptable; however documentation of the basis for accepting this data as appropriate to SQN is required.

Possible Resolution
Enhance the documentation in section 6.2 to better describe the acceptability of the generic estimates for SQN. Consideration should be given to specifically identifying this generic data use as an important assumption in the Uncertainties notebook (MDN-000-000-2010-0209) as well. That notebook has an overall item concerning the use of generic data; however, a specific item for the use of generic unavailability data could also be added.

F&O 4-9 SQN Response/Resolution
A discussion of the component boundaries was added to the Data Analysis notebook. Section 4.2 of the notebook defines system and component boundaries and lists them in Table 2. Generic component failure data and parametric estimations are discussed in Section 6.1 and presented in Table 7. The generic values were typically collected from NUREG/CR-6928. However, where data was not available, other sources were used and listed in Table 7. Generic unavailabilities are discussed in Section 6.2. For components that have unavailability tracked by the system engineer or the maintenance rule program, the SQN specific data is used in the analysis; however, if not available, generic unavailability from NUREG/CR-6928 was used. Generic unavailability data is presented in Table 8.

F&O 4-10 (Suggestion)
Failure data records are obtained from the plant's Cause Determination and Evaluation (CDE) records that are prepared by system engineers in response to failure events. The guidance for CDE development in plant procedure SPP-6.6 describes bases for failures,

discusses degraded conditions, and notes that Technical Specification failures or operability issues are not automatically Maintenance Rule functional failures (or PRA failures).

The CDE records are also then reviewed by the PRA staff to determine if a PRA failure has occurred. The CDEs that were used in the data analysis are included in Appendix D of the data notebook (MDN-000-000-2010-0202).

Because there are several DA-C SRs that specify requirements for the data collection and analysis process, it is suggested that the data analysis documentation be enhanced to specifically note these requirements and how they are met, especially since the other plant procedures do not specifically state these requirements (since the procedures are for system engineers and other non-PRA personnel). This F&O originated from SR DA-C4

Associated SRs: DA-C4, DA-C5, DA-C11, DA-C12, DA-C13, DA-E2

Basis for Significance
This is a suggestion since it pertains to enhancing the documentation to place all of the data analysis ground rules within the data notebook for clarity.

Possible Resolution
Enhance the data analysis notebook to specifically list the data collection requirements for DA-C4, C5, C6, C11, C12, and C13.

F&O 4-10 SQN Response/Resolution
DA-C4, Functional failures are determined based on the system engineer and maintenance rule expert panel. These determinations are outlined in NPG-SPP-03.4, Maintenance Rule Performance Indicator Monitoring, Trending and Reporting – 10 CFR 50.65,

and are only made by a qualified individual.

DA-C5, There was an identified event where multiple repeat failures occurred within the same time. Each of these events was assigned a specific CDE, however as noted in the documentation of CDE 1615 the three events were all assigned to one failure event in the PRA model.
DA-C11, Unavailability is defined in the maintenance rule technical instruction TI-4. The definition presented states that unavailability is only counted while at power (mode 1), additionally, in the definition, unavailability is credited when the component would not be able to perform its designed function.

DA-C12, The definition of the component boundaries for tracking unavailability are documented in TI-4, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting – 10CFR50.65. For frontline systems only front line impacts are assigned to that system. If the ERCW header or other multi-system impact components are unavailable then the unavailability is tracked at that level.

DA-C13, For all significant unavailabilities, start and finish times are accurately documented in the maintenance rule spreadsheets.

F&O 4-11 (Finding)
While the PRA model considers the possibility of two PORVs [power operated relief valves] being blocked at the same time, there does not appear to have been an investigation of whether coincident maintenance can occur in the various SQN systems (or if coincident inter-system maintenance can occur). Therefore this SR is not met.

It was also observed that the PORV blocking basis events noted above did not appear to be documented

in either the data notebook or the appropriate system notebook.

(This F&O originated from SQ DA-C14)

Associated SRs:DA-C14

Basis for Significance
This is a finding since the technical requirements of the SR are not met.

Possible Resolution
A study should be conducted to determine if coincident maintenance conditions can occur. If so, the system models may need to be modified and additional basic events to represent the coincident maintenance states would need to be added. If it is determined that no coincident maintenance can occur, then this should be documented in the data notebook or within the system notebooks.

Documentation for the calculation of the time that either one or both PORVs can be blocked should also be added to either the system notebook or the data notebook.

F&O 4-11 SQN Response/Resolution
The following was added to the data analysis notebook to address coincident maintenance:

Coincident maintenance is scheduling maintenance where multiple SSCs [systems, structures, and components] are out of service at the same time. Specifically components on the same train, RHR [residual heat removal] train A and SI [safety injection] train A for example, being out of service for maintenance at the same time. The Outage and Site Scheduling Directive Manual 1.0 (Reference 28) dictates that:

Twelve (12) week schedule by FEG [functional equipment group] groups ensures that within a train week, no two (2) accident mitigating devices are removed from service at the same time [i.e., “A” train Residual Heat Removal (RHR) is not removed from service at the same time as “A” train Containment Spray.]

This requirement is further discussed in the Outage and Site Scheduling Directive Manual 4.7 (Reference 29) which states that any systems important to PRA that are unavailable at the same time must meet the requirements [SIC] of the plant risk matrix. Normally maintenance on any systems important to the PRA is not scheduled at the same time. If it is these instances are extremely rare and the current model does not exclude coincident maintenance events from appearing in a single cutset. Therefore the probability of having coincident maintenance events is extremely rare and accounted for during the normal cutset processing.

F&O 4-12 (Suggestion)
Surveillance testing intervals are used for only a subset of the components for which operating data is calculated. For those using the surveillance testing intervals, the data notebook (MDN-000-000-2010-0202, section 7.3.4) does not indicate that a review of the surveillance test procedures was performed to determine if all sub-elements were tested on the same frequency. Therefore the Category I requirements are satisfied for this SR.

(This F&O originated from SR DA-C10)

Associated SR: DA-C10

Basis for Significance
This is considered a suggestion, since Category I is met and may be adequate for most applications. It is

unlikely that the data estimates will change as a result of fully meeting the Category II requirements.

Possible Resolution
To meet category II requirements, the specific surveillance procedures that are credited in section 7.3.4 should be reviewed to confirm that the components for which demands or run time are being estimated are being properly exercised within each procedure. This review should be documented in the data notebook.

F&O 4-12 SQN Response/Resolution
Four procedures were used to derive success data. In order for these procedures to be valid tests, each was reviewed to ensure that the function of the surveillance or test procedure actually tested all portions of the component within the component boundary.

For ACPFR [auxiliary compressor (standby) fails to run] surveillance instruction 0-SI-SXV-032-200.A (Reference 25) and 0-SI-SXV-032-200.B (Reference 26) were used to estimate the number of hours in operation in the data window. Each of these procedures requires the compressor to be in full operation for an extended period of time to assure adequate cooling to the compressor. Therefore these procedures are acceptable for use in calculating the number of run hours for ACPFR.

For AOAFC [air operated valve (air system) fails to close] the surveillance instructions 1-SI-SXV-000-201.0 (Reference 27) and 2-SI-SXV-032-201.0 (Reference 28) were reviewed. These instructions require the valves to close within their acceptance criteria and require the complete valve to operate. Therefore these procedures are acceptable for use in calculating the number of demands for AOAFC.

F&O 4-13 (Suggestion)
The PRA model currently uses flag events [to] indicate which standby component is running. It was noted that these flags could be set to zero or one (TRUE or FALSE during quantification) as in the ERCW [essential raw cooling water] system, or could be set to an appropriate split fraction to reflect the percentage of time each component was running as was done in the CCS [component cooling system] system. (The base PRA model solution appears to assume a specific set of components are running or in standby, with the exception of CCS, which assumes a 50%/50% likelihood of each train running.) The "mixing" of assumed configurations with probabilistic configurations should be re-examined. For CCS, the split fractions are based on assumptions based on system design, but are reviewed by the system engineers for accuracy. However, operational data is not reviewed to determine the specific split fractions for each component. Therefore, the requirements of Category I for SR DA-C8 are met.

(This F&O originated from SR DA-C8)

Associated SRs: IE-A6, IE-C10, DA-C8

Basis for Significance
This is considered to be a suggestion, as Category I of DA-C8 is met and this should be adequate for most applications. The determination of more precise split fractions (e.g., 54% and 46% vs. an assumed 50%/50% split) would not impact the overall PRA results significantly.

Possible Resolution
To meet Category II, collect operating data to determine the actual standby/running fractions for plant equipment. This data could be documented either in each system notebook or in the data notebook. Consideration should also be given to

using a consistent set of assumptions concerning system alignments (i.e., either all based on an assumed configuration or all based on probabilistic estimates for each alignments).

F&O 4-13 SQN Response/Resolution
The values used in each fault tree were agreed upon by the system engineers from the site. No changes will be made to the split fraction values.

b. The SQN PRA configuration is controlled by TVA procedure NEDP-26, Probabilistic Risk Assessment (PRA).

The PRA update process ensures that the PRA models adequately reflect the as-built, as-operated plant. The ASME/ANS PRA Standard (ASME/ANS RA-Sa-2009) defines the two types of updates to the PRA Model, PRA Maintenance or PRA Upgrade. The TVA process follows the Standard. The frequency for updates to the PRA Model of Record (MOR) is governed by NEDP-26. PRA MOR updates are expected to be completed at least once every other fuel cycle or sooner if estimated cumulative impact of plant configuration changes exceed a prescribed delta risk threshold for CDF and/or LERF. The overall decision to update the PRA MOR ahead of the normal PRA maintenance and upgrade schedule considers the impact on applications and programs that use the PRA results. PRA updates follow the guidelines established by the ASME/ANS RA-Sa-2009 Standard for PRA for a minimum of a Category II assessment. Furthermore, when updating the PRA MOR, NRC Regulatory Guide 1.200 is considered with respect to exceptions the NRC made to the Standard.

TVA procedure NPG-SPP-09.11 provides the general requirements for performing a PRA MOR update including initiation, data collection, and other

important aspects for updating the model. During the update process, a review is performed in accordance with procedure NEDP-5, Design Document Reviews, to ensure the responsibilities of the preparer, checker, verifier, and others are met for the PRA analyses documenting the PRA update. The PRA Summary Notebook is revised for every PRA MOR update which contains information relevant to the update. According to NEDP-26, PRA updates may be peer reviewed in part, or in whole; however, PRA upgrades receive a mandatory Peer Review commensurate with the aspect of the PRA MOR that was upgraded, or affected by the upgrade.

Another aspect to the SQN PRA model configuration control is performance of required periodic self-assessments.

In accordance with NEDP-26, PRA models and applications are documented in a manner that facilitates peer review as well as future updates and applications of the PRA. The documentation is required to be performed such that traceability and reproducibility is maintained. The procedure further states: "The purpose of the PRA MOR is to provide a prescriptive method for quality, configuration, and documentation control."

Response Date/Time	**1/22/2015 10:55 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Caroline Tilton**
Added By	**Scott Bowman**
Date Added	**1/22/2015 9:56 AM**

Date Modified

Modified By

Licensee Response/NRC Response/NRC Question Closure

Id	**427**
NRC Question Number	**KNH-025**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**2/19/2015**
Notification	**Scott Bowman Michelle Conner Khadijah Hemphill Andrew Hon Lynn Mynatt Ray Schiele Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**2/19/2015 10:21 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**201**
NRC Question Number	**KNH-026**
Category	**Technical**
ITS Section	**3.6**
ITS Number	**3.6.3**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Hossein Hamzehee**
Technical Branch POC	**Jonathan Evans**
Conf Call Requested	**N**
NRC Question	**For changes related to TSTF-446:** **RG 1.174 states that "an implementation and monitoring plan should be developed to ensure that the engineering evaluation conducted to examine the impact of the proposed changes continues to reflect the actual reliability and availability of SSCs that have been evaluated. This will ensure that the conclusions that have been drawn from the evaluation remain valid." Please describe how CIV availability will be monitored and assessed.**
Attach File 1	
Attach File 2	
Issue Date	**11/18/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**11/18/2014 5:51 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott** **Caroline Tilton**

Licensee Response/NRC Response/NRC Question Closure

Id	**423**
NRC Question Number	**KNH-026**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**RAI KNH-026**

For changes related to TSTF-446:

RG 1.174 states that "an implementation and monitoring plan should be developed to ensure that the engineering evaluation conducted to examine the impact of the proposed changes continues to reflect the actual reliability and availability of SSCs that have been evaluated. This will ensure that the conclusions that have been drawn from the evaluation remain valid." Please describe how CIV availability will be monitored and assessed.

TVA Response:

TVA Procedure NEDP-14 "Containment Leak Rate Programs" describes the process for SQN's implementation of the containment isolation monitoring program. This program follows 10 CFR 50 Appendix J Option B requirements, Regulatory Guide 1.163 "Performance Based Containment Leak-Test Program" and NEI 94-01 "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J."

Containment Isolation System functional failures are reported to the Maintenance Rule Program in accordance with 10 CFR 50.65. In accordance with TVA's SQN Technical Instruction TI-4, "Maintenance Rule

Performance Indicator Monitoring, Trending, and Reporting – 10CFR50.65," containment isolation valves (CIVs) are included in the scope of Maintenance Rule (MR) monitored components. Therefore, CIV failures, and support components, are assessed by the Maintenance Rule Program in which performance deficiencies (i.e., failures) and unavailability are tracked. Furthermore, TVA procedure NPG-SPP-03.4 "Maintenance Rule Performance Indicator Monitoring, Trending and Reporting – 10CFR50.65," describes the unavailability indicator for MR defined functions where a system, structure or component (SSC) is required to be available for service but is unable to perform it's MR defined function due to planned or unplanned activities. In accordance with TVA Procedure NPG-SPP-09.11, "Probabilistic Risk Assessment (PRA) Program," the Maintenance Rule Coordinator is required to provide the PRA update group all plant-specific unavailability and unreliability data for a specified update window.

The TVA PRA Program is governed by NEDP-26 "Probabilistic Risk Assessment (PRA)." It includes information sources such as the Maintenance Rule Program, when performing an update to the PRA model. Furthermore, NEDP-26 requires that when the PRA Model of Record is updated/upgraded, the effect of the change on programs and applications must be determined.

Response Date/Time	**1/22/2015 11:15 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Caroline Tilton**
Added By	**Scott Bowman**
Date Added	**1/22/2015 10:12 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**428**
NRC Question Number	**KNH-026**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**2/19/2015**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**2/19/2015 10:23 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**202**
NRC Question Number	**MHC001**
Category	**Technical**
ITS Section	**3.9**
ITS Number	**3.9.3**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Chris Jackson**
Technical Branch POC	**Matt Hardgrove**
Conf Call Requested	**N**
NRC Question	**The proposed TS 3.9.3 would allow movement of fuel and other core components while one Source Range Monitor is inoperable. This could have an adverse effect on core reactivity monitoring. Please provide justification for this proposed change, or propose a revision to TS 3.9.3 to prohibit movement of fuel and core components with one Source Range Monitor inoperable.**
Attach File 1	
Attach File 2	
Issue Date	**11/20/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**11/20/2014 8:24 AM**
Notification	**Scott Bowman Margaret Chernoff Michelle Conner Ravinder Grover Matthew Hardgrove Khadijah Hemphill Andrew Hon Lynn Mynatt Amrit Patel Ray Schiele Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**411**
NRC Question Number	**MHC001**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 MHC001 STB.pdf** (1MB)
Attachment 2	
Response Statement	

Based on the November 18, 2014, public meeting with the NRC staff concerning the operability of the Source Range Monitors in MODE 6, SQN proposes to retain the CTS 3.9.2 Action to suspend CORE ALTERATIONS when one source range monitor is inoperable in MODE 6. Specifically, ISTS 3.9.3 Required Action A.1, which requires immediate suspension of positive reactivity additions will be revised in ITS 3.9.3 Required Action A.1 to state "suspend CORE ALTERATIONS." The associated less restrictive Discussion of Change (DOC) L02 and DOC L02 indicators will be deleted. A new Justification for Deviation (JFD) 5, justifying the change to ISTS 3.9.3 Required Action A.1, will be added to the Justification for Deviations ITS 3.9.3, Nuclear Instrumentation. Associated JFD 5 indicators will be added, as well. The ITS 3.9.3 Bases Applicable Safety Analyses (ASA) Section will be revised to reflect that the source range neutron flux monitors are being retained in the technical specifications as a result of providing the primary on-scale monitoring of neutron flux levels during refueling. A new JFD 7, justifying the change to the ASA section, will be added to the Justifications for Deviations ITS 3.9.3 Bases, Nuclear Instrumentation. Associated JFD 7 indicators will be added, as well. The ITS 3.9.3 Bases for Actions A.1 and A.2 will be revised to be consistent with changes made to ITS Required Action A.1. JFD 4 indicators will be added to the ISTS markups to justify the proposed revision.

Below is a list of changes and associated pages:

1. **Retain CTS 3.9.2 Action a - pages 72 and 73 of Enclosure 2, Volume 14**
2. **Delete DOC L02 and L02 indicators - pages 72, 73, and 77 of Enclosure 2, Volume 14**
3. **Revise ITS 3.9.3 Required Action A.1 - pages 80 and 83 of Enclosure 2, Volume 14**

4. **Add JFD 5 and JFD 5 indicators - pages 80, 83, and 86 of Enclosure 2, Volume 14**
5. **Revise ITS 3.9.3 Bases ASA section - pages 88-90, and 94-96 of Enclosure 2, Volume 14**
6. **Add JFD 7 and JFD 7 indicators - pages 89, 90, 95, 96, and 100 of Enclosure 2, Volume 14**
7. **Revise ITS 3.9.3 Bases Actions A.1 and A.2 to be consistent with changes made to ITS 3.9.3 Required Action A.1 - pages 90 and 96 of Enclosure 2, Volume 14**
8. **Add JFD 4 indicators to the ISTS 3.9.3 Bases - pages 90 and 96 of Enclosure 2, Volume 14**

Related changes to retain the definition of CORE ALTERATIONS in ITS Section 1.0 will be addressed in the response to RAI KAB066.

See Attachment 1 for the draft revised DOCs, JFDs, and CTS and ISTS markups.

Response Date/Time	**12/27/2014 9:50 PM**
Closure Statement	
Question Closure Date	
Notification	**Mark Blumberg** **Scott Bowman** **Kristy Bucholtz** **Margaret Chernoff** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Matthew Hardgrove** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Amrit Patel** **Ray Schiele**
Added By	**Michelle Conner**
Date Added	**12/27/2014 8:51 PM**
Date Modified	
Modified By	

ITS A01 ITS 3.9.3

REFUELING OPERATIONS

3/4.9.2 INSTRUMENTATION

LIMITING CONDITION FOR OPERATION A02

LCO 3.9.3 3.9.2 As a minimum, two source range neutron flux monitors shall be OPERABLE ~~and operating~~, ~~each with continuous visual indication in the control room and one with audible indication in the containment and control room~~. LA01 L01

Applicability APPLICABILITY: MODE 6.

ACTION: A02

ACTION A a. With one of the above required monitors inoperable ~~or not operating~~, immediately suspend ~~all operations involving CORE ALTERATIONS~~ and suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet LCO 3.9.1. ~~positive reactivity additions~~ ~~L02~~ stet

Add proposed Required Action B.1 M01

ACTION B b. With both of the above required monitors inoperable ~~or not operating~~, ~~determine the boron concentration of the reactor coolant system~~ at least once per 12 hours. A02

c. ~~The provisions of Specification 3.0.3 are not applicable.~~ A03

SURVEILLANCE REQUIREMENTS

4.9.2 Each source range neutron flux monitor shall be demonstrated OPERABLE by performance of:

SR 3.9.3.1 a. A CHANNEL CHECK ~~at least once per 12 hours~~, and

In accordance with the Surveillance Frequency Control Program LA02

b. ~~A CHANNEL FUNCTIONAL TEST at least once per 7 days.~~ L03

Add proposed SR 3.9.3.2 ~~at a Frequency of 18 months~~ M02

In accordance with the Surveillance Frequency Control Program LA02

REFUELING OPERATIONS

3/4.9.2 INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.9.3 3.9.2 As a minimum, two source range neutron flux monitors shall be OPERABLE ~~and operating~~, ~~each with continuous visual indication in the control room and one with audible indication in the containment and control room.~~ A02 LA01 L01

Applicability APPLICABILITY: MODE 6.

ACTION:

ACTION A a. With one of the above required monitors inoperable ~~or not operating~~, immediately suspend ~~all operations involving CORE ALTERATIONS~~ and suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet LCO 3.9.1. stet ~~positive reactivity additions~~ ~~L02~~ A02

Add proposed Required Action B.1 M01

ACTION B b. With both of the above required monitors inoperable ~~or not operating~~, determine the boron concentration of the reactor coolant system at least once per 12 hours. A02

c. ~~The provisions of Specification 3.0.3 are not applicable~~. A03

SURVEILLANCE REQUIREMENTS

4.9.2 Each source range neutron flux monitor shall be demonstrated OPERABLE by performance of:

SR 3.9.3.1 a. A CHANNEL CHECK ~~at least once per 12 hours~~, and In accordance with the Surveillance Frequency Control Program LA02

b. ~~A CHANNEL FUNCTIONAL TEST at least once per 7 days.~~ L03

Add proposed SR 3.9.3.2 ~~at a Frequency of 18 months~~ M02

In accordance with the Surveillance Frequency Control Program LA02

DISCUSSION OF CHANGES
ITS 3.9.3, NUCLEAR INSTRUMENTATION

address a boron dilution event for Westinghouse plants. One method relies on precluding a boron dilution event by requiring all unborated water source isolation valves to be closed. Plants using this method contain a Technical Specification requirement to isolate all potential sources of unborated water. The other method is an analysis which assumes a maximum unborated water flow and determines that there is adequate time for operator action to mitigate the event. The operator action uses the audible indicator (count rate) to alert the operator of a possible dilution accident. This change is acceptable because SQN does not analyze a boron dilution accident during MODE 6 and isolates the boron dilution paths. Therefore, the possibility of an inadvertent boron dilution event occurring during MODE 6 refueling operations is precluded by adherence to ITS LCO 3.9.2, "Unborated Water Source Isolation Valves" which requires that potential dilution sources be isolated. This is accomplished by closing unborated water source isolation valves during refueling operations. Thus, the flow of unborated water to the filled portion of the RCS is prevented. This change has been designated as less restrictive because a less stringent LCO requirement is being applied in the ITS than was applied in the CTS.

L02 ~~*(Category 4 – Relaxation of Required Action)* CTS 3.9.2 ACTION a requires, in part, with one source range neutron flux monitor inoperable to immediately suspend all operations involving CORE ALTERATIONS. Under similar conditions, ITS 3.9.3 Required Action A.1 requires suspension of positive reactivity additions. This changes the CTS by requiring suspension of positive reactivity additions instead of suspending CORE ALTERATIONS.~~

Not Used

~~The purpose of the source range neutron flux monitors is to monitor core reactivity during refueling operations and provide a signal to the operators if an unexpected reactivity change occurs. Thus, when a source range monitor is inoperable, CORE ALTERATIONS are suspended to preclude an unmonitored reactivity change. CORE ALTERATIONS is defined in CTS 1.9, in part, as "the movement of any fuel, sources, reactivity control components or other components affecting reactivity within the reactor vessel with the head removed and fuel in the vessel." CORE ALTERATIONS only occur when the reactor vessel head is removed; therefore, it only applies to MODE 6. There are two evolutions encompassed under the term CORE ALTERATION that could affect the reactivity of the core. They are the addition of fuel to the reactor vessel and the withdrawal of control rods. However, ITS 3.9.3 Required Action A.1 requires immediate suspension of positive reactivity changes, except the introduction of coolant into the RCS. This would include both the addition of fuel to the reactor vessel and the withdrawal of control rods. Therefore, since the CORE ALTERATIONS of concern are only those that could affect positive reactivity in the core and these are suspended by ITS 3.9.3 Required Action A.1, changing the requirement from suspending "CORE ALTERATIONS" to suspending "positive reactivity additions" is acceptable. This change has been designated as less restrictive because a less stringent Required Action is being applied in the ITS than was applied in the CTS.~~

L03 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.9.2.b requires each source range neutron flux monitor to be demonstrated OPERABLE by performance of a CHANNEL FUNCTIONAL TEST at least once per 7 days. ITS 3.9.3 does not require the performance of a CHANNEL FUNCTIONAL TEST

3.9 REFUELING OPERATIONS

3.9.3 Nuclear Instrumentation

3.9.2

LCO 3.9.3 Two source range neutron flux monitors shall be OPERABLE.

~~AND~~

~~[One source range audible [alarm] [count rate] circuit shall be OPERABLE.]~~ 3

Applicability

APPLICABILITY: MODE 6.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION a	A. One ~~[required]~~ source range neutron flux monitor inoperable.	A.1 ~~Suspend positive reactivity additions.~~ Suspend CORE ALTERATIONS. AND A.2 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately Immediately	1 5
ACTION b DOC M01	B. Two ~~[required]~~ source range neutron flux monitors inoperable.	B.1 Initiate action to restore one source range neutron flux monitor to OPERABLE status. AND B.2 Perform SR 3.9.1.1.	Immediately Once per 12 hours	1

3.9 REFUELING OPERATIONS

3.9.3 Nuclear Instrumentation

3.9.2

LCO 3.9.3 Two source range neutron flux monitors shall be OPERABLE.

~~AND~~

~~[One source range audible [alarm] [count rate] circuit shall be OPERABLE.]~~ 3

Applicability

APPLICABILITY: MODE 6.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION a	A. One ~~[required]~~ source range neutron flux monitor inoperable.	A.1 ~~Suspend positive reactivity additions.~~ Suspend CORE ALTERATIONS. AND A.2 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately Immediately	1 5
ACTION b DOC M01	B. Two ~~[required]~~ source range neutron flux monitors inoperable.	B.1 Initiate action to restore one source range neutron flux monitor to OPERABLE status. AND B.2 Perform SR 3.9.1.1.	Immediately Once per 12 hours	1

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.3, NUCLEAR INSTRUMENTATION

1. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

2. Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. ISTS 3.9.3 contains bracketed options for source range OPERABILITY requirements to include audible alarm and count rate function. The bracketed information is required to be included for plants that assume a boron dilution event that is mitigated by operator response to an audible indication. For plants that do not have an analyzed boron dilution event in MODE 6, ISTS 3.9.2 is incorporated and the bracket values in ISTS 3.9.3 are not required. Since Sequoyah Nuclear Plant (SQN) does not assume a boron dilution event in MODE 6, ITS 3.9.2 has been adopted and the requirements for an audible alarm and count rate have been removed from ITS 3.9.3. Therefore, the ISTS LCO 3.9.3 requirement that "One source range audible [alarm][count rate] circuit shall be OPERABLE," has not been incorporated into ITS 3.9.3. Furthermore, ISTS 3.9.3 ACTION C, which requires that when the source range audible [alarm][count rate] circuit is inoperable to immediately initiate action to isolate unborated water sources, has not been incorporate in ITS 3.9.3.

4. ISTS SR 3.9.3.1 and ISTS 3.9.3.2 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program.

5. ISTS 3.9.3 Required Action A.1 requires immediate suspension of positive reactivity additions. ITS 3.9.3 Required Action A.1 requires immediate suspension of CORE ALTERATIONS. This change reflects the retention of CTS 3.9.2 Action a, that requires with one source range neutron flux monitor inoperable, "immediately suspend all operations involving CORE ALTERATIONS."

Enclosure 2, Volume 14, Rev. 0, Page 86 of 236

B 3.9 REFUELING OPERATIONS

B 3.9.3 Nuclear Instrumentation

BASES

BACKGROUND

~~-----REVIEWER'S NOTE-----~~
~~Bracketed options are provided for source range OPERABILITY requirements to include audible alarm or count rate function. These options apply to plants that assume a boron dilution event that is mitigated by operator response to an audible indication. For plants that isolate all boron dilution paths (per LCO 3.9.2), the source range OPERABILITY includes only a visual monitoring function.~~
~~----------~~ 1

The source range neutron flux monitors are used during refueling operations to monitor the core reactivity condition. The installed source range neutron flux monitors are part of the Nuclear Instrumentation System (NIS). These detectors are located external to the reactor vessel and detect neutrons leaking from the core.

Dual Chamber Unguarded Fission Chamber

The installed source range neutron flux monitors are ~~BF3~~ detectors ~~operating in the proportional region of the gas filled detector characteristic curve~~. The detectors monitor the neutron flux in counts per second. The instrument range covers six decades of neutron flux (1E+6 cps) with a ~~[5]~~% instrument accuracy. The detectors also provide continuous visual indication in the control room ~~[~~and an audible ~~[alarm]~~ ~~[~~count rate~~] to alert operators to a possible dilution accident].~~ The NIS is designed in accordance with the criteria presented in Reference 1. 2 3 3

7

in the containment and the control room.

APPLICABLE SAFETY ANALYSES

Two OPERABLE source range neutron flux monitors are required to provide a signal to alert the operator to unexpected changes in core reactivity such as ~~with a boron dilution accident (Ref. 2) or~~ an improperly loaded fuel assembly. ~~[The audible count rate from the source range neutron flux monitors provides prompt and definite indication of any boron dilution. The count rate increase is proportional to the subcritical multiplication factor and allows operators to promptly recognize the initiation of a boron dilution event. Prompt recognition of the initiation of a boron dilution event is consistent with the assumptions of the safety analysis and is necessary to assure sufficient time is available for isolation of the primary water makeup source before SHUTDOWN MARGIN is lost (Ref. 2).]~~ 2 4

stet

(Ref. 3)

INSERT 1 2

7 2 **INSERT 1**

The need for a requirement for the source range neutron flux monitors to mitigate an uncontrolled boron dilution accident is eliminated by isolating all unborated water sources as required by LCO 3.9.2, "Unborated Water Source Isolation Valves."

Fuel assembly loading errors are prevented by administrative procedures implemented during core loading (Ref. 3). These administrative procedures include detailed neutron count rate monitoring to determine that the just loaded fuel assembly does not excessively increase the count rate and that the extrapolated inverse count rate ratio is not decreasing for unexplained reasons.

The source range neutron flux monitors are not assumed to function during a MODE 6 design basis accident or transient. However, because the source range neutron flux monitors provide the primary on-scale monitoring of neutron flux levels during refueling, they are retained in the technical specifications.

BASES

APPLICABLE SAFETY ANALYSES (continued)

~~-----REVIEWER'S NOTE-----~~
~~The need for a safety analysis for an uncontrolled boron dilution accident is eliminated by isolating all unborated water sources as required by LCO 3.9.2, "Unborated Water Source Isolation Valves."~~
~~----------~~ 1

~~The source range neutron flux monitors satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).~~ 7

LCO

This LCO requires that two source range neutron flux monitors be OPERABLE to ensure that redundant monitoring capability is available to detect changes in core reactivity. To be OPERABLE, each monitor must provide visual indication ~~[~~in the control room~~]~~. ~~[In addition, at least one of the two monitors must provide an OPERABLE audible [alarm] [count rate] function to alert the operators to the initiation of a boron dilution event.]~~ 4

APPLICABILITY

In MODE 6, the source range neutron flux monitors must be OPERABLE to determine changes in core reactivity. There are no other direct means available to check core reactivity levels. In MODES 2, 3, 4, and 5, these same installed source range detectors and circuitry are also required to be OPERABLE by LCO 3.3.1, "Reactor Trip System (RTS) Instrumentation ~~[~~and LCO 3.3.9, "~~BDPS~~ Boron Dilution Monitoring Instrumentation (BDMI)"~~]~~. 3

ACTIONS

A.1 and A.2

With only one source range neutron flux monitor OPERABLE, redundancy has been lost. Since these instruments are the only direct means of monitoring core reactivity conditions, ~~positive reactivity additions and~~ CORE ALTERATIONS introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1 must be suspended immediately. Suspending ~~positive reactivity additions that could result in failure to meet the minimum boron concentration limit~~ CORE ALTERATIONS is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than ~~that~~ what would be required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Performance of Required Action A.1 shall not preclude completion of movement of a component to a safe position. 4 4 5

B 3.9 REFUELING OPERATIONS

B 3.9.3 Nuclear Instrumentation

BASES

BACKGROUND

~~-----REVIEWER'S NOTE-----~~
~~Bracketed options are provided for source range OPERABILITY requirements to include audible alarm or count rate function. These options apply to plants that assume a boron dilution event that is mitigated by operator response to an audible indication. For plants that isolate all boron dilution paths (per LCO 3.9.2), the source range OPERABILITY includes only a visual monitoring function.~~
~~-----~~ 1

The source range neutron flux monitors are used during refueling operations to monitor the core reactivity condition. The installed source range neutron flux monitors are part of the Nuclear Instrumentation System (NIS). These detectors are located external to the reactor vessel and detect neutrons leaking from the core.

Dual Chamber Unguarded Fission Chamber

The installed source range neutron flux monitors are ~~BF3~~ detectors ~~operating in the proportional region of the gas filled detector characteristic curve~~. The detectors monitor the neutron flux in counts per second. The instrument range covers six decades of neutron flux (1E+6 cps) with a ~~[5]~~ 7 % instrument accuracy. The detectors also provide continuous visual indication in the control room ~~[~~and an audible ~~[alarm] [~~count rate~~] to alert operators to a possible dilution accident].~~ in the containment and the control room. The NIS is designed in accordance with the criteria presented in Reference 1. 2 3 3

APPLICABLE SAFETY ANALYSES

Two OPERABLE source range neutron flux monitors are required to provide a signal to alert the operator to unexpected changes in core reactivity such as ~~with a boron dilution accident (Ref. 2) or~~ stet an improperly loaded fuel assembly (Ref. 3). ~~[The audible count rate from the source range neutron flux monitors provides prompt and definite indication of any boron dilution. The count rate increase is proportional to the subcritical multiplication factor and allows operators to promptly recognize the initiation of a boron dilution event. Prompt recognition of the initiation of a boron dilution event is consistent with the assumptions of the safety analysis and is necessary to assure sufficient time is available for isolation of the primary water makeup source before SHUTDOWN MARGIN is lost (Ref. 2).]~~ 2 4

INSERT 1 2

7 2 **INSERT 1**

The need for a requirement for the source range neutron flux monitors to mitigate an uncontrolled boron dilution accident is eliminated by isolating all unborated water sources as required by LCO 3.9.2, "Unborated Water Source Isolation Valves."

Fuel assembly loading errors are prevented by administrative procedures implemented during core loading (Ref. 3). These administrative procedures include detailed neutron count rate monitoring to determine that the just loaded fuel assembly does not excessively increase the count rate and that the extrapolated inverse count rate ratio is not decreasing for unexplained reasons.

The source range neutron flux monitors are not assumed to function during a MODE 6 design basis accident or transient. However, because the source range neutron flux monitors provide the primary on-scale monitoring of neutron flux levels during refueling, they are retained in the technical specifications.

BASES

APPLICABLE SAFETY ANALYSES (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~The need for a safety analysis for an uncontrolled boron dilution accident is eliminated by isolating all unborated water sources as required by LCO 3.9.2, "Unborated Water Source Isolation Valves."~~
~~--~~ 1

~~The source range neutron flux monitors satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).~~ 7

LCO

This LCO requires that two source range neutron flux monitors be OPERABLE to ensure that redundant monitoring capability is available to detect changes in core reactivity. To be OPERABLE, each monitor must provide visual indication ~~[~~in the control room~~]~~. ~~[In addition, at least one of the two monitors must provide an OPERABLE audible [alarm] [count rate] function to alert the operators to the initiation of a boron dilution event.]~~ 4

APPLICABILITY

In MODE 6, the source range neutron flux monitors must be OPERABLE to determine changes in core reactivity. There are no other direct means available to check core reactivity levels. In MODES 2, 3, 4, and 5, these same installed source range detectors and circuitry are also required to be OPERABLE by LCO 3.3.1, "Reactor Trip System (RTS) Instrumentation ~~[~~and LCO 3.3.9, "~~BDPS~~ Boron Dilution Monitoring Instrumentation (BDMI)"~~]~~. 3

ACTIONS

A.1 and A.2

With only one source range neutron flux monitor OPERABLE, redundancy has been lost. Since these instruments are the only direct means of monitoring core reactivity conditions, CORE ALTERATIONS ~~positive reactivity additions and~~ introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1 must be suspended immediately. Suspending CORE ALTERATIONS ~~positive reactivity additions that could result in failure to meet the minimum boron concentration limit~~ is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than ~~that~~ what would be required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Performance of Required Action A.1 shall not preclude completion of movement of a component to a safe position. 4 4 5

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.3 BASES, NUCLEAR INSTRUMENTATION

1. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

4. Changes are made to be consistent with changes made to the Specification.

5. Editorial changes made for enhanced clarity.

6. ISTS SR 3.9.3.1 and SR 3.9.3.2 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program.

7. ISTS 3.9.3 Applicable Safety Analysis (ASA) section states, "the source range neutron flux monitors satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii)." SQN's source range neutron flux monitors are not assumed to function during a MODE 6 design basis accident or transient. Therefore, the statement has been deleted from the ASA section. Furthermore, the ASA section is modified by the statement, "However, because the source range neutron flux monitors provide the primary on-scale monitoring of neutron flux during refueling, they are retained in the technical specifications."

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Licensee Response/NRC Response/NRC Question Closure

Id	**421**
NRC Question Number	**MHC001**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**1/20/2015**
Notification	**Scott Bowman Margaret Chernoff Michelle Conner Matthew Hardgrove Khadijah Hemphill Andrew Hon Lynn Mynatt Amrit Patel Ray Schiele Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**1/20/2015 6:53 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**206**
NRC Question Number	**MHC002**
Category	**Technical**
ITS Section	**3.7**
ITS Number	**3.7.12**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Blumberg & Bettle**
Conf Call Requested	**N**
NRC Question	

In the Revised Attachment 1 for Response to NRC Response.pdf dated 12/3/2014 associated with RPG-001, draft revised changes to CTS 3.9.12/ITS 3.7.12, Auxiliary Building Gas Treatment System, were provided.

The proposed revision contains Condition B, Two ABGTS [Auxiliary Building Gas Treatment] trains inoperable due to inoperable ABSCE [Auxiliary Building Secondary Containment Enclosure] boundary in Modes 1, 2, 3, and 4. The Required Action associated with this Condition requires restoration of the ABSCE boundary to operable status within 24 hours. Condition C is entered if two ABGTS trains are inoperable in Modes 1, 2, 3, or 4 for reasons other than Condition B. The Required Action for Condition C is to be in Mode 3 within 6 hours and in Mode 5 within 36 hours.

Proposed SR 3.7.12.4 requires verification that one ABGTS train can maintain a pressure ≤ -0.25 inches water gauge with respect to atmospheric pressure

during the post accident mode of operation at a flow rate >/= 8,100 cfm and ≤ 9,900 cfm. The bases for Proposed SR 3.7.12.4 state that the SR verifies the integrity of the auxiliary building enclosure. The bases also state that the ABGTS is designed to maintain a -0.25 in wg at a flow rate of >/= 8,100 and </= 9,900 cfm to the auxiliary building.

In the event of a failure to satisfy SR 3.7.12.4, please explain how it will be determined if the failure should result in entry into Condition B or Condition C. Please identify which of the proposed surveillance tests are used to verify functionality of the ABSCE boundary and which of the proposed surveillance tests are used to determine operability of the ABGTS trains.

Attach File 1	
Attach File 2	
Issue Date	**1/20/2015**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**1/20/2015 7:17 AM**
Notification	**Mark Blumberg Scott Bowman Margaret Chernoff Michelle Conner Matthew Hamm Khadijah Hemphill Andrew Hon Lynn Mynatt Ray Schiele Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**425**
NRC Question Number	**MHC002**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 for RAI MHC002.pdf** (942KB)
Attachment 2	
Response Statement	**In the event of a failure to satisfy SR 3.7.12.4, please explain how it will be determined if the failure should result in entry into Condition B or Condition C.**

ITS SR 3.7.12.4 requires verifying that each Auxiliary Building Gas Treatment System (ABGTS) train can maintain a pressure ≤ -0.25 inches water gauge with respect to atmospheric pressure during the post accident mode of operation at a flow rate ≥ 8,100 and ≤ 9,900 cfm. If the ITS SR 3.7.12.4 acceptance criteria are not met, the operability determination process will determine whether the issue that caused the failure is associated with the ABGTS train being tested or the issue is associated with the auxiliary building secondary containment enclosure (ABSCE) boundary. In MODE 1, 2, 3, or 4, if the failure is associated with the ABGTS train being tested, ITS 3.7.12 Condition A would be entered. In MODE 1, 2, 3, or 4, if the failure is associated with the ABSCE boundary, ITS 3.7.12 Condition B would be entered. In MODE 1, 2, 3, or 4, if the failure is associated with both the ABGTS train and the ABSCE boundary, ITS 3.7.12 Conditions A and B would be entered concurrently. Entry into ITS 3.7.12 Condition C (as proposed in the RAI), associated with a failure of ITS SR 3.7.12.4, would only occur if the Required Action and associated Completion Time of ITS Condition A or B are not met in MODE 1, 2, 3, or 4. Therefore, a failure of ITS SR 3.7.12.4 would not result in an entry into ITS 3.7.12 Condition C, but instead would result in an entry into ITS 3.7.12 Conditions A

and/or B.

Please identify which of the proposed surveillance tests are used to verify functionality of the ABSCE boundary and which of the proposed surveillance tests are used to determine operability of the ABGTS trains.

ITS SRs 3.7.12.1, 3.7.12.2, 3.7.12.3 verify the OPERABILITY of the ABGTS train(s).

ITS SR 3.7.12.4 verifies the integrity of the ABSCE boundary. However, failure of ITS SR 3.7.12.4, could identify an inoperable ABGTS train if the failure is associated with an ABGTS train component and the failure is not related to the ABSCE boundary.

Additionally, during review it was discovered that the ITS 3.7.12 Bases discussion for ITS SR 3.7.12.4 is missing the word "pressure" from the following sentence, "The ABGTS is designed to maintain a ≤ -0.25 inches water gauge with respect to atmospheric pressure at a flow rate ≥ 8,100 and ≤ 9,900 cfm to the auxiliary building." Therefore, the sentence will be revised to read, "The ABGTS is designed to maintain a <u>pressure</u> ≤ -0.25 inches water gauge with respect to atmospheric pressure at a flow rate ≥ 8,100 and ≤ 9,900 cfm to the auxiliary building." A new Justification for Deviation (JFD) 7 will be written to discuss the addition of the word pressure and JFD indicators will be added to the ISTS markups.

See Attachment 1 for the draft revised ITS 3.7.12 Bases and JFD 7.

Response Date/Time	**2/18/2015 1:40 PM**
Closure Statement	
Question Closure Date	
Notification	**Mark Blumberg**

	Scott Bowman **Margaret Chernoff** **Michelle Conner** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**2/18/2015 12:37 PM**
Date Modified	
Modified By	

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[~~ SR 3.7.~~13~~12.3 3 1

This SR verifies that each ~~FBACS~~ ABGTS train starts and operates on an actual or simulated actuation signal. INSERT 5 ~~[The [18] month Frequency is consistent with Reference 6.]~~ 1 4 6

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ 5

SR 3.7.~~13~~12.4 1

This SR verifies the integrity of the ~~fuel~~ auxiliary building enclosure (i.e., spent fuel storage area and the ESF pump rooms). The ability of the ~~fuel~~ auxiliary building to maintain negative pressure with respect to potentially uncontaminated adjacent areas is periodically tested to verify proper function of the ~~FBACS~~ ABGTS. During the ~~[~~post accident~~]~~ mode of operation, the ~~FBACS~~ ABGTS is designed to maintain a slight negative pressure in the ~~fuel~~ auxiliary building, to prevent unfiltered LEAKAGE. The ~~FBACS~~ ABGTS is designed to maintain a pressure ≤ ~~[-0.125]~~ - 0.25 inches water gauge with respect to atmospheric pressure at a flow rate ~~of [20,000]~~ ≥ 8,100 and ≤ 9,900 cfm to the ~~fuel~~ auxiliary building. ~~[The Frequency of [18] months is consistent with the guidance provided in NUREG-0800, Section 6.5.1 (Ref. 7).~~ 2 1 3 7 3 1 6

~~An [18] month Frequency (on a STAGGERED TEST BASIS) is consistent with Reference 6.~~

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

[SR 3.7.~~13~~ 12.3 3 1

This SR verifies that each ~~FBACS~~ ABGTS train starts and operates on an actual or simulated actuation signal. INSERT 5 ~~[The [18] month Frequency is consistent with Reference 6.]~~ 1 4 6

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ 5

SR 3.7.~~13~~ 12.4 1

This SR verifies the integrity of the ~~fuel~~ auxiliary building enclosure (i.e., spent fuel storage area and the ESF pump rooms). The ability of the ~~fuel~~ auxiliary building to maintain negative pressure with respect to potentially uncontaminated adjacent areas is periodically tested to verify proper function of the ~~FBACS~~ ABGTS. During the ~~[~~post accident~~]~~ mode of operation, the ~~FBACS~~ ABGTS is designed to maintain a slight negative pressure in the ~~fuel~~ auxiliary building, to prevent unfiltered LEAKAGE. The ~~FBACS~~ ABGTS is designed to maintain a pressure ≤ ~~[-0.125]~~ - 0.25 inches water gauge with respect to atmospheric pressure at a flow rate ~~of [20,000]~~ ≥ 8,100 and ≤ 9,900 cfm to the ~~fuel~~ auxiliary building. ~~[The Frequency of [18] months is consistent with the guidance provided in NUREG-0800, Section 6.5.1 (Ref. 7).~~ 2 1 3 7 6

~~An [18] month Frequency (on a STAGGERED TEST BASIS) is consistent with Reference 6.~~

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.12 BASES, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS)

1. Sequoyah Nuclear Plant (SQN) design does not include the ISTS 3.7.12, "Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)." Therefore, ISTS 3.7.13, "Fuel Building Air Cleanup System (FBACS)" has been renumbered as ITS 3.7.12. Additionally, SQN does not have a Fuel Building Air Cleanup System (FBACS); therefore, ISTS 3.7.13 has been renamed to Auxiliary Building Gas Treatment System (ABGTS) for ITS 3.7.12.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

4. Changes are made to be consistent with changes made to the Specification.

5. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

6. ISTS SR 3.7.13.1, SR 3.7.13.3 and SR 3.7.13.4 Bases (ITS SR 3.7.12.1, SR 3.7.12.3 and SR 3.7.12.4, respectively) provides two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Additionally, the Frequency description which is being removed will be included in the Surveillance Frequency Control Program.

7. The word “pressure” has been added to align with ISTS SR 3.7.13.4 (ITS SR 3.7.12.4).

Enclosure 2, Volume 12, Rev. 0, Page 482 of 704

Licensee Response/NRC Response/NRC Question Closure

Id	**441**
NRC Question Number	**MHC002**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**4/29/2015**
Notification	**Kristy Bucholtz** **Margaret Chernoff** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**4/29/2015 8:29 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**208**
NRC Question Number	**MHC004**
Category	**Technical**
ITS Section	**3.9**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Undine Shoop**
Technical Branch POC	**Mark Blumberg**
Conf Call Requested	**N**

NRC Question

Movement of irradiated fuel, movement of fresh fuel over irradiated fuel, and loads other than fuel (i.e. tools and casks not covered by the heavy loads program) over irradiated fuel can create a source term if a fuel handling accident (FHA) occurs. Many of these potential scenarios are addressed by the proposed Technical Specifications credited for an FHA in containment (i.e. LCO 3.3.6, 3.3.7, 3.7.10, 3.7.12, 3.8.2, 3.8.8, 3.8.10, 3.9.4, 3.9.7 and 3.9.8), but not all proposed Technical Specifications seem to align with the mitigating systems credited for the FHA inside containment. For example, Limiting Condition for Operation (LCO) 3.9.8, "Decay Time" is consistent with the 100 hours assumed in the FHA inside containment, and addresses movement of fuel and some loads over the core. LCO 3.9.7, "Refueling Cavity Water Level," only applies during movement of irradiated fuel, but does not address the applicability covered by LCO 3.9.8.

These proposed Technical Specifications do not appear to align with the credited mitigation features in the FHA. Please either justify how the proposed Applicability and Required Actions align with the FHA in containment, or make the Applicability and Required Actions consistent with the systems and scenarios credited and analyzed in the FHA in containment.

Attach File 1	
Attach File 2	
Issue Date	**4/7/2015**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**4/7/2015 3:45 PM**
Notification	**Mark Blumberg** **Scott Bowman** **Margaret Chernoff** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**444**
NRC Question Number	**MHC004**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and will be addressed under MHC003 followup RAI.**
Question Closure Date	**5/4/2015**
Notification	**Mark Blumberg** **Scott Bowman** **Margaret Chernoff** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**5/4/2015 2:19 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**209**
NRC Question Number	**MHC005**
Category	**Technical**
ITS Section	**3.7**
ITS Number	**3.7.12**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	**446 and 452**
NRC Reviewer Supervisor	**Undine Shoop**
Technical Branch POC	**Kristy Bucholtz**
Conf Call Requested	**N**

NRC Question

On pages 446 and 452 of Enclosure 2, Volume 12, a note is applied to Improved Technical Specifications (ITS) Limiting Condition of Operation (LCO) 3.7.12, "Auxiliary Building Gas Treatment System (ABGTS)." The Note states, "The Auxiliary Building Secondary Containment Enclosure (ABSCE) boundary may be opened intermittently under administrative control." The current technical specifications Plant Systems LCO 3/4.7.8, "Auxiliary Building Gas Treatment System," and Refueling Operations LCO 3/4.9.12, "Auxiliary Building Gas Treatment System," do not have this noted allowance. 10 CFR 50.36 requires the technical specifications be derived from the analyses and evaluation included in the safety analysis report.

Section 15.5.3 of Sequoyah's Updated Final Safety Analysis Report (UFSAR) contains the environmental consequences of a postulated Loss of Coolant Accident (LOCA). This analysis assumes that activity leaking to the Auxiliary Building is immediately released without filtration to the environment for the first 5 minutes after which it is held up for 0.3 hours and then released through the ABGTS filter system. This assumption is based on an initial delay of 4 minutes to establish the ABSCE and 1 minute to draw down the ABSCE to a negative 1/4-inch water

gauge.

The proposed LCO note to ITS 3.7.12 above is not consistent with the environmental consequences of a LOCA licensing basis for Sequoyah, which assumes the ABSCE boundary, is established in 4 minutes. The note allows the ABSCE boundary to be opened for an indefinite length of time, in addition to its unlimited use. Furthermore, the referenced administrative control is not defined in the operating license or proposed ITS for Sequoyah. The administrative control is discussed in the ITS Bases. The ITS Bases should describe or clarify the ITS; the ITS bases are not allowed to change the ITS. The proposed ITS 3.7.12 bases states requirements for ITS 3.7.12 and therefore the ITS 3.7.12 Bases are changing the ITS.

Therefore, the NRC staff requests one of the following:

1. Submit for the NRC staff's review a revised environmental consequences of a LOCA analysis that supports the ABSCE boundary being opened and has dose results that meet 10 CFR 100. In addition, provide the inputs, assumptions, methodology and technical basis for the assumptions used.

2. Provide 1) a proposed change to ITS 3.7.12 that is consistent with the NRC-approved design basis as reflected in UFSAR Section 15.5.3, "Environmental Consequences of a LOCA" analysis, and 2) ITS 3.7.12 bases that is consistent with the proposed change to ITS 3.7.12.

Attach File 1	
Attach File 2	
Issue Date	**4/7/2015**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**4/7/2015 3:47 PM**
Notification	**Mark Blumberg** **Scott Bowman** **Kristy Bucholtz** **Margaret Chernoff** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**443**
NRC Question Number	**MHC005**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 to RAI MHC005.pdf** (953KB)
Attachment 2	
Response Statement	

In response to RAI MHC005, the ITS 3.7.12 Bases, LCO Section will be revised (Enclosure 2, Volume 12 - pages 462 and 473). Specifically, the Bases LCO Section will be revised to state, "Note 1 allows the Auxiliary Building Secondary Containment Enclosure (ABSCE) boundary to be opened intermittently under administrative controls. For entry and exit through doors the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls should be proceduralized and consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening and to restore the ABSCE boundary to a condition equivalent to the design condition when a need for auxiliary building isolation is indicated." Additionally, a new Justification for Deviation (JFD) 7 will be added to the ITS 3.7.12 Bases Justification for Deviations Section to justify the change (Enclosure 2, Volume 12 - page 482). JFD 7 indicators will be added to the ISTS markups, as well.

As stated in the RAI, 10 CFR 50.36 requires the technical specifications be derived from the analyses and evaluation included in the safety analysis report. The SQN Updated Final Safety Analysis Report (UFSAR), Section 15.5.3 provides the environmental consequences associated with a loss of coolant accident (LOCA). The analysis assumes that activity leaking to the auxiliary building is immediately released to the

environment without filtration for the first 5 minutes after which it is held up for 0.3 hours and then released through the Auxiliary Building Gas Treatment System (ABGTS) filter train. The assumption of 5 minutes of free release before filtration, is based on an initial delay of 4 minutes to establish the ABSCE and 1 minute to draw the ABSCE to a negative 1/4-inch water gauge. Therefore, the LCO allowance to open the ABSCE boundary intermittently under administrative controls provided the ABSCE boundary will be established within 4 minutes is consistent with the SQN UFSAR.

Based on the proposed change to the ITS 3.7.12 Bases to state that administrative controls for other openings (openings other than doors used for entry and exit) should be proceduralized, SQN procedures regarding the intermittent opening of the ABSCE boundary will require ABSCE breaches to be restored within 4 minutes such that the ABSCE can be drawn to a negative 1/4–inch water gauge within 5 minutes.

Additionally, the NRC staff states that, "the referenced administrative control is not defined in the operating license or proposed ITS for Sequoyah. The administrative control is discussed in the ITS Bases. The ITS Bases should describe or clarify the ITS; the ITS bases are not allowed to change the ITS. The proposed ITS 3.7.12 bases states requirements for ITS 3.7.12 and therefore the ITS Bases are changing the ITS." The ITS LCO 3.7.12 Note states the Auxiliary Building Secondary Containment Enclosure (ABSCE) may be opened intermittently under administrative control. The technical specifications require administrative controls and the bases provide clarifying information. Furthermore, the use of the term administrative controls, regarding the allowance to open or unisolate a system, structure, or component, is used seven times (ISTS 3.6.2, 3.6.3, 3.7.10, 3.7.12, 3.7.13, 3.7.14, and 3.9.4) in NUREG–1431, Rev. 4, with no definition provided in the technical specifications. In some

instances the ISTS Bases describe or clarify what an administrative control is and in some instances the Bases provide no additional information. Therefore, the proposed note is consistent with NUREG–1431, Rev. 4 and does not require additional information in the technical specifications defining what constitutes an administrative control.

See Attachment 1 for the draft revised ISTS 3.7.12 markups and JFD 7.

Response Date/Time	**5/1/2015 3:25 PM**
Closure Statement	
Question Closure Date	
Notification	**Mark Blumberg** **Scott Bowman** **Kristy Bucholtz** **Margaret Chernoff** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**5/1/2015 2:24 PM**
Date Modified	
Modified By	

BASES

APPLICABLE SAFETY ANALYSES (continued)

~~material provided by the one remaining train of this filtration system.~~ The amount of fission products available for release from the auxiliary ~~fuel handling~~ building is determined for a fuel handling accident and for a LOCA. ~~[~~Due to radioactive decay, ABGTS ~~FBACS~~ is only required to isolate during fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 100 hours ~~[X] days~~).~~]~~ These assumptions and the analysis follow the guidance provided in Regulatory Guide 1.183 ~~1.25~~ (Ref. 3 ~~4~~). 2 1 3 1 3 2

The ABGTS ~~FBACS~~ satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). 1

LCO

Two independent and redundant trains of the ABGTS ~~FBACS~~ are required to be OPERABLE to ensure that at least one train is available, assuming a single failure that disables the other train, coincident with a loss of offsite power. Total system failure could result in the atmospheric release from the auxiliary ~~fuel handling~~ building exceeding the 10 CFR 100 (Ref. 4 ~~5~~) limits in the event of a LOCA ~~fuel handling accident [involving handling recently irradiated fuel]~~. INSERT 2 1 1 2 2

The ABGTS ~~FBACS~~ is considered OPERABLE when the individual components necessary to control exposure in the auxiliary ~~fuel handling~~ building are OPERABLE in both trains. An ABGTS ~~FBACS~~ train is considered OPERABLE when its associated: 1

a. Fan is OPERABLE,

b. HEPA filter and charcoal adsorber are not excessively restricting flow, and are capable of performing their filtration function, and

c. Heater, ~~demister,~~ ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained. 1

The LCO is modified by two Notes. Note 1 allows ~~a Note allowing~~ the Auxiliary Building Secondary Containment Enclosure (ABSCE) ~~fuel building~~ boundary to be opened intermittently under administrative controls. For entry and exit through doors the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls should be proceduralized and consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening and to restore the ABSCE boundary to a condition equivalent to the design condition when a need for auxiliary ~~fuel~~ building isolation is indicated. 1 7 7 1 4

INSERT 3

Enclosure 2, Volume 12, Rev. 0, Page 462 of 704

BASES

APPLICABLE SAFETY ANALYSES (continued)

~~material provided by the one remaining train of this filtration system.~~ The amount of fission products available for release from the ~~fuel handling~~ auxiliary building is determined for a fuel handling accident and for a LOCA. ~~[~~Due to radioactive decay, ~~FBACS~~ ABGTS is only required to isolate during fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous ~~[X] days~~ 100 hours).~~]~~ These assumptions and the analysis follow the guidance provided in Regulatory Guide ~~1.25~~ 1.183 (Ref. ~~4~~ 3). 2 1 3 1 3 2

The ~~FBACS~~ ABGTS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). 1

LCO

Two independent and redundant trains of the ~~FBACS~~ ABGTS are required to be OPERABLE to ensure that at least one train is available, assuming a single failure that disables the other train, coincident with a loss of offsite power. Total system failure could result in the atmospheric release from the ~~fuel handling~~ auxiliary building exceeding the 10 CFR 100 (Ref. ~~5~~ 4) limits in the event of a ~~fuel handling accident [involving handling recently irradiated fuel]~~ LOCA. INSERT 2 1 1 2 2

The ~~FBACS~~ ABGTS is considered OPERABLE when the individual components necessary to control exposure in the ~~fuel handling~~ auxiliary building are OPERABLE in both trains. An ~~FBACS~~ ABGTS train is considered OPERABLE when its associated: 1

a. Fan is OPERABLE,

b. HEPA filter and charcoal adsorber are not excessively restricting flow, and are capable of performing their filtration function, and

c. Heater, ~~demister,~~ ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained. 1

The LCO is modified by ~~a Note allowing~~ two Notes. Note 1 allows the ~~fuel building~~ Auxiliary Building Secondary Containment Enclosure (ABSCE) boundary to be opened intermittently under administrative controls. For entry and exit through doors the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls should be proceduralized and consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening and to restore the ABSCE boundary to a condition equivalent to the design condition when a need for ~~fuel~~ auxiliary building isolation is indicated. 1 7 7 1 4

INSERT 3

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.12 BASES, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS)

1. Sequoyah Nuclear Plant (SQN) design does not include the ISTS 3.7.12, "Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)." Therefore, ISTS 3.7.13, "Fuel Building Air Cleanup System (FBACS)" has been renumbered as ITS 3.7.12. Additionally, SQN does not have a Fuel Building Air Cleanup System (FBACS); therefore, ISTS 3.7.13 has been renamed to Auxiliary Building Gas Treatment System (ABGTS) for ITS 3.7.12.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

4. Changes are made to be consistent with changes made to the Specification.

5. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

6. ISTS SR 3.7.13.1, SR 3.7.13.3 and SR 3.7.13.4 Bases (ITS SR 3.7.12.1, SR 3.7.12.3 and SR 3.7.12.4, respectively) provides two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Additionally, the Frequency description which is being removed will be included in the Surveillance Frequency Control Program.

7. The ISTS 3.7.13 Bases LCO Section describes what constitutes an administrative control regarding the opening of the fuel building boundary on an intermittent basis. The ITS 3.7.12 Bases has been revised to state that, "For other openings, these controls should be proceduralized and consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening and to restore the ABSCE boundary to a condition equivalent to the design condition when a need for auxiliary building isolation is indicated." This change is acceptable because it provides additional information to state that controls should be proceduralized and the ABSCE should be returned to a condition equivalent to the design condition.

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Licensee Response/NRC Response/NRC Question Closure

Id	**448**
NRC Question Number	**MHC005**
Select Application	**NRC Response**
Attachment 1	
Attachment 2	
Response Statement	**The NRC staff has reviewed TVA's response to MHC005 and has determined that there are two issues with both the LCO notes in ITS 3.7.10 and ITS 3.7.12.**

The first issue is that the LCO notes are not consistent with Sequoyah's current NRC-approved licensing basis. Updated Final Safety Analysis Report (UFSAR) Section 15.5.3, "Environmental Consequences of a Postulated Loss of Coolant Accident," assumes that the control room will be isolated automatically by a safety injection system signal and/or by radiation signal from beta detectors located in the air intake stream common to the air intake ports at either end of the control building. In addition, UFSAR Section 15.5.3 assumes fission products which leak from the primary containment to areas of the Auxiliary Building will be diluted in the room atmosphere and will travel via ducts and other rooms to the fuel handling area or the waste packaging area where the suctions for the (ABGTS) are located and that the mean holdup time for airborne activity in the Auxiliary Building areas other than the fuel handling area is greater than one hour with the Auxiliary Building isolated and both trains of the ABGTS operating. Furthermore, for the reference case, it has been conservatively assumed in the estimation of activity releases that activity leaking to the Auxiliary Building is immediately released without filtration to the environment for the first 5 minutes after which it is held up for 0.3 hours and then released through the ABGTS filter system.

The NRC-approved licensing basis for the radiological consequences associated with a loss of coolant accident for Sequoyah's does not account for any operator action to restore the boundaries of either the control room or the auxiliary building.

The second issue is that the LCO notes are not consistent with the use and application section in the improved Technical Specifications. The use and application section in the improved Technical Specifications states that known failures of the requirements of a Surveillance, even without a Surveillance specifically being "performed," constitutes a Surveillance not "met," and that a surveillance must be met in order to meet the associated LCO.

CTS 4.7.7.h requires that Control Room Envelope (CRE) unfiltered air in-leakage testing must be performed in accordance with the control room envelope habitability program (CTS 6.17.d), which states that measurement, at designated locations, of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation by one train of the Control Room Emergency Ventilation System, operating at the flow rate of 4000 cubic feet

per minute plus or minus 10 percent, at a Frequency of 36 months on a staggered test basis. This surveillance is proposed as ITS SR 3.7.10.5 and ITS 5.5.16.d.

CTS 4.7.8.d.4 requires verifying once per 18 months that the system maintains the spent fuel storage area and the ESF pump rooms at a pressure equal to or more negative than minus 1/4 inch water gauge relative the outside atmosphere while maintaining a total system flow of 9000 cfm ±10%. This surveillance is proposed as ITS SR 3.7.12.4.

Opening the boundary of the control room or the auxiliary building would cause failure of these surveillance requirements, respectively and therefore failure to meet the associated LCO. If used, the proposed LCO notes cause inoperability of the respective systems and the LCO, which is not consistent with the usage of ITS.

The NRC staff has determined that the proposed LCO notes are not consistent with Sequoyah's NRC-approved licensing basis and the usage and application of ITS.

Therefore, the NRC staff requests one of the following:

1. **Submit for the NRC staff's review a revised radiological consequences for a LOCA analysis that either supports the ABSCE boundary being opened or includes the proposed operator actions to restore the boundary and has dose results that meet 10 CFR 100. In addition, provide the inputs, assumptions, methodology and technical basis for the assumptions used.**

2. **Remove the LCO note from ITS 3.7.12.**

(Note: The NRC staff is not requesting that the LCO note be removed from ITS 3.7.10 at this time because it is in Sequoyah's current technical specifications and therefore, the NRC staff will further review this issue under 10 CFR 50.109.)

Response Date/Time	**5/7/2015 6:00 PM**
Closure Statement	
Question Closure Date	
Notification	**Mark Blumberg** **Margaret Chernoff** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Kristy Bucholtz**
Date Added	**5/7/2015 8:00 AM**
Date Modified	

Modified By

Licensee Response/NRC Response/NRC Question Closure

Id	**456**
NRC Question Number	**MHC005**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 to NRC Response to RAI MHC005.pdf** (1007KB)
Attachment 2	
Response Statement	

Based on the Staff's response to RAI MHC005, ITS 3.7.12 (ABGTS) LCO Note 1 will be deleted on pages 446 and 452 of Enclosure 2, Volume 12. Specifically, ITS 3.7.12 LCO Note 1 that states, "The Auxiliary Building Secondary Containment Enclosure (ABSCE) boundary may be opened intermittently under administrative control," will be deleted. As a result of the deletion the following changes to the ITS submittal are required:

1. **The CTS markups will be revised to delete the proposed addition of ITS 3.7.12 LCO Note 1, delete the associated Discussion of Change (DOC) L01 indicators, and the ITS cross reference for CTS LCO 3.9.12 will be revised to LCO 3.7.12 Note. (pages 427, 429, 431, and 433 of Enclosure 2, Volume 12)**

2. **DOC L01 will be revised to state, "Not Used," in the ITS 3.7.12 Discussion of Changes Section. (pages 439 and 440 of Enclosure 2, Volume 12)**

3. **The ISTS markups will be revised to delete ITS LCO 3.7.12 Note 1, revise "NOTES" to "NOTE," delete the associated CTS cross reference to DOC L01 3.9.12, revise the Justification for Deviation (JFD) indicator for the associated change to ITS LCO 3.7.12 Note 1, and delete the number 2 for ITS LCO 3.7.12 Note 2 (there is only one note). (pages 446, 447, 452, and 453 of Enclosure 2, Volume 12)**

4. The ISTS Bases markups will be revised to correspond with changes made to the ITS 3.7.12 Specification. (pages 462, 463, 473, and 474 of Enclosure 2, Volume 12)

See Attachment 1 for the draft revised changes to the ITS submittal discussed above.

Response Date/Time	**5/21/2015 2:40 PM**
Closure Statement	
Question Closure Date	
Notification	**Mark Blumberg** **Scott Bowman** **Kristy Bucholtz** **Margaret Chernoff** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**5/21/2015 1:40 PM**
Date Modified	
Modified By	

ITS A01 ITS 3.7.12

PLANT SYSTEMS

3/4.7.8 AUXILIARY BUILDING GAS TREATMENT SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.7.12 — 3.7.8 Two ~~independent~~ auxiliary building gas treatment filter trains shall be OPERABLE. LA01

~~Add proposed LCO Note 1~~ ~~L01~~

Applicability — APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Add proposed ACTION Note L02

ACTION A — With one auxiliary building gas treatment filter train inoperable, restore the inoperable train to OPERABLE status within 7 days

ACTION C — or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Add proposed ACTION B L02

Add proposed ACTION C, 2nd Condition

SURVEILLANCE REQUIREMENTS

SR 3.7.12.1, SR 3.7.12.3, SR 3.7.12.4 — 4.7.8 Each auxiliary building gas treatment filter train shall be demonstrated OPERABLE:

In accordance with the Surveillance Frequency Control Program LA02

SR 3.7.12.1 — a. At least ~~once per 31 days on a STAGGERED TEST BASIS~~ by initiating, ~~from the control room, flow through the HEPA filter and charcoal adsorber train~~ and verifying that the system operates for at least ~~10 hours~~ 15 continuous minutes with the heaters on. L03 LA03 L04

Add proposed SR 3.7.12.2 A02

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978 (except for the provisions of ANSI N510 Sections 8 and 9), and the system flow rate is 9000 cfm ± 10%.

2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, shows the methyl iodide penetration less than 2.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86° F) and a relative humidity of 70%.

3. Verifying a system flow rate of 9000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

See ITS 5.5.9

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ITS A01 ITS 3.7.12

REFUELING OPERATIONS

3/4.9.12 AUXILIARY BUILDING GAS TREATMENT SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.7.12 Note ~~2~~

3.9.12 One auxiliary building gas treatment filter train shall be OPERABLE.

Applicability

APPLICABILITY: ~~Whenever irradiated fuel is in the storage pool.~~ During movement of recently irradiated fuel assemblies in the auxiliary building. L06

ACTION:

Add proposed Required Action D.1 L06

ACTION D

a. With no auxiliary building gas treatment filter train OPERABLE, ~~suspend all operations involving movement of fuel within the spent fuel pit or crane operation with loads over the spent fuel pit until at least one auxiliary building gas treatment filter train is restored to OPERABLE status~~.

ACTIONS Note

b. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS L06

SR 3.7.12.1, SR 3.7.12.3

4.9.12 The above required auxiliary buildings gas treatment filter train shall be demonstrated OPERABLE:

In accordance with the Surveillance Frequency Control Program LA02

L03

SR 3.7.12.1

a. ~~At least once per 31 days on a STAGGERED TEST BASIS~~ by initiating, ~~from the control room, flow through the HEPA filters and charcoal adsorbers~~ and verifying that the system operates for at least 10 hours with the heaters on. LA03

Add proposed SR 3.7.12.2 A02

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978 (except for the provisions of ANSI N510 Sections 8 and 9), and the system flow rate is 9000 cfm ± 10%.

2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, shows the methyl iodide penetration less than 2.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86°F) and a relative humidity of 70%.

3. Verifying a system flow rate of 9000 cfm ± 10% during system operations when tested in accordance with ANSI N510-1975.

See ITS 5.5.9

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ITS A01 ITS 3.7.12

PLANT SYSTEMS

3/4.7.8 AUXILIARY BUILDING GAS TREATMENT SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.7.12

3.7.8 Two ~~independent~~ auxiliary building gas treatment filter trains shall be OPERABLE. LA01

~~Add proposed LCO Note 1~~ ~~L01~~

Applicability

APPLICABILITY: Modes 1, 2, 3 and 4.

ACTION:

Add proposed ACTION Note L02

ACTION A

ACTION C

With one auxiliary building gas treatment filter train inoperable, restore the inoperable train to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Add proposed ACTION B L02

Add proposed ACTION C, 2nd Condition

SURVEILLANCE REQUIREMENTS

SR 3.7.12.1, SR 3.7.12.3, SR 3.7.12.4

4.7.8 Each auxiliary building gas treatment filter train shall be demonstrated OPERABLE: In accordance with the Surveillance Frequency Control Program LA02

SR 3.7.12.1

a. ~~At least once per 31 days on a STAGGERED TEST BASIS~~ by initiating, ~~from the control room~~, ~~flow through the HEPA filter and charcoal adsorber train~~ and verifying that the system operates for at least ~~10 hours~~ 15 continuous minutes with the heaters on. L03 LA03 L04

Add proposed SR 3.7.12.2 A02

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978 (except for the provisions of ANSI N510 Sections 8 and 9), and the system flow rate is 9000 cfm ± 10%.

2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, shows the methyl iodide penetration less than 2.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86° F) and a relative humidity of 70%.

3. Verifying a system flow rate of 9000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

See ITS 5.5.9

REFUELING OPERATIONS

3/4.9.12 AUXILIARY BUILDING GAS TREATMENT SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.7.12 Note ~~2~~ 3.9.12 One auxiliary building gas treatment filter train shall be OPERABLE.

Applicability APPLICABILITY: ~~Whenever irradiated fuel is in the storage pool.~~ During movement of recently irradiated fuel assemblies in the auxiliary building. L06

ACTION:

Add proposed Required Action D.1 L06

ACTION D a. With no auxiliary building gas treatment filter train OPERABLE, ~~suspend all operations involving movement of fuel within the spent fuel pit or crane operation with loads over the spent fuel pit until at least one auxiliary building gas treatment filter train is restored to OPERABLE status~~.

ACTIONS Note b. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

SR 3.7.12.1, SR 3.7.12.3 4.9.12 The above required auxiliary building gas treatment filter train shall be demonstrated OPERABLE:

In accordance with the Surveillance Frequency Control Program LA02 L03 LA03

SR 3.7.12.1 a. ~~At least once per 31 days on a STAGGERED TEST BASIS~~ by initiating, ~~from the control room, flow through the HEPA filters and charcoal adsorbers~~ and verifying that the system operates for at least 10 hours with the heaters on.

Add proposed SR 3.7.12.2 A02

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978 (except for the provisions of ANSI N510 Sections 8 and 9), and the system flow rate is 9000 cfm $\pm$ 10%.

2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, shows the methyl iodide penetration less than 2.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86° F) and a relative humidity of 70%.

3. Verifying a system flow rate of 9000 cfm $\pm$ 10% during system operation when tested in accordance with ANSI N510-1975.

See ITS 5.5.9

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DISCUSSION OF CHANGES
ITS 3.7.12, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS)

adequate protection of public health and safety. ITS 3.7.12 retains the requirement that two ABGTS trains are required to be OPERABLE. Also, this change is acceptable because these types of details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA05 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.7.8.d.3 requires verification that the ABGTS system maintains the spent fuel storage area and the ESF pump rooms at a pressure equal to or more negative than minus 1/4 inch water gage relative to the outside atmosphere while maintaining a total system flow of 9000 cfm plus or minus 10%. ITS 3.7.12.4 requires verification that the ABGTS train can maintain a pressure greater than or equal to -0.25 inches water gauge with respect to atmospheric pressure at a flow rate greater than or equal to 8,100 and less than or equal to 9,900 cfm. This changes the CTS by moving the statement that the system maintains the spent fuel storage area and the ESF pump rooms at the specified pressure to the Bases.

The removal of these details for performing a Surveillance Requirement from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirements to verify the ABGTS train can maintain a pressure greater than or equal to -0.25 inches water gauge with respect to atmospheric pressure at a flow rate of greater than or equal to 8,100 and less than or equal to 9,900 cfm. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specifications are being removed from the Technical Specifications.

<u>LESS RESTRICTIVE CHANGES</u>

L01 ~~*(Category 1 – Relaxation of LCO Requirements)* CTS 3.7.8 requires two ABGTS trains to be OPERABLE. ITS LCO 3.7.12 includes the same ABGTS OPERABILITY requirements but is modified by Note 1, which states "The Auxiliary Building Secondary Containment Enclosure (ABSCE) boundary may be opened intermittently under administrative control." This changes the CTS by allowing the ABSCE boundary to be opened under administrative controls when the ABGTS is required to be OPERABLE.~~

Not Used

~~The purpose of CTS 3.7.8 is to maintain the air pressure in the auxiliary building below atmospheric, reduce the concentration of nuclides in air releases from the Auxiliary Building Secondary Containment Enclosure (ABSCE), and to minimize the spread of airborne radioactivity within the Auxiliary Building following an~~

DISCUSSION OF CHANGES
ITS 3.7.12, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS)

~~accidental release in the fuel handling areas. ITS LCO 3.7.12 Note 1 will allow the ABSCE boundary to be opened under administrative controls when the ABGTS is required to be OPERABLE. This change is acceptable because the administrative controls are described in the Bases. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for auxiliary building isolation is indicated. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.~~

L02 *(Category 4 – Relaxation of Required Action)* CTS 3.7.8 ACTION contains compensatory actions to take when one auxiliary building gas treatment filter train is inoperable in MODES 1, 2, 3 and 4. CTS 3.7.8 does not contain compensatory actions to take when both auxiliary building gas treatment filter trains are inoperable. Therefore, CTS 3.0.3 would be entered for two auxiliary building gas treatment filter trains inoperable. CTS 3.0.3 requires action to be initiated within one hour to be in HOT STANDBY (equivalent to ITS MODE 3) in the following 6 hours, to be in HOT SHUTDOWN (equivalent to ITS MODE 4) in the following 6 hours, and to be in COLD SHUTDOWN (equivalent to ITS MODE 5) in the subsequent 36 hours. ITS 3.7.12 ACTIONS contain a Note stating LCO 3.0.3 is not applicable. ITS 3.7.12 ACTION B states with two ABGTS trains inoperable due to an inoperable Auxiliary Building Secondary Containment Enclosure (ABSCE) boundary in MODE 1, 2, 3, or 4 to restore the auxiliary building boundary to OPERABLE status within 24 hours. Additionally, ITS 3.7.12 ACTION C states, in part, when two ABGTS trains are inoperable for reasons other than Condition B (i.e., an inoperable ABSCE boundary) or if the Required Action and associated Completion Time of Condition B is not met in MODE 1, 2, 3, or 4 to be in MODE 3 within 6 hours and to be in MODE 5 within 36 hours. This changes the CTS by not requiring entry into LCO 3.0.3 when two ABGTS trains are inoperable in MODE 1, 2, 3, or 4, and adds compensatory actions to take when two ABGTS trains are inoperable in MODE 1, 2, 3, or 4.

ITS 3.7.12 is applicable during movement of recently irradiated fuel assemblies in addition to MODE 1, 2, 3, or 4. Since the movement of recently irradiated fuel assemblies can occur in MODES 1, 2, 3, and 4, it is necessary to add an ACTIONS Note stating that LCO 3.0.3 is not applicable because the movement of fuel is independent of reactor operations. This change is acceptable because ITS 3.7.12 ACTIONS B and C will provide compensatory measures to take when two trains of ABGTS are inoperable in MODE 1, 2, 3, or 4. ITS 3.7.12 ACTION B applies when two ABGTS trains are inoperable because of an inoperable ABSCE boundary in MODE 1, 2, 3, or 4 and provides 24 hours to restore the inoperable auxiliary building boundary to OPERABLE status. During these 24 hours, compensatory measures will be taken to protect plant personnel from potential hazards, and preplanned compensatory measures will be in place to address both the intentional and unintentional inoperability of the ABSCE boundary. Furthermore, the 24 hour Completion Time is based on the low probability of a DBA occurring during this time period and the compensatory measures that will be taken. ITS 3.7.12 ACTION C applies when the Required Action and associated Completion Time of Condition B is not met or when two ABGTS trains

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CTS

ABGTS ~~FBACS~~
3.7.~~13~~ 12 1

3.7 PLANT SYSTEMS

3.7.~~13~~ 12 ~~Fuel Building Air Cleanup~~ Auxiliary Building Gas Treatment System ~~(FBACS)~~ ABGTS 1

3.7.8 LCO 3.7.~~13~~ 12 Two ~~FBACS~~ ABGTS trains shall be OPERABLE. 1

~~DOC L01~~ ~~3.9.12~~ ~~Auxiliary Building Secondary Containment Enclosure (ABSCE)~~ -----NOTE------ ~~S~~
~~1.~~ ~~The fuel building boundary may be opened intermittently under administrative control.~~ 3 ~~2~~ 3
INSERT 1

3.7.8 Applicability, 3.9.12 Applicability

APPLICABILITY: ~~[~~MODES 1, 2, 3, and 4, ~~]~~
During movement of ~~[~~recently~~]~~ irradiated fuel assemblies in the ~~fuel~~ auxiliary building. 4 3

ACTIONS

DOC L02, 3.9.12 ACTION b

-----NOTE-----
LCO 3.0.3 is not applicable.

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
3.7.8 ACTION	A. One ~~FBACS~~ ABGTS train inoperable~~.~~ In MODE 1, 2, 3, or 4	A.1 Restore ~~FBACS~~ ABGTS train to OPERABLE status.	7 days	1 2
DOC L02	B. Two ~~FBACS~~ ABGTS trains inoperable due to inoperable ~~fuel building~~ ABSCE boundary in MODE 1, 2, 3, or 4.	B.1 Restore ~~fuel building~~ ABSCE boundary to OPERABLE status.	24 hours	1 3

2

INSERT 1

3.9.12 ~~2.~~ Only one ABGTS train is required to be OPERABLE during movement of recently irradiated fuel assemblies in the auxiliary building.

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CTS

ABGTS ~~FBACS~~ 1
3.7.~~13~~ 12

3.7 PLANT SYSTEMS

3.7.~~13~~ 12 Auxiliary Building Gas Treatment ~~Fuel Building Air Cleanup~~ System ABGTS ~~(FBACS)~~ 1

3.7.8 LCO 3.7.~~13~~ 12 Two ABGTS ~~FBACS~~ trains shall be OPERABLE. 1

~~Auxiliary Building Secondary Containment Enclosure (ABSCE)~~ ~~S~~

---NOTE---

~~DOC L01~~ ~~3.9.12~~ ~~1.~~ ~~The fuel building boundary may be opened intermittently under administrative control.~~ 3 ~~2~~ 3

INSERT 1

3.7.8 Applicability, 3.9.12 Applicability

APPLICABILITY: ~~[~~MODES 1, 2, 3, and 4, ~~]~~
During movement of ~~[~~recently~~]~~ irradiated fuel assemblies in the auxiliary ~~fuel~~ building. 4 3

ACTIONS

---NOTE---

DOC L02, 3.9.12 ACTION b

LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ABGTS ~~FBACS~~ train inoperable In MODE 1, 2, 3, or 4~~.~~	A.1 Restore ABGTS ~~FBACS~~ train to OPERABLE status.	7 days
B. Two ABGTS ~~FBACS~~ trains inoperable due to inoperable ABSCE ~~fuel building~~ boundary ~~-~~in MODE 1, 2, 3, or 4.	B.1 Restore ABSCE ~~fuel building~~ boundary to OPERABLE status.	24 hours

3.7.8 ACTION (Condition A) 1 2

DOC L02 (Condition B) 1 3

2

INSERT 1

3.9.12 ~~2.~~ Only one ABGTS train is required to be OPERABLE during movement of recently irradiated fuel assemblies in the auxiliary building.

ABGTS ~~FBACS~~ 1
B 3.7.~~13~~ 12

BASES

APPLICABLE SAFETY ANALYSES (continued)

~~material provided by the one remaining train of this filtration system.~~ The amount of fission products available for release from the ~~fuel handling~~ auxiliary building is determined for a fuel handling accident and for a LOCA. ~~[~~Due to radioactive decay, ~~FBACS~~ ABGTS is only required to isolate during fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous ~~[X] days~~ 100 hours).~~]~~ These assumptions and the analysis follow the guidance provided in Regulatory Guide ~~1.25~~ 1.183 (Ref. ~~4~~ 3). 2 1 3 1 3 2

The ~~FBACS~~ ABGTS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). 1

LCO

Two independent and redundant trains of the ~~FBACS~~ ABGTS are required to be OPERABLE to ensure that at least one train is available, assuming a single failure that disables the other train, coincident with a loss of offsite power. Total system failure could result in the atmospheric release from the ~~fuel handling~~ auxiliary building exceeding the 10 CFR 100 (Ref. ~~5~~ 4) limits in the event of a ~~fuel handling accident [involving handling recently irradiated fuel]~~ LOCA. INSERT 2 1 1 2 2

The ~~FBACS~~ ABGTS is considered OPERABLE when the individual components necessary to control exposure in the ~~fuel handling~~ auxiliary building are OPERABLE in both trains. An ~~FBACS~~ ABGTS train is considered OPERABLE when its associated: 1

a. Fan is OPERABLE,

b. HEPA filter and charcoal adsorber are not excessively restricting flow, and are capable of performing their filtration function, and

c. Heater, ~~demister,~~ ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained. 1

a The LCO is modified by ~~two Notes. Note 1 allows~~ ~~a Note allowing~~ the ~~fuel building~~ ~~Auxiliary Building Secondary Containment Enclosure (ABSCE)~~ ~~boundary to be opened intermittently under administrative controls. For entry and exit through doors the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for~~ ~~fuel~~ ~~auxiliary~~ ~~building isolation is indicated.~~ ~~1~~ 4 ~~1~~

INSERT 3 4

2

INSERT 2

One train of the ABGTS is required to be OPERABLE to mitigate the consequences of a fuel handling accident involving handling recently irradiated fuel to limit releases to the environment to within the 10 CFR 50.67 limits.

4

INSERT 3

Note ~~2~~ that specifies that only one ABGTS train is required to be OPERABLE during the movement of recently irradiated fuel assemblies in the auxiliary building.

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BASES

APPLICABLE SAFETY ANALYSES (continued)

~~material provided by the one remaining train of this filtration system.~~ The amount of fission products available for release from the ~~fuel handling~~ auxiliary building is determined for a fuel handling accident and for a LOCA. ~~[~~Due to radioactive decay, ~~FBACS~~ ABGTS is only required to isolate during fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous ~~[X] days~~ 100 hours).~~]~~ These assumptions and the analysis follow the guidance provided in Regulatory Guide ~~1.25~~ 1.183 (Ref. ~~4~~ 3). 2 1 3 1 3 2

The ~~FBACS~~ ABGTS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). 1

LCO

Two independent and redundant trains of the ~~FBACS~~ ABGTS are required to be OPERABLE to ensure that at least one train is available, assuming a single failure that disables the other train, coincident with a loss of offsite power. Total system failure could result in the atmospheric release from the ~~fuel handling~~ auxiliary building exceeding the 10 CFR 100 (Ref. ~~5~~ 4) limits in the event of a ~~fuel handling accident [involving handling recently irradiated fuel]~~ LOCA. INSERT 2 1 1 2 2

The ~~FBACS~~ ABGTS is considered OPERABLE when the individual components necessary to control exposure in the ~~fuel handling~~ auxiliary building are OPERABLE in both trains. An ~~FBACS~~ ABGTS train is considered OPERABLE when its associated: 1

a. Fan is OPERABLE,

b. HEPA filter and charcoal adsorber are not excessively restricting flow, and are capable of performing their filtration function, and

c. Heater, ~~demister,~~ ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained. 1

a ~~The LCO is modified by two Notes. Note 1 allows a Note allowing the Auxiliary Building Secondary Containment Enclosure (ABSCE) fuel building boundary to be opened intermittently under administrative controls. For entry and exit through doors the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for auxiliary fuel building isolation is indicated.~~ ~~1~~ 4 ~~1~~ 4

INSERT 3

2

INSERT 2

One train of the ABGTS is required to be OPERABLE to mitigate the consequences of a fuel handling accident involving handling recently irradiated fuel to limit releases to the environment to within the 10 CFR 50.67 limits.

4

INSERT 3

that

Note ~~2~~ specifies that only one ABGTS train is required to be OPERABLE during the movement of recently irradiated fuel assemblies in the auxiliary building.

Licensee Response/NRC Response/NRC Question Closure

Id	**458**
NRC Question Number	**MHC005**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**5/27/2015**
Notification	**Mark Blumberg Scott Bowman Michelle Conner Khadijah Hemphill Andrew Hon Lynn Mynatt Ray Schiele Roger Scott**
Added By	**Kristy Bucholtz**
Date Added	**5/27/2015 10:07 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**211**
NRC Question Number	**MHC007**
Category	**Technical**
ITS Section	**AST**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Undine Shoop**
Technical Branch POC	**Mark Blumberg**
Conf Call Requested	**N**
NRC Question	**Why are Tritium-Producing Burnable Absorber Rods (TPBARs) not included in the Fuel Handling Accident analysis source term?**
Attach File 1	
Attach File 2	
Issue Date	**4/14/2015**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**4/14/2015 1:33 PM**
Notification	**Mark Blumberg** **Scott Bowman** **Margaret Chernoff** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**434**
NRC Question Number	**MHC007**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**Sequoyah Nuclear Plant (SQN), Units 1 and 2, both have license conditions, provided with the issuance of Amendments 278 and 289 for Unit 1 and Amendments 269 and 279 for Unit 2, that state "This license amendment is effective as of the date of its issuance, and shall be implemented prior to starting up from the outage where TVA inserts tritium-producing burnable absorber rods in the core, provided there have been no changes to the facility that materially change the bases for approval of the [this] amendment." Since the issuance of these amendments, changes have been made at SQN, Units 1 and 2, that materially change the bases for NRC approval of Amendments 278 and 289 for Unit 1 and Amendments 269 and 279 for Unit 2. A license amendment request was submitted on June 17, 2011, that requested an amendment of the licensing basis and the Technical Specifications (TS) to permit the use of AREVA Advanced W17 HTP fuel at SQN. The Safety Evaluation Report (SER) for the approval of this license amendment was issued on September 26, 2012. As a result, the bases for the TPBAR amendments have materially changed such that TVA would need to request and receive NRC approval prior to introducing any tritium-producing burnable absorber rods (TPBARs) into either SQN unit. At this time, SQN is not licensed to insert tritium-producing burnable absorber rods in the core. Therefore, SQN did not include TPBARS as part of the source term in the revised fuel handling accident dose consequences analysis submitted in Supplement 1 (ADAMS Accession No. ML 14350B364) to the SQN Unit 1 and 2 Technical Specifications conversion to NUREG-1431, Rev 4.**
Response Date/Time	**4/20/2015 3:20 PM**
Closure Statement	
Question Closure	

Date	
Notification	**Mark Blumberg** **Scott Bowman** **Kristy Bucholtz** **Margaret Chernoff** **Michelle Conner** **Robert Elliott** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Lynn Mynatt**
Date Added	**4/20/2015 2:20 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**439**
NRC Question Number	**MHC007**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**4/23/2015**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**4/23/2015 12:08 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**30**
NRC Question Number	**MEH-001**
Category	**Technical**
ITS Section	**3.7**
ITS Number	**3.7.4**
DOC Number	
JFD Number	**6**
JFD Bases Number	
Page Number(s)	**128 of 704**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**The frequency for STS SR 3.7.4.1 is 18 months OR In accordance with the SFCP. The proposed frequency for proposed SR 3.7.4.1 is "In accordance with the Inservice Testing Program." Enclosure 2, Volume 12 Page 128 of 704 states that the ARVs are Code Class valves tested under the Sequoyah ASME Section XI Inservice Testing Program. Please provide an expanded justification for the proposed frequency which discusses why testing in accordance with the Inservice Testing Program is equivalent to or better than testing at a set frequency or in accordance with the surveillance frequency control program. Part of the expanded justification should discuss whether or not future revisions to the ASME Code could unintentionally change testing frequencies for the ARVs in TS.**
Attach File 1	
Attach File 2	
Issue Date	**5/7/2014**
Added By	**Matthew Hamm**
Date Modified	
Modified By	
Date Added	**5/7/2014 2:05 PM**
Notification	**Scott Bowman Michelle Conner Matthew Hamm Khadijah Hemphill Andrew Hon Lynn Mynatt Ray Schiele Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**33**
NRC Question Number	**MEH-001**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 draft revised ITS submittal pages.pdf** (69KB)
Attachment 2	

Response Statement

In response to RAI MEH-001, the Frequency for ITS SR 3.7.4.1 will be changed from, “In accordance with the Inservice Testing Program,” to “In accordance with the Surveillance Frequency Control Program.” Justification for deviation (JFD) 6 will be revised to indicate that for ISTS SR 3.7.4.1, SQN is proposing to control the ARV Surveillance Frequency under the Surveillance Frequency Control Program.

Additionally, the ITS Bases for SR 3.7.4.1 will be changed from, “The Surveillance Frequency is controlled under the Inservice Testing Program,” to, “The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.” JFD 7, for the ITS 3.7.4 Bases, will be revised to indicate that for ISTS SR 3.7.4.1, SQN is proposing to control the ARV Surveillance Frequency under the Surveillance Frequency Control Program.

As discussed in DOC M01, SQN CTS do not contain a specification for ARVs. ITS 3.7.4 specifies the requirements for the ARVs, consistent with the requirements of ISTS 3.7.4, “Atmospheric Dump Valves.” As part of the adoption of ITS 3.7.4, a new surveillance, SR 3.7.4.1, will be added to verify one complete cycle of each ARV. ISTS SR 3.7.4.1 provides two options for controlling the Frequency of the Surveillance Requirement: (1) an 18 month Frequency, or (2) an 18 month Frequency relocated to the Surveillance Frequency Control Program. SQN currently tests the ARVs at an 18 month frequency. SQN is proposing to maintain the 18 month testing frequency and control the ARV Surveillance Frequency under the Surveillance Frequency Control Program.

See Attachment 1 for draft revised ITS submittal pages.

Response Date/Time	**5/23/2014 9:15 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner**

	Matthew Hamm **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**5/23/2014 8:12 AM**
Date Modified	
Modified By	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
DOC M01 SR 3.7.4.1	Verify one complete cycle of each ARV ~~ADV~~.	~~[[18] months~~ ~~OR~~ In accordance with the Inservice Testing ~~Surveillance Frequency Control~~ Program ~~]~~ (stet) 1 6
~~SR 3.7.4.2~~	~~[Verify one complete cycle of each ADV block valve.~~	~~[[18] months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~ 2

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
DOC M01 SR 3.7.4.1	Verify one complete cycle of each ARV ~~ADV~~.	~~[[18] months~~ ~~OR~~ In accordance with the Inservice Testing ~~Surveillance Frequency Control~~ Program ~~]~~ stet 1 6
~~SR 3.7.4.2~~	~~[Verify one complete cycle of each ADV block valve.~~	~~[[18] months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~ 2

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.4, ATMOSPHERIC RELIEF VALVES (ARVs)

6. ISTS SR 3.7.4.1 provides two options for controlling the Frequency of the Surveillance Requirement. SQN currently tests the ARVs at an 18 month frequency. SQN is proposing to maintain the 18 month testing frequency and control the ARV Surveillance Frequency under the Surveillance Frequency Control Program ~~Inservice Testing Program. The ARVs are ASME Section XI Code Class valves at SQN and as such are tested under the SQN ASME Section XI Inservice Testing Program~~.

Enclosure 2, Volume 12, Rev. 0, Page 128 of 704

BASES

ACTIONS (continued)

B.1

With ~~two~~ one or more ~~ADV~~ ARV lines inoperable for reasons other than Condition A, action must be taken to restore all ~~but one ADV~~ ARV lines to OPERABLE status. ~~Since the block valve can be closed to isolate an ADV, some repairs may be possible with the unit at power.~~ The 24 hour Completion Time is reasonable to repair inoperable ~~ADV~~ ARV lines, based on the availability of the Steam ~~Bypass~~ Dump System and MSSVs, and the low probability of an event occurring during this period that would require the ~~ADV~~ ARV lines. 6 1 2

C.1 and C.2

If the ~~ADV~~ ARV lines cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4, without reliance upon steam generator for heat removal, within ~~[~~24~~]~~ hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. 1 3

SURVEILLANCE REQUIREMENTS

SR 3.7.4.1

To perform a controlled cooldown of the RCS, the ~~ADVs~~ ARVs must be able to be opened ~~either~~ remotely ~~or locally~~ and throttled through their full range. This SR ensures that the ~~ADVs~~ ARVs are tested through a full control cycle at least once per fuel cycle. Performance of inservice testing or use of an ~~ADV~~ ARV during a unit cooldown may satisfy this requirement. ~~[Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. The Frequency is acceptable from a reliability standpoint.~~ 2 1 7

~~OR~~

The Surveillance Frequency is controlled under the ~~Surveillance Frequency Control~~ ~~Inservice Testing~~ Program. ~~7~~

stet

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ 8

BASES

ACTIONS (continued)

B.1

With ~~two~~ one or more ~~ADV~~ ARV lines inoperable for reasons other than Condition A, action must be taken to restore all ~~but one ADV~~ ARV lines to OPERABLE status. ~~Since the block valve can be closed to isolate an ADV, some repairs may be possible with the unit at power.~~ The 24 hour Completion Time is reasonable to repair inoperable ~~ADV~~ ARV lines, based on the availability of the Steam ~~Bypass~~ Dump System and MSSVs, and the low probability of an event occurring during this period that would require the ~~ADV~~ ARV lines. 6 1 2

C.1 and C.2

If the ~~ADV~~ ARV lines cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4, without reliance upon steam generator for heat removal, within ~~[~~24~~]~~ hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. 1 3

SURVEILLANCE REQUIREMENTS

SR 3.7.4.1

To perform a controlled cooldown of the RCS, the ~~ADVs~~ ARVs must be able to be opened ~~either~~ remotely ~~or locally~~ and throttled through their full range. This SR ensures that the ~~ADVs~~ ARVs are tested through a full control cycle at least once per fuel cycle. Performance of inservice testing or use of an ~~ADV~~ ARV during a unit cooldown may satisfy this requirement. ~~[Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. The Frequency is acceptable from a reliability standpoint.~~ 2 1 7

~~OR~~

The Surveillance Frequency is controlled under the ~~Surveillance Frequency Control~~ ~~Inservice Testing~~ Program. ~~7~~

stet

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 8

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.4 BASES, ATMOSPHERIC RELIEF VALVES (ARVs)

1. ISTS B 3.7.4, "Atmospheric Dump Valves" title has been changed to "Atmospheric Relief Valves" to reflect the name used at Sequoyah Nuclear Plant. Additionally, the acronyms "ADVs" and "ADV" have been changed to "ARVs" and "ARV", respectively.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

4. Changes are made to be consistent with SQN UFSAR accident analysis describing the use of the ARVs in the mitigation of the steam generator tube rupture event concurrent with a loss of offsite power. The accident analysis assumes the steam generator ARVs associated with the unaffected steam generators are available to cool down the RCS and terminate the primary to secondary leak.

5. SQN Unit 1 and 2 Steam Generator Tube Rupture accident analysis does not assume a single failure.

6. Changes are made to be consistent with changes made to the Specification.

7. ISTS SR 3.7.4.1 provides two options for controlling the Frequency of the Surveillance Requirement. SQN is proposing to control the ARV Surveillance Frequency under the ~~Inservice Testing~~ Program. ~~The ARVs are ASME Section XI Code Class valves at SQN and as such are tested under the SQN ASME Section XI Inservice Testing Program.~~

8. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

Surveillance Frequency Control

Enclosure 2, Volume 12, Rev. 0, Page 142 of 704

Licensee Response/NRC Response/NRC Question Closure

Id	**173**
NRC Question Number	**MEH-001**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**7/16/2014**
Notification	**Scott Bowman** **Michelle Conner** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Matthew Hamm**
Date Added	**7/16/2014 11:50 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**65**
NRC Question Number	**MEH-002**
Category	**Technical**
ITS Section	**3.7**
ITS Number	**3.7.7**
DOC Number	
JFD Number	**3**
JFD Bases Number	
Page Number (s)	**242**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

Page 243 of 704 of Enclosure 2 Volume 12 contains JFD 3 for non-inclusion of iSTS SR 3.7.7.2, JFD 3 states that the SQN CCS does not include valves that receive an actuation signal.

UFSAR 9.2.1.7.6 generally describes the CCS valves. It states, in part,

> **Valve LCV-70-63 is an automatic air-operated, fail-closed, makeup water level control valve for the surge tank. Valve FCV-70-66 is an air-operated, fail-closed, vent valve for the surge tank that closes on a high radiation signal. Valve FCV-70-85 is an air-operated, fail-closed, containment isolation valve to the excess letdown heat exchanger.**

The UFASR excerpt appears to conflict with the JFD statement that the SQN CCS does not include valves that receive an actuation signal. Specifically, FCV-70-66 appears to receive a close actuation signal on high radiation signal.

Provide additional information on the valves listed in the excerpt above, including which SR's their actuation function is tested under. If, FCV-70-66 is indeed a CCS valve that receives an actuation signal, provide additional justification for non-inclusion of iSTS SR 3.7.7.2 or propose inclusion of iSTS SR 3.7.7.2.

Attach File 1

Attach File 2

Issue Date	**5/16/2014**
Added By	**Matthew Hamm**
Date Modified	
Modified By	
Date Added	**5/16/2014 12:35 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**132**
NRC Question Number	**MEH-002**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**In response to RAI MEH-002, SQN is providing the following information:**

The justification for the deletion of ISTS SR 3.7.7.2 is contained in justification for deviation (JFD) 3. ISTS SR 3.7.7.2 states, "Verify each CCW automatic valve in the flow path that is not locked sealed or otherwise secured in the correct position, actuates to the correct position on an actual or simulated actuation signal."

(1) Component cooling water system (CCS) Valve, LCV-70-63, is an automatic, air-operated, fail-closed, makeup water level control valve for the surge tank. Component cooling water leakage from the system is detected by a low-level switch which activates LCV-70-63 to provide demineralized makeup water to the system. LCV-70-63 is not in the component cooling water flow path nor does it receive an Engineered Safety Feature (ESF) actuation signal. Therefore, LCV−70−63 would not be required to be tested in accordance with ISTS SR 3.7.7.2.

(2) CCS Valve, FCV-70-66, is an air-operated, fail-closed, vent valve for the surge tank that closes on a high radiation signal. Radiation Monitors, 0-RE-90-123, 1-RE-90-123 and 2−RE−90−123, continuously monitor the CCS line downstream of a CCS heat exchanger for activity levels indicative of a reactor coolant leak from either the Reactor Coolant or Residual Heat Removal Systems. On a high radioactivity alarm signal from any of the three channels, discharges from the vent line of the CCS surge tank are stopped by automatic closure of the isolation valve, FCV-70-66, in the vent line. This control action halts the introduction of radioactivity from the surge tank into the building air space. The high radioactivity setpoint is established such that counting rates above normal background will initiate the automatic control action. LCV-70-63 is not in the component cooling water flow path nor does it receive an ESF actuation signal. The listed radiation monitors are not in the technical specification instrumentation requirements nor do they send a signal to the ESF actuation system to generate an actuation signal. Therefore, FCV−70−66 would not be required to be tested in accordance with ISTS SR 3.7.7.2.

(3) CCS Valve, FCV-70-85, is an air-operated, fail-closed, containment isolation valve (Penetration X-035) to the excess letdown heat exchanger.

The valve will be tested as part of ITS SR 3.6.3.6, which states, "Verify each automatic containment isolation valve that is not locked, sealed or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal." LCV-70-85 is tested in accordance with ITS SR 3.6.3.6 to ensure safety function is preserved. Therefore, LCV−70−85 would not require additional testing in ISTS SR 3.7.7.2.

Therefore, the deletion of ISTS SR 3.7.7.2 is justified as being not needed, because the three valves discussed in UFSAR Section 9.2.1.7.6 are either not in the component cooling water flow path or are tested by a different surveillance requirement.

Response Date/Time	6/20/2014 5:05 AM
Closure Statement	
Question Closure Date	
Notification	Scott Bowman Michelle Conner Matthew Hamm Khadijah Hemphill Andrew Hon Ray Schiele
Added By	Scott Bowman
Date Added	6/20/2014 4:03 AM
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**255**
NRC Question Number	**MEH-002**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/8/2014**
Notification	**Scott Bowman** **Michelle Conner** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Matthew Hamm**
Date Added	**8/8/2014 1:55 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**107**
NRC Question Number	**MEH-003**
Category	**Technical**
ITS Section	**3.7**
ITS Number	**3.7.9**
DOC Number	
JFD Number	**5**
JFD Bases Number	
Page Number(s)	**312**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

The proposed SR 3.7.9.2 text is:

Verify average water temperature of UHS is:
a) ≤ 81°F with any ERCW train aligned to support one pump per train operation,
b) < 83°F with one ERCW supply strainer and two ERCW pumps OPERABLE on that train, and
c) ≤ 87°F with two ERCW supply strainers and two ERCW pumps OPERABLE per train.

It appears the frequency of proposed SR 3.7.9.2 is a frequency that is related to specific conditions or conditions for the performance of a surveillance requirement. These types of frequencies were not permitted to be relocated to the Surveillance Frequency Control Program. However, JFD 5 on page 312 of 704 of Enclosure 2, Volume 12 states that the proposed frequency for SR 3.7.9.2 is "In Accordance with the Surveillance Frequency Control Program." Please provide a more detailed explanation as to why the proposed frequency for SR 3.7.9.2 does not meet any of the 4 types of frequencies specifically not allowed to be relocated by TSTF-425.

Attach File 1	
Attach File 2	
Issue Date	**5/29/2014**
Added By	**Matthew Hamm**

Date Modified	
Modified By	
Date Added	**5/29/2014 3:05 PM**
Notification	**Scott Bowman** **Michelle Conner** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**142**
NRC Question Number	**MEH-003**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**As indicated in Discussion of Change (DOC) LA01, the Frequency of proposed ITS SR 3.7.9.2 is 24 hours consistent with CTS 4.7.5.1. This CTS frequency of “at least once per 24 hours” is being relocated to the Surveillance Frequency Control Program. This frequency is time-based and is not related to specific conditions or conditions for performance of the surveillance. Proposed SR 3.7.9.2 must be performed every 24 hours regardless of the Essential Raw Cooling Water (ERCW) System configuration. The ERCW System configurations specified in a), b), and c) of proposed SR 3.7.9.2 are provided to differentiate when each specified average water temperature acceptance criteria must be met to satisfy SR 3.7.9.2 and does not alter when SR 3.7.9.2 must be performed. Therefore, the proposed relocated frequency of every 24 hours: 1) does not reference other approved programs; 2) is not purely event driven; 3) does not have a time component performing the surveillance on a one−time basis once the event occurs; and 4) is not related to a specific condition or conditions for the performance of a surveillance requirement (e.g., when the ERCW System configuration is altered).**
Response Date/Time	**6/20/2014 2:40 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman Michelle Conner Matthew Hamm Khadijah Hemphill Andrew Hon Ray Schiele**
Added By	**Scott Bowman**
Date Added	**6/20/2014 1:41 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**254**
NRC Question Number	**MEH-003**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/8/2014**
Notification	**Scott Bowman** **Michelle Conner** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Matthew Hamm**
Date Added	**8/8/2014 1:55 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**147**
NRC Question Number	**MEH-004**
Category	**Technical**
ITS Section	**3.1**
ITS Number	**3.1.7**
DOC Number	
JFD Number	**2**
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**The proposed non adoption of STS 3.1.7 Condition C and addition of Completion Times for the described condition of STS 3.1.7 Condition C to Conditions A and B is not the STS format. The proposed additional CTs for Conditions A and B appear to have a negative impact on the human factors/readability improvement of having a specific and separate Condition C. JFD 2 on page 263 of 356 appears to lack sufficient justification for non adoption of STS format and degradation of the human factors/readability aspects of the proposed TS. Please provide further justification for the proposed change or change the proposal to adopt STS 3.1.7 Condition C.**
Attach File 1	
Attach File 2	
Issue Date	**6/9/2014**
Added By	**Matthew Hamm**
Date Modified	
Modified By	
Date Added	**6/9/2014 12:10 PM**
Notification	**Scott Bowman** **Matthew Hamm** **Andrew Hon** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**364**
NRC Question Number	**MEH-004**
Select Application	**Licensee Response**
Attachment 1	**RAI MEH 004 Attachment 1 R1.pdf** (347KB)
Attachment 2	
Response Statement	

In response to MEH-004, ISTS 3.1.7 Condition C, on pages 253 and 260 of Enclosure 2, Volume 6, will be retained in the SQN ITS. The proposed additional Completion Times associated with verifying the position of the rods with inoperable position indicators immediately after a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position for ITS 3.1.7 Conditions A and B, on pages 249, 250, 253, 254, 256, 257, 260, and 261, will be deleted (Inserts 2 and 4). Additionally, the following changes will be necessary:

1. **CTS markups will be revised to indicate the cross reference to ITS Condition C. Subsequent cross references, as needed, will be revised based on the addition of ITS Condition C. (Pages 240, 241, 243, and 244)**

2. **Discussion of change (DOC) M03 will be added, as well as, DOC M03 indicators. CTS 3.1.3.2 Actions a and b require immediate verification of the non-indicating rod's position if a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position. ITS 3.1.7 Required Action C.1 requires verification of a rod's position if a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position and allows 4 hours for completion of the verification. DOC M03 provides the justification for changing the CTS 3.1.3.2 Action a and b Completion Time of immediately to the ITS 3.1.7 Required Action C.1 Completion Time of 4 hours. (Pages 240, 243, and 247)**

3. **DOC L02 will be added, as well as, DOC L02 indicators. CTS 3.1.3.2 Action b, for more than one rod position indicator per bank inoperable, requires immediate verification of the non-indicating rod's position if a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position. ITS 3.1.7 Required Action C.2 provides an option to reduce THERMAL POWER to < 50% RTP if one or more rods with an inoperable position indicator have been moved in excess of 24 steps in one direction since the last determination of the rod's position. DOC L02 provides the justification for adopting ITS 3.1.7 Required Action C.2 for**

CTS 3.1.3.2 Action b. (Pages 241, 244, and 248)

4. **DOCs M01 and L01 will be revised to reflect changes made by the addition ITS 3.1.7 Condition C. (Pages 246 and 248)**

5. **The ISTS markups will be revised to correct the CTS cross references in the right hand margin. (Pages 253 and 260)**

6. **The ISTS markups will be revised to reflect the addition of ITS 3.1.7 Condition C (Previously proposed ITS Condition C will be become D and Condition D will become E.). (Pages 253, 255, 260, and 262)**

7. **Justification for deviation (JFD) 2 associated with the deletion of ISTS 3.1.7 Condition C will be deleted, as well as, JFD 2 indicators. (Pages 249, 250, 253 - 257, 260, 261, 262, and 263)**

8. **The ITS 3.1.7 Bases for Action A.1 and B.1, B.2, B.3, and B.4 will be revised to reflect the addition of ITS 3.1.7 Condition C. ITS 3.1.7 Bases Inserts 5 and 6 will be deleted. (Pages 271 - 274 and 283 - 286)**

9. **The ITS 3.1.7 Bases will be revised to retain ISTS Bases text associated with ITS 3.1.7 Action C. (Pages 271, 273, 275, 283, 285, and 287)**

10. **Bases JFD indicators will be revised to reflect the addition of ITS 3.1.7 Condition C. (Pages 271 - 275 and 283 - 287)**

11. **The ISTS 3.1.7 Bases markups will be revised to reflect the addition of ITS 3.1.7 Bases Actions C.1 and C.2 (Previously proposed ITS Bases Actions C.1.1 and C.1.2 will be become D.1.1 and D.1.2, C.2 will become D.2, and D.1 will become E.1.). (Pages 275 and 287**

12. **ISTS 3.1.7 Bases Action D.2 will be revised. Specifically, the ISTS phrase, "per Required Actions C.1.1 and C.1.2," is being retained, however, the Required Actions will be revised to C.1 and C.2. A JFD 5 indicator will be added to the right hand margin to justify the change. (Pages 275 and 287)**

See Attachment 1 for draft revised ISTS and CTS markups and associated changes.

Response Date/Time: **9/30/2014 1:55 PM**

Closure Statement:

Question Closure Date:

Notification: **Scott Bowman**
Michelle Conner
Matthew Hamm
Khadijah Hemphill
Andrew Hon

	Ray Schiele
Added By	**Scott Bowman**
Date Added	**9/30/2014 12:49 PM**
Date Modified	
Modified By	

A01

ITS ITS 3.1.7

REACTIVITY CONTROL SYSTEMS

POSITION INDICATION SYSTEMS - OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.1.7 3.1.3.2 The shutdown and control rod position indication system and the demand position indication system shall be OPERABLE ~~and capable of determining the control rod positions within ± 12 steps.~~ LA01

Applicability APPLICABILITY: MODES 1 and 2.

ACTION:

L01 Add proposed ACTIONS Note 1

ACTION A

a. With a maximum of one rod position indicator per bank inoperable either:

Condition C

within 4 hours

M03

1. Determine the position of the non-indicating rod(s) indirectly by the movable incore detectors at least once per 12 hours and ~~immediately~~ after any motion of the non-indicating rod which exceeds 24 steps in one direction since the last determination of the rod's position, or

2.* a) Determine the position of the non-indicating rod indirectly by the movable incore detectors within 8 hours and once every 31 days thereafter and within 8 hours if rod control system parameters indicate unintended movement, and

b) Review the parameters of the rod control system for indications of unintended rod movement for the rod with an inoperable position indicator within 16 hours and once per 8 hours thereafter, and

c) Determine the position of the non-indicating rod indirectly by the movable incore detectors within 8 hours if the rod with an inoperable position indicator is moved greater than 12 steps and prior to increasing THERMAL POWER above 50% RATED THERMAL POWER and within 8 hours of reaching 100% RATED THERMAL POWER, or

3. Reduce THERMAL POWER to less than 50% of RATED THERMAL POWER within 8 hours.

M01 Add proposed ACTION ~~D~~ E

ACTION B

b. With more than one rod position indicator per bank inoperable either:

within 4 hours

M03

Condition C

1. Determine the position of the non-indicating rod(s) indirectly by the movable incore detectors at least once per 12 hours, and ~~immediately~~ after any motion of the non-indicating rod which exceeds 24 steps in one direction since the last determination of the rod's position, and

Required Action A.2 Note

* Rod position monitoring by Actions 2.a), 2.b), and 2.c) may only be applied to one inoperable rod position indicator ~~and shall only be allowed: (1) until the end of the current cycle, or (2) until an entry into MODE 5 of sufficient duration, whichever occurs first, when the repair of the inoperable rod position indication can safely be performed. Actions 2.a), 2.b), and 2.c) shall not be allowed after the plant has been in MODE 5 or other plant condition, for a sufficient period of time, in which the repair of the inoperable rod position indication could have safely been performed.~~

Add proposed ACTIONS Note 2 A02

A01

ITS ITS 3.1.7

REACTIVITY CONTROL SYSTEMS

POSITION INDICATION SYSTEM - OPERATING

2. Place the control rods under manual control, and monitor and record Reactor Coolant System average temperature (T_{avg}) at least once per hour, and

ACTION B

3. Restore the rod position indicators to OPERABLE status within 24 hours such that a maximum of one rod position indicator per bank is inoperable, or

ACTION ~~D~~ E

Add Proposed Required Action C.2

L02

4. Be in HOT STANDBY within the next 6 hours.

c. With a maximum of one demand position indicator per bank inoperable either:

ACTION ~~C~~ D

1. Verify that all rod position indicators for the affected bank are OPERABLE and that the most withdrawn rod and the least withdrawn rod of the bank are within a maximum of 12 steps of each other at least once per 12 hours, or

~~2.~~ Reduce THERMAL POWER to less than 50% of RATED THERMAL POWER within 8 hours.

Add proposed ACTION ~~D~~ E

M01

SURVEILLANCE REQUIREMENTS

~~4.1.3.2 Each rod position indicator shall be determined to be OPERABLE by verifying that the demand position indication system and the rod position indication system agree within 12 steps at least once per 12 hours except during time intervals when the Rod Position Deviation Monitor is inoperable, then compare the demand position indication system and the rod position indication system at least once per 4 hours~~.

Add proposed SR 3.1.7.1

M02

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A01

ITS

ITS 3.1.7

REACTIVITY CONTROL SYSTEMS

POSITION INDICATION SYSTEMS - OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.1.7

3.1.3.2 The shutdown and control rod position indication system and the demand position indication system shall be OPERABLE ~~and capable of determining the control rod positions within ± 12 steps~~.

LA01

Applicability

APPLICABILITY: Modes 1 and 2.

ACTION:

Add proposed ACTIONS Note 1

L01

a. With a maximum of one rod position indicator per bank inoperable either:

within 4 hours

Condition C

1. Determine the position of the non-indicating rod(s) indirectly by the movable incore detectors at least once per 12 hours and ~~immediately~~ after any motion of the non-indicating rod which exceeds 24 steps in one direction since the last determination of the rod's position, or

M03

ACTION A

2.* a) Determine the position of the non-indicating rod indirectly by the movable incore detectors within 8 hours and once every 31 days thereafter and within 8 hours if rod control system parameters indicate unintended movement, and

b) Review the parameters of the rod control system for indications of unintended rod movement for the rod with an inoperable position indicator within 16 hours and once per 8 hours thereafter, and

c) Determine the position of the non-indicating rod indirectly by the movable incore detectors within 8 hours if the rod with an inoperable position indicator is moved greater than 12 steps and prior to increasing THERMAL POWER above 50% RATED THERMAL POWER and within 8 hours of reaching 100% RATED THERMAL POWER, or

3. Reduce THERMAL POWER TO less than 50% of RATED THERMAL POWER within 8 hours.

M01

Add proposed ACTION ~~D~~ E

b. With more than one rod position indicator per bank inoperable either:

Condition C

ACTION B

1. Determine the position of the non-indicating rod(s) indirectly by the movable incore detectors at least once per 12 hours, and ~~immediately~~ after any motion of the non-indicating rod which exceeds 24 steps in one direction since the last determination of the rod's position, and

within 4 hours

M03

Required Action A.2 Note

* Rod position monitoring by Actions 2.a), 2.b), and 2.c) may only be applied to one inoperable rod position indicator ~~and shall only be allowed: (1) until the end of the current cycle, or (2) until an entry into MODE 5 of sufficient duration, whichever occurs first, when the repair of the inoperable rod position indication can safely be performed. Actions 2.a), 2.b), and 2.c) shall not be allowed after the plant has been in MODE 5 or other plant condition, for a sufficient period of time, in which the repair of the inoperable rod position indication could have safely been performed.~~

Add proposed ACTIONS Note 2

A02

A01

ITS ITS 3.1.7

REACTIVITY CONTROL SYSTEMS

POSITION INDICATION SYSTEMS - OPERATING

2. Place the control rods under manual control, and monitor and record Reactor Coolant System average temperature (T_{avg}) at least once per hour, and

ACTION B

3. Restore the rod position indicators to OPERABLE status within 24 hours such that a maximum of one rod position indicator per bank is inoperable, or

ACTION ~~D~~ E

Add Proposed Required Action C.2

L02

4. Be in HOT STANDBY within the next 6 hours.

c. With a maximum of one demand position indicator per bank inoperable either:

ACTION ~~C~~ D

1. Verify that all rod position indicators for the affected bank are OPERABLE and that the most withdrawn rod and the least withdrawn rod of the bank are within a maximum of 12 steps of each other at least once per 12 hours, or

2. Reduce THERMAL POWER to less than 50% of RATED THERMAL POWER within 8 hours.

Add proposed ACTION ~~D~~ E

M01

SURVEILLANCE REQUIRMENTS

~~4.1.3.2 Each rod position indicator shall be determined to be OPERABLE by verifying that the demand position indication system and the rod position indication system agree within 12 steps at least once per 12 hours except during time intervals when the Rod Position Deviation Monitor is inoperable, then compare the demand position indication system and the rod position indication system at least once per 4 hours.~~

Add proposed SR 3.1.7.1

M02

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DISCUSSION OF CHANGES
ITS 3.1.7, ROD POSITION INDICATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG - 1431, Rev. 4.0, "Standard Technical Specifications - Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.1.3.2 Note * applies to Actions 2.a, 2.b, and 2.c and may be only applied to one inoperable rod position indicator. In this condition, the inoperable rod position indicator shall only be allowed until either the end of the current cycle, or until an entry into MODE 5 of sufficient duration, whichever occurs first, when the repair of the inoperable rod position indication can safely be performed. Actions 2.a, 2.b, and 2.c shall not be allowed after the plant has been in MODE 5 or other plant condition, for a sufficient period of time, in which the repair of the inoperable rod position indication could have safely been performed. ITS 3.1.7 ACTIONS Note 2 states that LCO 3.0.4.a and b are not applicable for Required Actions A.2.1 and A.2.2 following startup from a refueling outage, or following entry into MODE 5 of sufficient duration to safely repair an inoperable rod position indication. This changes the CTS by rewording the allowance for one rod position indicator inoperable to be consistent with ITS terminology.

This change is designated as an administrative change since the change does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.1.3.2 ACTION a and c do not contain an ACTION to follow if the provided ACTIONS cannot be met. Therefore, CTS 3.0.3 would be entered, which would allow 1 hour to initiate a shutdown and 7 hours to be in HOT STANDBY. ITS 3.1.7 ACTION ~~D~~ requires if the Required Actions and associated Completion Time ~~of ACTION A or C~~ are not met, to be in MODE 3 within 6 hours. This changes the CTS by eliminating the one hour to initiate a shutdown and consequently allows one hour less for the unit to be in MODE 3.

E

S

This change is acceptable because it provides an appropriate compensatory measure for the described conditions. If any Required Action and associated Completion Time cannot be met, the unit must be placed in a MODE in which the LCO does not apply. The LCO is applicable in MODES 1 and 2. Requiring a shutdown to MODE 3 is appropriate in this condition. The one hour allowed by CTS 3.0.3 to prepare for a shutdown is not needed because the operators have had time to prepare for the shutdown while attempting to follow the Required Actions and associated Completion Times. This change is designated as more restrictive because it allows less time to shutdown than is allowed in the CTS.

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DISCUSSION OF CHANGES
ITS 3.1.7, ROD POSITION INDICATION

M02 CTS 4.1.3.2 requires that each rod position indicator shall be determined to be OPERABLE by verifying that the demand position indication system and the rod position indication system agree within 12 steps at least once per 12 hours except during time intervals when the Rod Position Deviation Monitor is inoperable, then compare the demand position indication system and the rod position indication system at least once per 4 hours. ITS 3.1.7 does not contain this requirement because it is duplicative of CTS 4.1.3.1.1 (ITS SR 3.1.4.1). A new Surveillance has been added (ITS SR 3.1.7.1) to verify each RPI agrees within 12 steps of the group demand position for the full indicated range of rod travel, once prior to criticality after each removal of the reactor head. This changes the CTS by adding a new Surveillance Requirement.

The purpose of ITS SR 3.1.7.1 is to provide additional assurance that the rod position indication system is operating correctly. This change is acceptable because it provides additional assurance that the rod position indication channels are OPERABLE. This change is designated as more restrictive because it adds a new Surveillance Requirement to the CTS.

M03

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS LCO 3.1.3.2 requires the shutdown and control rod position indication system and the demand position indication system to be OPERABLE and capable of determining the control rod positions within ± 12 steps. ITS LCO 3.1.7 requires the analog Rod Position Indication System and the Demand Position Indication System to be OPERABLE but the details of what constitutes an OPERABLE system are moved to the Bases. This changes the CTS by removing the details of what constitutes an OPERABLE system to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS retains the requirement that the Rod Position Indication System and Demand Position Indication System be OPERABLE. The details on the capability requirements of the systems do not need to appear in the specification in order for the requirement to apply. Additionally, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

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DOC M03

CTS LCO 3.1.3.2 states," The shutdown and control rod position indication system and the demand position indication system shall be OPERABLE and capable of determining the control rod positions within ± 12 steps." CTS 3.1.3.2 ACTION a.1 states, "With a maximum of one rod position indicator per bank inoperable either: Determine the position of the non-indicating rod(s) indirectly by the movable incore detectors at least once per 12 hours and immediately after any motion of the non-indicating rod which exceeds 24 steps in one direction since the last determination of the rod's position, or." CTS 3.1.3.2 ACTION b.1 states, "With more than one rod position indicator per bank inoperable either: 1. Determine the position of the non-indicating rod(s) indirectly by the movable incore detectors at least once per 12 hours, and immediately after any motion of the non-indicating rod which exceeds 24 steps in one direction since the last determination of the rod's position, and." CTS 3.1.3.2 ACTION a.1 and b.1 both require identical compensatory measures to be performed "immediately." ITS 3.1.7 CONDITION C. states, "One or more rods with inoperable position indicators have been moved in excess of 24 steps in one direction since the last determination of the rod's position." ITS 3.1.7 Required Action C.1 states, "Verify the position of the rods with inoperable position indicators indirectly by using movable incore detectors," and has a Completion Time of 4 hours. The CTS 3.1.3.2 and ITS 3.1.7 actions for verification of rod position are identical with different completion times. This changes the CTS by limiting the time to 4 hours to complete the verification of the position of the rods with inoperable position indicators.

This change is acceptable because a time limit is placed on the length of time required to verify rod position after rod movement of 24 or more steps. If the rod position cannot be verified within the proposed Completion Time of 4 hours, the unit's power will be reduced to < 50% RTP which will ensure undesirable power distributions will be minimized. This change is designated as more restrictive because it restricts the time allowed to complete the verification of the position of the rods with inoperable position indicators.

DISCUSSION OF CHANGES
ITS 3.1.7, ROD POSITION INDICATION

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.1.3.2 ACTION a covers the inoperability for a maximum of one rod position indicator per bank. CTS 3.1.3.2 ACTION b covers the inoperability for more than one rod position indicator per bank. CTS 3.1.3.2 ACTION c covers the inoperability for a maximum of one demand position indicator per bank. ITS 3.1.7 ACTIONS are modified by Note 1 that states "Separate Condition entry is allowed for each inoperable rod position indicator and each demand position indicator." ITS 3.1.7 ACTION A covers inoperability for one rod position indicator per bank. ITS 3.1.7 ACTION B covers inoperability for more than one rod position indicator per bank. ITS 3.1.7 ACTION ~~C~~ D covers inoperability for one demand position indicator bank for one or more banks. This changes the CTS by allowing separate Condition entry for each inoperable rod position indicator and each demand position indicator.

The purpose of CTS 3.1.3.2 ACTION a is to provide compensatory actions for a maximum of one rod position indicator per bank. The purpose of CTS 3.1.3.2 ACTION b is to provide compensatory actions for more than one rod position indicator per bank. The purpose of CTS 3.1.3.2 ACTION c is to provide compensatory actions for one demand position indicator per bank. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a DBA occurring during the repair period. This change will allow separate Condition entry for each inoperable rod position indicator and each inoperable demand position indicator while the CTS does not. The ITS will allow each inoperable rod position indicator or each inoperable demand position indicator to be tracked separately. This change is acceptable because the Required Actions for each Condition provide appropriate compensatory actions for inoperable position indication. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L02

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DOC L02

(Category 4 – Relaxation of Required Action) CTS LCO 3.1.3.2 states, "The shutdown and control rod position indication system and the demand position indication system shall be OPERABLE and capable of determining the control rod positions within ± 12 steps." The CTS 3.1.3.2 ACTION for, "a maximum of one rod position indicator per bank inoperable," requires the performance of either ACTION a.1 or a.2 or a.3. CTS 3.1.3.2 ACTION a.3 requires the reduction of THERMAL POWER to less than 50% of RATED THERMAL POWER within 8 hours. The CTS 3.1.3.2 ACTION for, "more than one rod position indicator per bank inoperable" requires the performance of ACTION b.1 and b.2 and b.3 or b.4. CTS 3.1.3.2 ACTION b.4 requires the unit to be placed in HOT STANDBY within the next 6 hours. CTS 3.1.3.2 ACTION a. and ACTION b. do not have the same end state. ITS 3.1.7 CONDITION C. states, "One or more rods with inoperable position indicators have been moved in excess of 24 steps in one direction since the last determination of the rod's position." The ITS 3.1.7 CONDITION C entry point of "one or more rods" includes one rod or more than one rod and is identical to the entry points for both CTS 3.1.3.2 ACTION a.1 and b.1. ITS 3.1.7 CONDITION C requires the performance of either Required Action C.1 or Required Action C.2. ITS Required Action C.1 states, "Verify the position of the rods with inoperable position indicators indirectly by using movable incore detectors," and is identical to CTS 3.1.3.2 ACTION a.1 and b.1. ITS Required Action C.2 states, "Reduce THERMAL POWER to < 50% RTP," and is identical to CTS 3.1.3.2 ACTION a.3, but is not an option for CTS 3.1.3.2 ACTION b. This changes the CTS by allowing a reduction in RTP as an alternative to the verification of a rod's position.

The purpose of the CTS ACTION to "verify the position of the rods with inoperable position indicators indirectly by using movable incore detectors" is to ensure a misaligned rod does not go undetected and cause a power imbalance in the core. This change is acceptable because, if within the required Completion Time of 4 hours, for ITS Required Action C.1, the rod positions have not been determined, THERMAL POWER must be reduced to < 50% RTP to avoid undesirable power distributions that could result from continued operation at $\geq$ 50% RTP when one or more rods are misaligned by more than 24 steps. This change is designated as less restrictive because less stringent Required Actions are being applied in ITS than were applied in CTS.

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Rod Position Indication

3.1.3.2

LCO 3.1.7 The ~~[Digital]~~ Rod Position Indication ~~([D]RPI)~~ System and the Demand Position Indication System shall be OPERABLE. 1

Applicability

APPLICABILITY: MODES 1 and 2.

ACTIONS 5

---NOTE S---

1. Separate Condition entry is allowed for each inoperable rod position indicator and each demand position indicator. INSERT 1

CONDITION	REQUIRED ACTION		COMPLETION TIME
ACTION a A. One ~~[D]RPI~~ rod position indicator per ~~group~~ bank inoperable ~~for one or more groups~~.	A.1	Verify the position of the rods with inoperable position indicators indirectly by using movable incore detectors.	Once per ~~8~~ 12 hours (1) (4) ~~INSERT 2~~ (2)
	INSERT 3 (3) OR		
	A.~~2~~ 3	Reduce THERMAL POWER to ~~≤~~ < 50% RTP.	8 hours (3) (4)
ACTION b B. More than one ~~[D]RPI~~ rod position indicator per ~~group~~ bank inoperable.	B.1	Place the control rods under manual control.	Immediately (1) (4)
	AND		
	B.2	Monitor and record Reactor Coolant System T_{avg}.	Once per 1 hour
	AND		

4 **INSERT 1**

3.1.3.2 Note* 2. LCO 3.0.4.a and b are not applicable for Required Actions A.2.1 and A.2.2 following a startup from a refueling outage, or following entry into MODE 5 of sufficient duration to safely repair an inoperable rod position indication.

~~2~~ ~~**INSERT 2**~~

~~AND~~

~~Action a.1~~ ~~Immediately after a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position~~

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ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION b		B.3 Verify the position of the rods with inoperable position indicators indirectly by using the movable incore detectors.	Once per ~~8~~ 12 hours ~~INSERT 4~~	4 ~~2~~
		AND		
STET		B.4 Restore inoperable position indicators to OPERABLE status such that a maximum of one ~~[D]RPI~~ rod position indicator per ~~group~~ bank is inoperable.	24 hours	1 4
DOC M03 ACTION a.1 ACTION b.1 DOC L02	~~C. One or more rods with inoperable position indicators have been moved in excess of 24 steps in one direction since the last determination of the rod's position.~~	~~C.1 Verify the position of the rods with inoperable position indicators indirectly by using movable incore detectors.~~	~~[4] hours~~ 4 hours	~~2~~ 4
		~~OR~~		
		~~C.2 Reduce THERMAL POWER to ≤ 50% RTP.~~ <	~~8 hours~~	
DOC L01 ACTION c STET	~~D~~ ~~C~~. One demand position indicator per bank inoperable for one or more banks.	~~D~~ ~~C~~.1.1 Verify by administrative means all ~~[D]RPIs~~ rod position indicators for the affected banks are OPERABLE.	Once per ~~8~~ 12 hours	~~2~~ 4 1
		AND		
		~~D~~.1.2 Verify the most withdrawn rod and the least withdrawn rod of the affected banks are ≤ 12 steps apart.	Once per ~~8~~ 12 hours	~~2~~ 4
		OR		

2 ~~**INSERT 4**~~

~~AND~~

~~Action b.1~~ ~~Immediately after a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position~~

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
ACTION c		STET ~~D~~ C.2	Reduce THERMAL POWER to ~~≤~~ < 50% RTP.	8 hours	~~2~~ 4
ACTION b.4, DOC M02	STET ~~E~~ D. Required Action and associated Completion Time not met.	STET ~~E~~ D.1	Be in MODE 3.	6 hours	~~2~~

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.1.3.2	SR 3.1.7.1	Verify each ~~[D]RPI~~ rod position indicator agrees within ~~[~~12~~]~~ steps of the group demand position ~~for the [full indicated range]~~ at 20 and 215 steps of rod travel.	Once prior to criticality after each removal of the reactor head	1

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CTS

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Rod Position Indication

3.1.3.2 LCO 3.1.7 The ~~[Digital]~~ Rod Position Indication ~~([D]RPI)~~ System and the Demand Position Indication System shall be OPERABLE. 1

Applicability APPLICABILITY: MODES 1 and 2.

ACTIONS

--NOTE S-- 5

1. Separate Condition entry is allowed for each inoperable rod position indicator and each demand position indicator. INSERT 1

CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION a A. One ~~[D]RPI~~ rod position indicator per ~~group~~ bank inoperable ~~for one or more groups~~.	A.1 Verify the position of the rods with inoperable position indicators indirectly by using movable incore detectors.	Once per ~~8~~ 12 hours ~~INSERT 2~~	1 4 2
	INSERT 3		3
	OR		
	A.~~2~~ 3 Reduce THERMAL POWER to ~~≤~~ < 50% RTP.	8 hours	3 4
ACTION b B. More than one ~~[D]RPI~~ rod position indicator per ~~group~~ bank inoperable.	B.1 Place the control rods under manual control.	Immediately	1 4
	AND		
	B.2 Monitor and record Reactor Coolant System T_{avg}.	Once per 1 hour	
	AND		

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4 **INSERT 1**

3.1.3.2 Note* 2. LCO 3.0.4.a and b are not applicable for Required Actions A.2.1 and A.2.2 following a startup from a refueling outage, or following entry into MODE 5 of sufficient duration to safely repair an inoperable rod position indication.

~~2~~ **~~INSERT 2~~**

~~AND~~

~~Action a.1~~ ~~Immediately after a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position~~

ACTIONS (continued)

CTS	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION b		B.3 Verify the position of the rods with inoperable position indicators indirectly by using the movable incore detectors.	Once per ~~8~~ 12 hours ~~INSERT 4~~	4 ~~2~~
		AND		
		B.4 Restore inoperable position indicators to OPERABLE status such that a maximum of one ~~[D]RPI~~ rod position indicator per ~~group~~ bank is inoperable.	24 hours	1 4
STET DOC M03 ACTION a.1 ACTION b.1 DOC L02	~~C. One or more rods with inoperable position indicators have been moved in excess of 24 steps in one direction since the last determination of the rod's position.~~	~~C.1 Verify the position of the rods with inoperable position indicators indirectly by using movable incore detectors.~~	~~[4] hours~~ 4 hours	~~2~~ 4
		~~OR~~		
		~~C.2 Reduce THERMAL POWER to ≤ 50% RTP.~~ <	~~8 hours~~	
DOC L01 ACTION c STET	~~D~~ C. One demand position indicator per bank inoperable for one or more banks.	~~D~~ C.1.1 Verify by administrative means all ~~[D]RPIs~~ rod position indicators for the affected banks are OPERABLE.	Once per ~~8~~ 12 hours	~~2~~ 4 1
		AND		
		~~D~~ C.1.2 Verify the most withdrawn rod and the least withdrawn rod of the affected banks are ≤ 12 steps apart.	Once per ~~8~~ 12 hours	~~2~~ 4
		OR		

2 ~~**INSERT 4**~~

~~AND~~

~~Action b.1~~ ~~Immediately after a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position~~

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
ACTION c	STET	~~D~~ C.2	Reduce THERMAL POWER to ~~≤~~ < 50% RTP.	8 hours	~~2~~ 4
ACTION b.4, DOC M02	~~E~~ D. Required Action and associated Completion Time not met.	~~E~~ D.1	Be in MODE 3.	6 hours	~~2~~

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.1.3.2	SR 3.1.7.1	Verify each ~~[D]RPI~~ rod position indicator agrees within ~~[~~12~~]~~ steps of the group demand position ~~for the [full indicated range]~~ at 20 and 215 steps of rod travel.	Once prior to criticality after each removal of the reactor head	1

JUSTIFICATION FOR DEVIATIONS
ITS 3.1.7, ROD POSITION INDICATION

1. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

2. ~~ISTS 3.1.7 ACTION C has been deleted and a new conditional Completion time has been added to Required Action A.1 and B.3. The new completion time ensures that SQN current licensing basis is maintained, in that a verification of the position indicator is still being performed immediately after a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position. Additionally, ISTS 3.1.7 ACTIONS D and E has been changed to ITS 3.1.7 ACTIONS C and D, respectively, because of this deletion.~~

3. ISTS 3.1.7 ACTION A provides compensatory actions for when one rod position indicator is inoperable. ITS 3.1.7 provides an additional Required Action that can be taken when one rod position indicator is inoperable. The new Required Action allows the use of an alternate means other than the movable incore detectors to monitor the position of a control or shutdown rod when the analog rod position indication system is inoperable. This change reflects a current licensing basis that was approved by the NRC in Amendment 315 for Unit 1 and Amendment 304 for Unit 2 (ADAMS Accession No. ML063120575). Additionally ISTS 3.1.7 Required Action A.2 has been renumbered as ITS 3.1.7 Required Action A.3.

4. Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

5. Editorial changes made for enhanced clarity/consistency.

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BASES

ACTIONS

The ACTIONS Table is modified by a Note indicating that a separate Condition entry is allowed for each inoperable rod position indicator and each demand position indicator. This is acceptable because the Required Actions for each Condition provide appropriate compensatory actions for each inoperable position indicator.

INSERT 4 4

A.1

Rod Position Indication bank

When one ~~[D]RPI~~ channel per ~~group~~ fails, the position of the rod may ~~still~~ be determined indirectly by use of the movable incore detectors. ~~The Required Action may also be satisfied by ensuring at least once per 8 hours that F_Q satisfies LCO 3.2.1, $F^N_{\Delta H}$ satisfies LCO 3.2.2, and SHUTDOWN MARGIN is within the limits provided in the COLR, provided the nonindicating rods have not been moved.~~ Based on experience, normal power operation does not require excessive movement of banks. ~~If a bank has been significantly moved, the Required Action of C.1 or C.2 below is required.~~ Therefore, verification of RCCA position within the Completion Time of ~~8~~ 12 hours is adequate for allowing continued full power operation, since the probability of simultaneously having a rod significantly out of position and an event sensitive to that rod position is small. 2 1 5 3 4 4

STET

~~INSERT 5~~ 4

A.~~2~~ 3 4

Reduction of THERMAL POWER to ~~≤~~ < 50% RTP puts the core into a condition where rod position is not significantly affecting core peaking factors (Ref. 3). 4

The allowed Completion Time of 8 hours is reasonable, based on operating experience, for reducing power to ~~≤~~ < 50% RTP from full power conditions without challenging plant systems and allowing for rod position determination by Required Action A.1 above. 4

B.1, B.2, B.3, and B.4

Rod Position Indication bank fails

When more than one ~~[D]RPI~~ per ~~group fail~~, additional actions are necessary to ensure that acceptable power distribution limits are maintained, minimum SDM is maintained, and the potential effects of rod misalignment on associated accident analyses are limited. Placing the Rod Control System in manual assures unplanned rod motion will not occur. Together with the indirect position determination available via 2 1 5

4 **INSERT 4**

A second Note has been added to provide clarification that LCO 3.0.4.a and LCO 3.0.4.c are not applicable for Required Action A.2.1 and A.2.2 following startup from a refueling outage, or following entry into MODE 5 of sufficient duration to safely repair an inoperable rod position indication.

~~4~~ ~~**INSERT 5**~~

~~If one or more rods have been significantly moved (in excess of 24 steps in one direction, since the position was last determined), Required Action A.1 is still appropriate, but actions must be initiated immediately to begin verifying that the rod is still properly positioned, relative to their group positions. In this Required Action, the Completion Time only begins on discovery that both:~~

~~a. One rod position indication per bank is inoperable, and~~

~~b. A rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position.~~

~~If at any time during the existence of Condition A (one RPI per bank inoperable), a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position, this Completion Time begins to be tracked.~~

A.2.1, and A.2.2

When one RPI channel per bank fails, the position of the rod may still be determined indirectly by use of the movable incore detectors and reviewing the parameters of the rod control system for indications of unintended rod movement for the rod with the inoperable position indication. Therefore, verification of RCCA position within 8 hours and every 31days thereafter is adequate for allowing continued full power operation as long as a review of the parameters of the rod control system for indications of unintended rod movement for the rod with the inoperable position indication is performed within 16 hours and every 8 hours thereafter. Furthermore, if the rod control system parameters indicate unintended movement or if the rod with an inoperable position indicator is moved greater than 12 steps, then the verification of the RCCA position must be performed within 8 hours. As long as these compensatory actions are met, reactor operation can then continue until the end of the current cycle or until an entry into MODE 5 of sufficient duration that the repair of the inoperable rod position indication can safely be performed.

Required Actions A.2.1,and A.2.2 are modified by a Note directing that these Required Actions may only be applied to one inoperable rod position indicator.

BASES

ACTIONS (continued)

movable incore detectors will minimize the potential for rod misalignment. The immediate Completion Time for placing the Rod Control System in manual reflects the urgency with which unplanned rod motion must be prevented while in this Condition.

helps

Monitoring and recording reactor coolant T_{avg} ~~help~~ assure that significant changes in power distribution and SDM are avoided. The once per hour Completion Time is acceptable because only minor fluctuations in RCS temperature are expected at steady state plant operating conditions. 5

The position of the rods may be determined indirectly by use of the movable incore detectors. ~~The Required Action may also be satisfied by ensuring at least once per 8 hours that F_Q satisfies LCO 3.2.1, $F^N_{\Delta H}$ satisfies LCO 3.2.2, and SHUTDOWN MARGIN is within the limits provided in the COLR, provided the nonindicating rods have not been moved.~~ 3 Verification of control rod position once per ~~8~~ 12 hours is adequate 4 for allowing continued full power operation for a limited, 24 hour period, since the probability of simultaneously having a rod significantly out of position and an event sensitive to that rod position is small. The 24 hour Completion Time provides sufficient time to troubleshoot and restore the ~~[D]RPI~~ Rod Position Indication system to operation while avoiding the plant challenges 2 5 associated with the shutdown without full rod position indication.

Based on operating experience, normal power operation does not require excessive rod movement. If one or more rods has been significantly moved~~, the Required Action of C.1 or C.2 below is required~~. ~~4~~

~~INSERT 6~~

STET

~~C.1 and C.2~~

~~These Required Actions clarify that when one or more rods with inoperable position indicators have been moved in excess of 24 steps in one direction, since the position was last determined, the Required Actions of A.1 and A.2, [or B.1, as applicable] are still appropriate but must be initiated promptly under Required Action C.1 to begin verifying that these rods are still properly positioned, relative to their group positions.~~ ~~4~~

4 hours <

~~If, within [4] hours, the rod positions have not been determined, THERMAL POWER must be reduced to ≤ 50% RTP within 8 hours to avoid undesirable power distributions that could result from continued operation at > 50% RTP, if one or more rods are misaligned by more than 24 steps. The allowed Completion Time of [4] hours provides an acceptable period of time to verify the rod positions.~~ 4 hours 4

≥

4 ~~**INSERT 6**~~

~~(in excess of 24 steps in one direction, since the position was last determined), Required Action B.3 is still appropriate, but action must be initiated immediately to begin verifying that the rod is properly positioned, relative to its bank position. In this Required Action, the Completion Time only begins on discovery that both:~~

~~a. More than one RPI per bank is inoperable; and~~

~~b. A rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position.~~

~~If at any time during the existence of Condition B (more than one RPI per bank inoperable), a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position, this Completion Time begins to be tracked.~~

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BASES

ACTIONS (continued)

C

~~D~~.1.1 and ~~D~~.1.2 4

STET

Rod Position Indication

With one demand position indicator per bank inoperable, the rod positions can be determined by the ~~[D]RPI~~ System. Since normal power operation does not require excessive movement of rods, verification by administrative means that the rod position indicators are OPERABLE and the most withdrawn rod and the least withdrawn rod are ≤ 12 steps apart within the allowed Completion Time of once every ~~8~~ 12 hours is adequate. 2 4

C

~~D~~.2 4

STET

Reduction of THERMAL POWER to ~~≤~~ < 50% RTP puts the core into a condition where rod position is not significantly affecting core peaking factor limits (Ref. 3). The allowed Completion Time of 8 hours provides an acceptable period of time to verify the rod positions ~~per Required Actions C.1.1 and C.1.2~~ C.1 C.2 or reduce power to ~~≤~~ < 50% RTP. 4 4 1 5

D

~~E~~.1 4

If the Required Actions cannot be completed within the associated Completion Time, the plant must be brought to a MODE in which the requirement does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours. The allowed Completion Time is reasonable, based on operating experience, for reaching the required MODE from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.1.7.1

Rod Position Indication

Verification that the ~~[D]RPI~~ agrees with the demand position within ~~[~~12~~]~~ steps ensures that the ~~[D]RPI~~ Rod Position Indication is operating correctly. ~~Since the [D]RPI does not display the actual shutdown rod positions between 18 and 210 steps, only points within the indicated ranges are required in comparison.~~ INSERT 7 2 1

This Surveillance is performed prior to reactor criticality after each removal of the reactor head, as there is the potential for unnecessary plant transients if the SR were performed with the reactor at power.

BASES

ACTIONS

The ACTIONS Table is modified by a Note indicating that a separate Condition entry is allowed for each inoperable rod position indicator and each demand position indicator. This is acceptable because the Required Actions for each Condition provide appropriate compensatory actions for each inoperable position indicator.

INSERT 4 4

A.1

Rod Position Indication bank

When one ~~[D]RPI~~ channel per ~~group~~ fails, the position of the rod may ~~still~~ be determined indirectly by use of the movable incore detectors. ~~The Required Action may also be satisfied by ensuring at least once per 8 hours that F_Q satisfies LCO 3.2.1, $F^N_{\Delta H}$ satisfies LCO 3.2.2, and SHUTDOWN MARGIN is within the limits provided in the COLR, provided the nonindicating rods have not been moved.~~ Based on experience, normal power operation does not require excessive movement of banks. ~~If a bank has been significantly moved, the Required Action of C.1 or C.2 below is required.~~ Therefore, verification of RCCA position within the Completion Time of ~~8~~ 12 hours is adequate for allowing continued full power operation, since the probability of simultaneously having a rod significantly out of position and an event sensitive to that rod position is small. 2 1 5 3 4 4

STET

~~INSERT 5~~ 4

A.~~2~~ 3 4

Reduction of THERMAL POWER to ~~≤~~ < 50% RTP puts the core into a condition where rod position is not significantly affecting core peaking factors (Ref. 3). 4

The allowed Completion Time of 8 hours is reasonable, based on operating experience, for reducing power to ~~≤~~ < 50% RTP from full power conditions without challenging plant systems and allowing for rod position determination by Required Action A.1 above. 4

B.1, B.2, B.3, and B.4

Rod Position Indication bank fails

When more than one ~~[D]RPI~~ per ~~group fail~~, additional actions are necessary to ensure that acceptable power distribution limits are maintained, minimum SDM is maintained, and the potential effects of rod misalignment on associated accident analyses are limited. Placing the Rod Control System in manual assures unplanned rod motion will not occur. Together with the indirect position determination available via 2 1 5

4 **INSERT 4**

A second Note has been added to provide clarification that LCO 3.0.4.a and LCO 3.0.4.c are not applicable for Required Action A.2.1 and A.2.2 following startup from a refueling outage, or following entry into MODE 5 of sufficient duration to safely repair an inoperable rod position indication.

~~4~~ ~~**INSERT 5**~~

~~If one or more rods have been significantly moved (in excess of 24 steps in one direction, since the position was last determined), Required Action A.1 is still appropriate, but actions must be initiated immediately to begin verifying that the rod is still properly positioned, relative to their group positions. In this Required Action, the Completion Time only begins on discovery that both:~~

~~a. One rod position indication per bank is inoperable, and~~

~~b. A rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position.~~

~~If at any time during the existence of Condition A (one RPI per bank inoperable), a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position, this Completion Time begins to be tracked.~~

<u>A.2.1, and A.2.2</u>

When one RPI channel per bank fails, the position of the rod may still be determined indirectly by use of the movable incore detectors and reviewing the parameters of the rod control system for indications of unintended rod movement for the rod with the inoperable position indication. Therefore, verification of RCCA position within 8 hours and every 31days thereafter is adequate for allowing continued full power operation as long as a review of the parameters of the rod control system for indications of unintended rod movement for the rod with the inoperable position indication is performed within 16 hours and every 8 hours thereafter. Furthermore, if the rod control system parameters indicate unintended movement or if the rod with an inoperable position indicator is moved greater than 12 steps, then the verification of the RCCA position must be performed within 8 hours. As long as these compensatory actions are met, reactor operation can then continue until the end of the current cycle or until an entry into MODE 5 of sufficient duration that the repair of the inoperable rod position indication can safely be performed.

Required Actions A.2.1,and A.2.2 are modified by a Note directing that these Required Actions may only be applied to one inoperable rod position indicator.

BASES

ACTIONS (continued)

movable incore detectors will minimize the potential for rod misalignment. The immediate Completion Time for placing the Rod Control System in manual reflects the urgency with which unplanned rod motion must be prevented while in this Condition.

helps

Monitoring and recording reactor coolant T_{avg} ~~help~~ assure that significant changes in power distribution and SDM are avoided. The once per hour Completion Time is acceptable because only minor fluctuations in RCS temperature are expected at steady state plant operating conditions. 5

The position of the rods may be determined indirectly by use of the movable incore detectors. ~~The Required Action may also be satisfied by ensuring at least once per 8 hours that F_Q satisfies LCO 3.2.1, $F^N_{\Delta H}$ satisfies LCO 3.2.2, and SHUTDOWN MARGIN is within the limits provided in the COLR, provided the nonindicating rods have not been moved.~~ Verification of control rod position once per ~~8~~ 12 hours is adequate for allowing continued full power operation for a limited, 24 hour period, since the probability of simultaneously having a rod significantly out of position and an event sensitive to that rod position is small. The 24 hour Completion Time provides sufficient time to troubleshoot and restore the ~~[D]RPI~~ Rod Position Indication system to operation while avoiding the plant challenges associated with the shutdown without full rod position indication. 3 4 2 5

Based on operating experience, normal power operation does not require excessive rod movement. If one or more rods has been significantly moved~~, the Required Action of C.1 or C.2 below is required~~. 4

~~INSERT 6~~

STET

~~C.1 and C.2~~

~~These Required Actions clarify that when one or more rods with inoperable position indicators have been moved in excess of 24 steps in one direction, since the position was last determined, the Required Actions of A.1 and A.2, [or B.1, as applicable] are still appropriate but must be initiated promptly under Required Action C.1 to begin verifying that these rods are still properly positioned, relative to their group positions.~~ 4

4 hours

<

~~If, within [4] hours, the rod positions have not been determined, THERMAL POWER must be reduced to ≤ 50% RTP within 8 hours to avoid undesirable power distributions that could result from continued operation at > 50% RTP, if one or more rods are misaligned by more than 24 steps. The allowed Completion Time of [4] hours provides an acceptable period of time to verify the rod positions.~~ 4

4 hours

≥

4

~~INSERT 6~~

~~(in excess of 24 steps in one direction, since the position was last determined), Required Action B.3 is still appropriate, but action must be initiated immediately to begin verifying that the rod is properly positioned, relative to its bank position. In this Required Action, the Completion Time only begins on discovery that both:~~

a. ~~More than one RPI per bank is inoperable; and~~

b. ~~A rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position.~~

~~If at any time during the existence of Condition B (more than one RPI per bank inoperable), a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position, this Completion Time begins to be tracked.~~

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BASES

ACTIONS (continued)

C
~~D~~.1.1 and ~~D~~.1.2 4

STET

Rod Position Indication

With one demand position indicator per bank inoperable, the rod positions can be determined by the ~~[D]RPI~~ System. Since normal power operation does not require excessive movement of rods, verification by administrative means that the rod position indicators are OPERABLE and the most withdrawn rod and the least withdrawn rod are ≤ 12 steps apart within the allowed Completion Time of once every ~~8~~ 12 hours is adequate. 2 4

C
STE
~~D~~.2 4

<
Reduction of THERMAL POWER to ~~≤~~ < 50% RTP puts the core into a condition where rod position is not significantly affecting core peaking factor limits (Ref. 3). The allowed Completion Time of 8 hours provides an acceptable period of time to verify the rod positions ~~per Required Actions C.1.1 and C.1.2~~ or reduce power to ~~≤~~ < 50% RTP. 4 4 1 5

C.1 C.2

D
~~E~~.1 4

If the Required Actions cannot be completed within the associated Completion Time, the plant must be brought to a MODE in which the requirement does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours. The allowed Completion Time is reasonable, based on operating experience, for reaching the required MODE from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.1.7.1

Rod Position Indication

Verification that the ~~[D]RPI~~ agrees with the demand position within ~~[~~12~~]~~ steps ensures that the ~~[D]RPI~~ is operating correctly. ~~Since the [D]RPI does not display the actual shutdown rod positions between 18 and 210 steps, only points within the indicated ranges are required in comparison.~~ 2 1

Rod Position Indication

INSERT 7

This Surveillance is performed prior to reactor criticality after each removal of the reactor head, as there is the potential for unnecessary plant transients if the SR were performed with the reactor at power.

JUSTIFICATION FOR DEVIATIONS
ITS 3.1.7 BASES, ROD POSITION INDICATION

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

3. ISTS 3.1.7 Required Action A.1 Bases contains a statement allowing an alternative method of satisfying Required Action A.1 by verifying that F_Q and $F^N_{\Delta H}$ are within the limits provided in the COLR, provided the nonindicating rods have not been moved. Additionally, ISTS 3.1.7 Required Action B.3 Bases also contains this statement. ITS 3.1.7 Required Action A.1 Bases and Required Action B.3 Bases do not contain this statement. The statement has been deleted because it allows an alternative method for satisfying Required Actions A.1 and B.3 that are not addressed in the Specification. Since the Technical Specification Bases are not allowed to modify the Technical Specifications, this statement has been deleted.

4. Changes are made to be consistent with changes made to the Specification.

5. Editorial changes made for enhanced clarity/consistency.

Licensee Response/NRC Response/NRC Question Closure

Id	**375**
NRC Question Number	**MEH-004**
Select Application	**NRC Response**
Attachment 1	
Attachment 2	
Response Statement	**MEH-004 requested either further justification for the original proposed change to STS 3.1.7 or a proposal to adopt STS 3.1.7 Condition C. The 9/30/2014 response to MEH-004 did not contain further justification for the original proposed change, rather it contains a proposal to adopt STS 3.1.7 Condition C.** **The proposal to translate CTS 3.1.3.2 Actions a and b into the STS 3.1.7 Condition C is described as both more restrictive and less restrictive in DOC MO3 and DOC LO2.** **Contrary to the DOC MO4, it appears changing the Completion Time for the condition when a rod with an inoperable position indicator have been moved in excess of 24 steps since the last position determination from "immediately" to "4 hours" is a less restrictive change that requires justification. Please provide further discussion of the rationale for describing the change as more restrictive or change the description to less restrictive and provide the technical basis for the change.** **Note: The 4 hour Completion Time for STS 3.1.7 Condition C.1 is bracketed. Bracketed numbers in STS are values specific to a plant's current licensing basis. Accordingly, a technical justification for the 4 hour Completion Time needs to be provided.** **Contrary to the DOC LO2, it appears limiting thermal power to < 50% is more restrictive than limiting thermal power to ≤ 50%. Please provide further discussion of the rationale for describing the change as less restrictive or change the description to more restrictive.**
Response Date/Time	**10/16/2014 5:05 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Matthew Hamm** **Khadijah Hemphill**

	Andrew Hon **Ray Schiele**
Added By	**Matthew Hamm**
Date Added	**10/16/2014 4:03 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**382**
NRC Question Number	**MEH-004**
Select Application	**Licensee Response**
Attachment 1	**RAI MEH 004 Attachment 1 to NRC Response.pdf** (1MB)
Attachment 2	
Response Statement	**Based on the Staff's response to RAI MEH-004, proposed Discussion of Change (DOC) L02 on page 248 of Enclosure 2, Volume 8 will be revised, and proposed DOC M03 on page 247 will be deleted. Additionally, the proposed Completion Time for ITS 3.1.7 Required Action C.1, on pages 253 and 260 will be revised. See below for discussions associated with each proposed change.**

DOC L02 will be revised to justify ITS 3.1.7 less restrictive Required Action C.2 as it relates to the condition of more than one rod position indicator per bank inoperable. With more than one rod position indicator per bank inoperable and movement of a non-indicating rod which exceeds 24 steps in one direction, CTS 3.1.3.2 Action b requires, in part, determination of the non-indicating rod's position (CTS 3.1.3.2 Action b.1), <u>or</u> placing the unit in HOT STANDBY (CTS 3.1.3.2 Action b.4). ITS 3.1.7 Condition C for, "one or more rods with inoperable position indicators have been moved in excess of 24 steps in one direction since the last determination of the rod's position," requires performance of Required Action C.1 <u>or</u> C.2. ITS 3.1.7 Required Action C.1 requires verifying the position of the rods with inoperable position indicators. ITS 3.1.7 Required Action C.2 requires reducing THERMAL POWER to < 50% RTP vice requiring the unit to be placed in HOT STANDBY. Therefore, ITS 3.1.7 Required Action C.2 is a less restrictive change to CTS 3.1.3.2 Action b.4. Additional changes include the following:

1. An ITS cross-reference to Required Action C.2 will be added to the left-hand margin for CTS 3.1.3.2 Action a.3. (Pages 240 and 243 of Enclosure 2, Volume 6)

2. A CTS cross-reference to Action a.3 will be added to the left-hand margin for ITS 3.1.7 Required Action C.2. (Pages 253 and 260 of Enclosure 2, Volume 6)

In the initial response to RAI MEH-004, the Completion Time proposed for ITS 3.1.7 Required Action C.1 was 4 hours. Based on the Staff's response concerning bracketed values in ISTS, the Completion Time for ITS 3.1.7 Required Action C.1 will be revised from the ISTS bracketed value of 4 hours to Immediately. With one or more rod position indicators per bank inoperable and after any motion of the non-indicating rod which exceeds 24 steps in one direction since the last determination of the rod's position, CTS 3.1.3.2 Actions a.1 and b.1 require an immediate determination of the position of the non-indicating rod(s) indirectly by the movable incore detectors. This change aligns the Completion Time for ITS 3.1.7 Required Action C.1 with the Completion Time for CTS 3.1.3.2 Actions a.1 and b.1. Therefore, there is no longer a proposed more restrictive change, and DOC M03, that justified the change from Immediately to 4 hours, will be deleted. Additional changes include the following:

1. The CTS markups for CTS 3.1.3.2 Actions a.1 and b.1, initially provided as an attachment to the response for RAI MEH-004, will be revised to retain "immediately", delete the insert for "within 4 hours", and delete DOC M03 indicators. (Pages 240 and 243 of Enclosure 2, Volume 6)

2. The ISTS markups for ITS 3.1.7 Condition C, initially provided as an attachment to the response for RAI MEH-004, will be revised to delete the insert for "4 hours", add an insert for "Immediately", and add Justification for Deviations (JFD) 1 indicators. (Pages

253 and 260 of Enclosure 2, Volume 6)

3. **The ISTS Bases markups for ITS 3.1.7 Actions C.1 and C.2, initially provided as an attachment to the response for RAI MEH-004, will be revised. Specifically, The final paragraph will read, "If the rod positions have not been determined, THERMAL POWER must be reduced to < 50% RTP within 8 hours to avoid undesirable power distributions that could result from continued operation at ≥ 50% RTP, if one or more rods are misaligned by more than 24 steps."**

See Attachment 1 for the draft revised changes to the ITS submittal. Attachment 1 is a rollup of changes based on the original RAI response and the proposed changes discussed above. Because the attachment is a reflection of changes to the submittal, originally proposed changes in the initial RAI response that have been deleted will not be reflected in the rollup.

Response Date/Time	**11/24/2014 12:40 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**11/24/2014 11:40 AM**
Date Modified	
Modified By	

A01

ITS ITS 3.1.7

REACTIVITY CONTROL SYSTEMS

POSITION INDICATION SYSTEMS - OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.1.7 3.1.3.2 The shutdown and control rod position indication system and the demand position indication system shall be OPERABLE ~~and capable of determining the control rod positions within ± 12 steps.~~ LA01

Applicability APPLICABILITY: MODES 1 and 2.

ACTION: L01 Add proposed ACTIONS Note 1

ACTION A

a. With a maximum of one rod position indicator per bank inoperable either:

1. Determine the position of the non-indicating rod(s) indirectly by the movable incore detectors at least once per 12 hours and immediately after any motion of the non-indicating rod which exceeds 24 steps in one direction since the last determination of the rod's position, or

Condition C

2.* a) Determine the position of the non-indicating rod indirectly by the movable incore detectors within 8 hours and once every 31 days thereafter and within 8 hours if rod control system parameters indicate unintended movement, and

b) Review the parameters of the rod control system for indications of unintended rod movement for the rod with an inoperable position indicator within 16 hours and once per 8 hours thereafter, and

c) Determine the position of the non-indicating rod indirectly by the movable incore detectors within 8 hours if the rod with an inoperable position indicator is moved greater than 12 steps and prior to increasing THERMAL POWER above 50% RATED THERMAL POWER and within 8 hours of reaching 100% RATED THERMAL POWER, or

Required Action C.2

3. Reduce THERMAL POWER to less than 50% of RATED THERMAL POWER within 8 hours.

M01 Add proposed ACTION ~~D~~ E

ACTION B

b. With more than one rod position indicator per bank inoperable either:

1. Determine the position of the non-indicating rod(s) indirectly by the movable incore detectors at least once per 12 hours, and immediately after any motion of the non-indicating rod which exceeds 24 steps in one direction since the last determination of the rod's position, and

Condition C

Required Action A.2 Note

* Rod position monitoring by Actions 2.a), 2.b), and 2.c) may only be applied to one inoperable rod position indicator ~~and shall only be allowed: (1) until the end of the current cycle, or (2) until an entry into MODE 5 of sufficient duration, whichever occurs first, when the repair of the inoperable rod position indication can safely be performed. Actions 2.a), 2.b), and 2.c) shall not be allowed after the plant has been in MODE 5 or other plant condition, for a sufficient period of time, in which the repair of the inoperable rod position indication could have safely been performed.~~

Add proposed ACTIONS Note 2 A02

REACTIVITY CONTROL SYSTEMS

POSITION INDICATION SYSTEM - OPERATING

2. Place the control rods under manual control, and monitor and record Reactor Coolant System average temperature (T_{avg}) at least once per hour, and

ACTION B

3. Restore the rod position indicators to OPERABLE status within 24 hours such that a maximum of one rod position indicator per bank is inoperable, or

Add Proposed Required Action C.2

L02

ACTION ~~D~~ E

4. Be in HOT STANDBY within the next 6 hours.

c. With a maximum of one demand position indicator per bank inoperable either:

ACTION ~~C~~ D

1. Verify that all rod position indicators for the affected bank are OPERABLE and that the most withdrawn rod and the least withdrawn rod of the bank are within a maximum of 12 steps of each other at least once per 12 hours, or

~~2.~~ Reduce THERMAL POWER to less than 50% of RATED THERMAL POWER within 8 hours.

Add proposed ACTION ~~D~~ E

M01

SURVEILLANCE REQUIREMENTS

~~4.1.3.2 Each rod position indicator shall be determined to be OPERABLE by verifying that the demand position indication system and the rod position indication system agree within 12 steps at least once per 12 hours except during time intervals when the Rod Position Deviation Monitor is inoperable, then compare the demand position indication system and the rod position indication system at least once per 4 hours~~.

Add proposed SR 3.1.7.1

M02

A01

ITS

ITS 3.1.7

REACTIVITY CONTROL SYSTEMS

POSITION INDICATION SYSTEMS - OPERATING

LIMITING CONDITION OR OPERATION

LCO 3.1.7

3.1.3.2 The shutdown and control rod position indication system and the demand position indication system shall be OPERABLE ~~and capable of determining the control rod positions within ± 12 steps~~.

LA01

Applicability

APPLICABILITY: Modes 1 and 2.

ACTION:

L01

Add proposed ACTIONS Note 1

a. With a maximum of one rod position indicator per bank inoperable either:

Condition C

1. Determine the position of the non-indicating rod(s) indirectly by the movable incore detectors at least once per 12 hours and immediately after any motion of the non-indicating rod which exceeds 24 steps in one direction since the last determination of the rod's position, or

ACTION A

2. a) Determine the position of the non-indicating rod indirectly by the movable incore detectors within 8 hours and once every 31 days thereafter and within 8 hours if rod control system parameters indicate unintended movement, and

b) Review the parameters of the rod control system for indications of unintended rod movement for the rod with an inoperable position indicator within 16 hours and once per 8 hours thereafter, and

c) Determine the position of the non-indicating rod indirectly by the movable incore detectors within 8 hours if the rod with an inoperable position indicator is moved greater than 12 steps and prior to increasing THERMAL POWER above 50% RATED THERMAL POWER and within 8 hours of reaching 100% RATED THERMAL POWER, or

Required Action C.2

3. Reduce THERMAL POWER TO less than 50% of RATED THERMAL POWER within 8 hours.

M01

Add proposed ACTION ~~D~~

E

b. With more than one rod position indicator per bank inoperable either:

Condition C

ACTION B

1. Determine the position of the non-indicating rod(s) indirectly by the movable incore detectors at least once per 12 hours, and immediately after any motion of the non-indicating rod which exceeds 24 steps in one direction since the last determination of the rod's position, and

Required Action A.2 Note

Rod position monitoring by Actions 2.a), 2.b), and 2.c) may only be applied to one inoperable rod position indicator ~~and shall only be allowed: (1) until the end of the current cycle, or (2) until an entry into MODE 5 of sufficient duration, whichever occurs first, when the repair of the inoperable rod position indication can safely be performed. Actions 2.a), 2.b), and 2.c) shall not be allowed after the plant has been in MODE 5 or other plant condition, for a sufficient period of time, in which the repair of the inoperable rod position indication could have safely been performed.~~

Add proposed ACTIONS Note 2

A02

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A01

ITS ITS 3.1.7

REACTIVITY CONTROL SYSTEMS

POSITION INDICATION SYSTEMS - OPERATING

2. Place the control rods under manual control, and monitor and record Reactor Coolant System average temperature (T_{avg}) at least once per hour, and

ACTION B

3. Restore the rod position indicators to OPERABLE status within 24 hours such that a maximum of one rod position indicator per bank is inoperable, or

ACTION ~~D~~ E

Add Proposed Required Action C.2

L02

4. Be in HOT STANDBY within the next 6 hours.

c. With a maximum of one demand position indicator per bank inoperable either:

ACTION ~~C~~ D

1. Verify that all rod position indicators for the affected bank are OPERABLE and that the most withdrawn rod and the least withdrawn rod of the bank are within a maximum of 12 steps of each other at least once per 12 hours, or

2. Reduce THERMAL POWER to less than 50% of RATED THERMAL POWER within 8 hours.

Add proposed ACTION ~~D~~ E

M01

SURVEILLANCE REQUIRMENTS

~~4.1.3.2 Each rod position indicator shall be determined to be OPERABLE by verifying that the demand position indication system and the rod position indication system agree within 12 steps at least once per 12 hours except during time intervals when the Rod Position Deviation Monitor is inoperable, then compare the demand position indication system and the rod position indication system at least once per 4 hours.~~

Add proposed SR 3.1.7.1

M02

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DISCUSSION OF CHANGES
ITS 3.1.7, ROD POSITION INDICATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG - 1431, Rev. 4.0, "Standard Technical Specifications - Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.1.3.2 Note □applies to Actions 2.a, 2.b, and 2.c and may be only applied to one inoperable rod position indicator. In this condition, the inoperable rod position indicator shall only be allowed until either the end of the current cycle, or until an entry into MODE 5 of sufficient duration, whichever occurs first, when the repair of the inoperable rod position indication can safely be performed. Actions 2.a, 2.b, and 2.c shall not be allowed after the plant has been in MODE 5 or other plant condition, for a sufficient period of time, in which the repair of the inoperable rod position indication could have safely been performed. ITS 3.1.7 ACTIONS Note 2 states that LCO 3.0.4.a and b are not applicable for Required Actions A.2.1 and A.2.2 following startup from a refueling outage, or following entry into MODE 5 of sufficient duration to safely repair an inoperable rod position indication. This changes the CTS by rewording the allowance for one rod position indicator inoperable to be consistent with ITS terminology.

This change is designated as an administrative change since the change does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.1.3.2 ACTION a and c do not contain an ACTION to follow if the provided ACTIONS cannot be met. Therefore, CTS 3.0.3 would be entered, which would allow 1 hour to initiate a shutdown and 7 hours to be in HOT STANDBY. ITS 3.1.7 ACTION ~~D~~ E requires if the Required Actions and associated Completion Time s ~~of ACTION A or C~~ are not met, to be in MODE 3 within 6 hours. This changes the CTS by eliminating the one hour to initiate a shutdown and consequently allows one hour less for the unit to be in MODE 3.

This change is acceptable because it provides an appropriate compensatory measure for the described conditions. If any Required Action and associated Completion Time cannot be met, the unit must be placed in a MODE in which the LCO does not apply. The LCO is applicable in MODES 1 and 2. Requiring a shutdown to MODE 3 is appropriate in this condition. The one hour allowed by CTS 3.0.3 to prepare for a shutdown is not needed because the operators have had time to prepare for the shutdown while attempting to follow the Required Actions and associated Completion Times. This change is designated as more restrictive because it allows less time to shutdown than is allowed in the CTS.

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DISCUSSION OF CHANGES
ITS 3.1.7, ROD POSITION INDICATION

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.1.3.2 ACTION a covers the inoperability for a maximum of one rod position indicator per bank. CTS 3.1.3.2 ACTION b covers the inoperability for more than one rod position indicator per bank. CTS 3.1.3.2 ACTION c covers the inoperability for a maximum of one demand position indicator per bank. ITS 3.1.7 ACTIONS are modified by Note 1 that states "Separate Condition entry is allowed for each inoperable rod position indicator and each demand position indicator." ITS 3.1.7 ACTION A covers inoperability for one rod position indicator per bank. ITS 3.1.7 ACTION B covers inoperability for more than one rod position indicator per bank. ITS 3.1.7 D ACTION ~~C~~ covers inoperability for one demand position indicator bank for one or more banks. This changes the CTS by allowing separate Condition entry for each inoperable rod position indicator and each demand position indicator.

The purpose of CTS 3.1.3.2 ACTION a is to provide compensatory actions for a maximum of one rod position indicator per bank. The purpose of CTS 3.1.3.2 ACTION b is to provide compensatory actions for more than one rod position indicator per bank. The purpose of CTS 3.1.3.2 ACTION c is to provide compensatory actions for one demand position indicator per bank. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a DBA occurring during the repair period. This change will allow separate Condition entry for each inoperable rod position indicator and each inoperable demand position indicator while the CTS does not. The ITS will allow each inoperable rod position indicator or each inoperable demand position indicator to be tracked separately. This change is acceptable because the Required Actions for each Condition provide appropriate compensatory actions for inoperable position indication. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L02

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DOC L02

(Category 4 – Relaxation of Required Action) The CTS 3.1.3.2 ACTION for, "more than one rod position indicator per bank inoperable" requires the performance of ACTION b.1 and b.2 and b.3 or b.4. If CTS Actions b.1, b.2, and b.3 are not performed, then CTS 3.1.3.2 Action b.4 requires placing the unit in HOT STANDBY within the next 6 hours. CTS 3.1.3.2 Action b.1 requires, in part, determining the position of the non-indicating rod(s) indirectly by the movable incore detectors immediately after any motion of the non-indicating rod which exceeds 24 steps in one direction since the last determination of the rod's position. ITS 3.1.7 Condition C for, "one or more rods with inoperable position indicators have been moved in excess of 24 steps in one direction since the last determination of the rod's position," requires performance of Required Action C.1 or C.2. ITS 3.1.7 Required Action C.1 requires verifying the position of the rods with inoperable position indicators indirectly by using the movable incore detectors with a Completion Time of immediately. ITS 3.1.7 Required Action C.2 requires reducing THERMAL POWER to < 50% RTP. This changes the CTS by allowing a reduction in THERMAL POWER as an alternative to verifying the position of the rods with inoperable position indicators and placing the unit in HOT STANDBY within the next 6 hours.

The purpose of the CTS 3.1.3.2 ACTION to "verify the position of the rods with inoperable position indicators indirectly by using movable incore detectors" is to ensure a misaligned rod does not go undetected and cause a power imbalance in the core. This change is acceptable because, if the rod positions have not been determined, THERMAL POWER must be reduced to < 50% RTP to avoid undesirable power distributions that could result from continued operation at ≥ 50% RTP when one or more rods are misaligned by more than 24 steps. This change is designated as less restrictive because less stringent Required Actions are being applied in ITS than were applied in CTS.

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Rod Position Indication

3.1.3.2 LCO 3.1.7 The ~~Digital~~ Rod Position Indication ~~(DRPI)~~ System and the Demand Position Indication System shall be OPERABLE. 1

Applicability APPLICABILITY: MODES 1 and 2.

ACTIONS

------------------------------NOTE------------------------------ 5

S

1. Separate Condition entry is allowed for each inoperable rod position indicator and each demand position indicator.

INSERT 1

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION a A. One ~~DRPI~~ rod position indicator per ~~group~~ bank inoperable ~~for one or more groups~~.	A.1 Verify the position of the rods with inoperable position indicators indirectly by using movable incore detectors. INSERT 3 OR A.~~2~~ 3 Reduce THERMAL POWER to ~~≤~~ □ 50% RTP.	Once per ~~8~~ 12 hours 1 4 ~~INSERT 2~~ 2 3 8 hours 3 4
ACTION b B. More than one ~~DRPI~~ rod position indicator per ~~group~~ bank inoperable.	B.1 Place the control rods under manual control. AND B.2 Monitor and record Reactor Coolant System T_{avg}. AND	Immediately 1 4 Once per 1 hour

4 **INSERT 1**

3.1.3.2 Note 2. LCO 3.0.4.a and b are not applicable for Re uired Actions A.2.1 and A.2.2 following a startup from a refueling outage, or following entry into MODE 5 of sufficient duration to safely repair an inoperable rod position indication.

~~2~~ **~~INSERT 2~~**

~~AND~~

~~Action a.1~~ ~~Immediately after a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod s position~~

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION b	B.3 Verify the position of the rods with inoperable position indicators indirectly by using the movable incore detectors.	Once per ~~8~~ 12 hours INSERT 4 (4) (2)
	AND	
STET	B.4 Restore inoperable position indicators to OPERABLE status such that a maximum of one ~~DRPI~~ rod position indicator per ~~group~~ bank is inoperable.	24 hours Immediately (1) (4)
ACTION a.1 ACTION b.1 ACTION a.3 DOC L02 ~~C. One or more rods with inoperable position indicators have been moved in excess of 24 steps in one direction since the last determination of the rod's position.~~	~~C.1 Verify the position of the rods with inoperable position indicators indirectly by using movable incore detectors.~~	~~4 hours~~ (1) (2) (4)
	~~OR~~	
	~~C.2 Reduce THERMAL POWER to ≤ 50% RTP.~~ <	~~8 hours~~
DOC L01 ACTION c ~~D~~ C. One demand position indicator per bank inoperable for one or more banks.	~~D~~ C.1.1 Verify by administrative means all ~~DRPIs~~ rod position indicators for the affected banks are OPERABLE.	Once per ~~8~~ 12 hours (2) (4) (1)
	AND	
STET	~~D~~ C.1.2 Verify the most withdrawn rod and the least withdrawn rod of the affected banks are ≤ 12 steps apart.	Once per ~~8~~ 12 hours (2) (4)
	OR	

2 ~~**INSERT 4**~~

~~AND~~

~~Action b.1~~ ~~Immediately after a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position~~

CTS

Rod Position Indication
3.1.7

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
ACTION c		~~D~~ C .2	Reduce THERMAL POWER to ~~≤~~ □ 50% RTP.	8 hours	~~2~~ 4
ACTION b.4, DOC M02	~~E~~ D . Re□uired Action and associated Completion Time not met. STET	~~E~~ D .1	Be in MODE 3.	6 hours	~~2~~

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		□REQUENCY	
4.1.3.2	SR 3.1.7.1	Verify each ~~D RPI~~ rod position indicator agrees within ~~□~~12~~□~~ steps of the group demand position ~~for the □full indicated range□~~ at 20 and 215 steps of rod travel.	Once prior to criticality after each removal of the reactor head	1

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3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Rod Position Indication

3.1.3.2 LCO 3.1.7 The ~~Digital~~ Rod Position Indication ~~(D RPI)~~ System and the Demand Position Indication System shall be OPERABLE. 1

Applicability APPLICABILITY: MODES 1 and 2.

ACTIONS

S

---NOTE--- 5

1. Separate Condition entry is allowed for each inoperable rod position indicator and each demand position indicator.

INSERT 1

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION a — A. One ~~D RPI~~ rod position indicator per ~~group~~ bank inoperable ~~for one or more groups~~.	A.1 Verify the position of the rods with inoperable position indicators indirectly by using movable incore detectors. INSERT 3 OR A.~~2~~ 3 Reduce THERMAL POWER to ~~≤~~ □ 50% RTP.	Once per ~~8~~ 12 hours ~~INSERT 2~~ 8 hours
ACTION b — B. More than one ~~D RPI~~ rod position indicator per ~~group~~ bank inoperable.	B.1 Place the control rods under manual control. AND B.2 Monitor and record Reactor Coolant System T_{avg}. AND	Immediately Once per 1 hour

1 4 2 3 3 4 1 4

4 **INSERT 1**

3.1.3.2 Note□ 2. LCO 3.0.4.a and b are not applicable for Re□uired Actions A.2.1 and A.2.2 following a startup from a refueling outage, or following entry into MODE 5 of sufficient duration to safely repair an inoperable rod position indication.

~~2~~ ~~**INSERT 2**~~

~~AND~~

~~Action a.1~~ ~~Immediately after a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod□s position~~

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION b	B.3 Verify the position of the rods with inoperable position indicators indirectly by using the movable incore detectors.	Once per ~~8~~ 12 hours ~~INSERT 4~~
	AND	
STET	B.4 Restore inoperable position indicators to OPERABLE status such that a maximum of one ~~D RPI~~ rod position indicator per ~~group~~ bank is inoperable.	24 hours Immediately
ACTION a.1 ACTION b.1 ACTION a.3 DOC L02 ~~C. One or more rods with inoperable position indicators have been moved in excess of 24 steps in one direction since the last determination of the rod's position.~~	~~C.1 Verify the position of the rods with inoperable position indicators indirectly by using movable incore detectors.~~	~~4 hours~~
	~~OR~~	
	~~C.2 Reduce THERMAL POWER to ≤ 50% RTP.~~ <	~~8 hours~~
DOC L01 ACTION c ~~D~~ C. One demand position indicator per bank inoperable for one or more banks. STET	~~D~~ C.1.1 Verify by administrative means all ~~D RPIs~~ rod position indicators for the affected banks are OPERABLE.	Once per ~~8~~ 12 hours
	AND	
	~~D~~ C.1.2 Verify the most withdrawn rod and the least withdrawn rod of the affected banks are ≤ 12 steps apart.	Once per ~~8~~ 12 hours
	OR	

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~~2~~ **~~INSERT 4~~**

~~AND~~

~~Action b.1~~ ~~Immediately after a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position~~

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
ACTION c	STET	~~D~~ C.2	Reduce THERMAL POWER to ~~≤~~ □ 50% RTP.	8 hours	2 4
ACTION b.4, DOC M02	~~E~~ D. Re□uired Action and associated Completion Time not met.	~~E~~ D.1	Be in MODE 3.	6 hours	2

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		□REQUENCY	
4.1.3.2	SR 3.1.7.1	Verify each ~~D RPI~~ rod position indicator agrees within □12□ steps of the group demand position ~~for the □full indicated range□~~ at 20 and 215 steps of rod travel.	Once prior to criticality after each removal of the reactor head	1

JUSTIFICATION FOR DEVIATIONS
ITS 3.1.7, ROD POSITION INDICATION

1. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

2. ~~ISTS 3.1.7 ACTION C has been deleted and a new conditional Completion time has been added to Re□uired Action A.1 and B.3. The new completion time ensures that SQN current licensing basis is maintained, in that a verification of the position indicator is still being performed immediately after a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod□s position. Additionally, ISTS 3.1.7 ACTIONS D and E has been changed to ITS 3.1.7 ACTIONS C and D, respectively, because of this deletion.~~

3. ISTS 3.1.7 ACTION A provides compensatory actions for when one rod position indicator is inoperable. ITS 3.1.7 provides an additional Re□uired Action that can be taken when one rod position indicator is inoperable. The new Re□uired Action allows the use of an alternate means other than the movable incore detectors to monitor the position of a control or shutdown rod when the analog rod position indication system is inoperable. This change reflects a current licensing basis that was approved by the NRC in Amendment 315 for Unit 1 and Amendment 304 for Unit 2 (ADAMS Accession No. ML063120575). Additionally ISTS 3.1.7 Re□uired Action A.2 has been renumbered as ITS 3.1.7 Re□uired Action A.3.

4. Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

5. Editorial changes made for enhanced clarity/consistency.

BASES

ACTIONS

The ACTIONS Table is modified by a Note indicating that a separate Condition entry is allowed for each inoperable rod position indicator and each demand position indicator. This is acceptable because the Re□uired Actions for each Condition provide appropriate compensatory actions for each inoperable position indicator.

INSERT 4 4

A.1

Rod Position Indication bank

When one ~~D RPI~~ channel per ~~group~~ fails, the position of the rod may ~~still~~ be determined indirectly by use of the movable incore detectors. ~~The Re□uired Action may also be satisfied by ensuring at least once per 8 hours that □Q satisfies LCO 3.2.1, □N ΔH satisfies LCO 3.2.2, and SHUTDOWN MARGIN is within the limits provided in the COLR, provided the nonindicating rods have not been moved.~~ Based on experience, normal power operation does not re□uire excessive movement of banks. ~~If a bank has been significantly moved, the Re□uired Action of C.1 or C.2 below is re□uired.~~ Therefore, verification of RCCA position within the Completion Time of ~~8~~ 12 hours is ade□uate for allowing continued full power operation, since the probability of simultaneously having a rod significantly out of position and an event sensitive to that rod position is small. 2 1 5 3 4 4

STET

~~INSERT 5~~ 4

A.~~2~~ 3 4

Reduction of THERMAL POWER to ~~≤~~ □ 50% RTP puts the core into a condition where rod position is not significantly affecting core peaking factors (Ref. 3). 4

The allowed Completion Time of 8 hours is reasonable, based on operating experience, for reducing power to ~~≤~~ □ 50% RTP from full power conditions without challenging plant systems and allowing for rod position determination by Re□uired Action A.1 above. 4

B.1, B.2, B.3, and B.4

Rod Position Indication bank fails

When more than one ~~D RPI~~ per ~~group fail~~, additional actions are necessary to ensure that acceptable power distribution limits are maintained, minimum SDM is maintained, and the potential effects of rod misalignment on associated accident analyses are limited. Placing the Rod Control System in manual assures unplanned rod motion will not occur. Together with the indirect position determination available via 2 1 5

4 INSERT 4

A second Note has been added to provide clarification that LCO 3.0.4.a and LCO 3.0.4.c are not applicable for Required Action A.2.1 and A.2.2 following startup from a refueling outage, or following entry into MODE 5 of sufficient duration to safely repair an inoperable rod position indication.

4 ~~INSERT 5~~

~~If one or more rods have been significantly moved (in excess of 24 steps in one direction, since the position was last determined), Required Action A.1 is still appropriate, but actions must be initiated immediately to begin verifying that the rod is still properly positioned, relative to their group positions. In this Required Action, the Completion Time only begins on discovery that both:~~

~~a. One rod position indication per bank is inoperable, and~~

~~b. A rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position.~~

~~If at any time during the existence of Condition A (one RPI per bank inoperable), a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position, this Completion Time begins to be tracked.~~

<u>A.2.1, and A.2.2</u>

When one RPI channel per bank fails, the position of the rod may still be determined indirectly by use of the movable incore detectors and reviewing the parameters of the rod control system for indications of unintended rod movement for the rod with the inoperable position indication. Therefore, verification of RCCA position within 8 hours and every 31days thereafter is adequate for allowing continued full power operation as long as a review of the parameters of the rod control system for indications of unintended rod movement for the rod with the inoperable position indication is performed within 16 hours and every 8 hours thereafter. Furthermore, if the rod control system parameters indicate unintended movement or if the rod with an inoperable position indicator is moved greater than 12 steps, then the verification of the RCCA position must be performed within 8 hours. As long as these compensatory actions are met, reactor operation can then continue until the end of the current cycle or until an entry into MODE 5 of sufficient duration that the repair of the inoperable rod position indication can safely be performed.

Required Actions A.2.1,and A.2.2 are modified by a Note directing that these Required Actions may only be applied to one inoperable rod position indicator.

BASES

ACTIONS (continued)

movable incore detectors will minimi□e the potential for rod misalignment. The immediate Completion Time for placing the Rod Control System in manual reflects the urgency with which unplanned rod motion must be prevented while in this Condition.

helps

Monitoring and recording reactor coolant T_{avg} ~~help~~ assure that significant changes in power distribution and SDM are avoided. The once per hour Completion Time is acceptable because only minor fluctuations in RCS temperature are expected at steady state plant operating conditions. 5

The position of the rods may be determined indirectly by use of the movable incore detectors. ~~The Re□uired Action may also be satisfied by ensuring at least once per 8 hours that □$_Q$ satisfies LCO 3.2.1, □$^N_{\Delta H}$ satisfies LCO 3.2.2, and SHUTDOWN MARGIN is within the limits provided in the COLR, provided the nonindicating rods have not been moved.~~ Verification of control rod position once per ~~8~~ 12 hours is ade□uate for allowing continued full power operation for a limited, 24 hour period, since the probability of simultaneously having a rod significantly out of position and an event sensitive to that rod position is small. The 24 hour Completion Time provides sufficient time to troubleshoot and restore the ~~□D□RPI~~ Rod Position Indication system to operation while avoiding the plant challenges associated with the shutdown without full rod position indication. 3 4 2 5

Based on operating experience, normal power operation does not re□uire excessive rod movement. If one or more rods has been significantly moved~~, the Re□uired Action of C.1 or C.2 below is re□uired~~. 4

~~INSERT 6~~

STET

~~C.1 and C.2~~

~~These Re□uired Actions clarify that when one or more rods with inoperable position indicators have been moved in excess of 24 steps in one direction, since the position was last determined, the Re□uired Actions of A.1 and A.2, □or B.1, as applicable□are still appropriate but must be initiated promptly under Re□uired Action C.1 to begin verifying that these rods are still properly positioned, relative to their group positions.~~ 4

<

~~If, within □4□ hours, the rod positions have not been determined, THERMAL POWER must be reduced to ≤ 50% RTP within 8 hours to avoid undesirable power distributions that could result from continued operation at □ 50% RTP, if one or more rods are misaligned by more than 24 steps. The allowed Completion Time of □4□ hours provides an acceptable period of time to verify the rod positions.~~ 4

≥

4 ~~**INSERT 6**~~

~~(in excess of 24 steps in one direction, since the position was last determined), Re□uired Action B.3 is still appropriate, but action must be initiated immediately to begin verifying that the rod is properly positioned, relative to its bank position. In this Re□uired Action, the Completion Time only begins on discovery that both:~~

a. ~~More than one RPI per bank is inoperable□and~~

b. ~~A rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod□s position.~~

~~If at any time during the existence of Condition B (more than one RPI per bank inoperable), a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod□s position, this Completion Time begins to be tracked.~~

BASES

ACTIONS (continued)

C

STET ~~D~~.1.1 and ~~D~~.1.2 (4)

With one demand position indicator per bank inoperable, the rod positions can be determined by the ~~DRPI~~ Rod Position Indication System. Since normal power operation does not require excessive movement of rods, verification by administrative means that the rod position indicators are OPERABLE and the most withdrawn rod and the least withdrawn rod are ≤ 12 steps apart within the allowed Completion Time of once every ~~8~~ 12 hours is adequate. (2) (4)

C

STET ~~D~~.2 (4)

Reduction of THERMAL POWER to ~~≤~~ 50% RTP puts the core into a condition where rod position is not significantly affecting core peaking factor limits (Ref. 3). The allowed Completion Time of 8 hours provides an acceptable period of time to verify the rod positions ~~per Required Actions C.1.1 and C.1.2~~ C.1 C.2 or reduce power to ~~≤~~ 50% RTP. (4) (4) (1) (5)

D

~~E~~.1 (4)

If the Required Actions cannot be completed within the associated Completion Time, the plant must be brought to a MODE in which the requirement does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours. The allowed Completion Time is reasonable, based on operating experience, for reaching the required MODE from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.1.7.1

Verification that the ~~DRPI~~ Rod Position Indication agrees with the demand position within 12 steps ensures that the ~~DRPI~~ Rod Position Indication is operating correctly. ~~Since the DRPI does not display the actual shutdown rod positions between 18 and 210 steps, only points within the indicated ranges are required in comparison.~~ INSERT 7 (2) (1)

This Surveillance is performed prior to reactor criticality after each removal of the reactor head, as there is the potential for unnecessary plant transients if the SR were performed with the reactor at power.

BASES

ACTIONS

The ACTIONS Table is modified by a Note indicating that a separate Condition entry is allowed for each inoperable rod position indicator and each demand position indicator. This is acceptable because the Re□uired Actions for each Condition provide appropriate compensatory actions for each inoperable position indicator.

INSERT 4 4

A.1

Rod Position Indication bank

When one ~~D RPI~~ channel per ~~group~~ fails, the position of the rod may ~~still~~ be determined indirectly by use of the movable incore detectors. ~~The Re□uired Action may also be satisfied by ensuring at least once per 8 hours that □Q satisfies LCO 3.2.1, □N ΔH satisfies LCO 3.2.2, and SHUTDOWN MARGIN is within the limits provided in the COLR, provided the nonindicating rods have not been moved.~~ Based on experience, normal power operation does not re□uire excessive movement of banks. ~~If a bank has been significantly moved, the Re□uired Action of C.1 or C.2 below is re□uired.~~ Therefore, verification of RCCA position within the Completion Time of ~~8~~ 12 hours is ade□uate for allowing continued full power operation, since the probability of simultaneously having a rod significantly out of position and an event sensitive to that rod position is small. 2 1 5 3 4 4

STET

~~INSERT 5~~ 4

A.~~2~~ 3 4

Reduction of THERMAL POWER to ~~≤~~ □ 50% RTP puts the core into a condition where rod position is not significantly affecting core peaking factors (Ref. 3). 4

The allowed Completion Time of 8 hours is reasonable, based on operating experience, for reducing power to ~~≤~~ □ 50% RTP from full power conditions without challenging plant systems and allowing for rod position determination by Re□uired Action A.1 above. 4

B.1, B.2, B.3, and B.4

Rod Position Indication bank fails

When more than one ~~D RPI~~ per ~~group fail~~, additional actions are necessary to ensure that acceptable power distribution limits are maintained, minimum SDM is maintained, and the potential effects of rod misalignment on associated accident analyses are limited. Placing the Rod Control System in manual assures unplanned rod motion will not occur. Together with the indirect position determination available via 2 1 5

4 **INSERT 4**

A second Note has been added to provide clarification that LCO 3.0.4.a and LCO 3.0.4.c are not applicable for Re□uired Action A.2.1 and A.2.2 following startup from a refueling outage, or following entry into MODE 5 of sufficient duration to safely repair an inoperable rod position indication.

~~4~~ **~~INSERT 5~~**

~~If one or more rods have been significantly moved (in excess of 24 steps in one direction, since the position was last determined), Re□uired Action A.1 is still appropriate, but actions must be initiated immediately to begin verifying that the rod is still properly positioned, relative to their group positions. In this Re□uired Action, the Completion Time only begins on discovery that both:~~

~~a. One rod position indication per bank is inoperable, and~~

~~b. A rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod□s position.~~

~~If at any time during the existence of Condition A (one RPI per bank inoperable), a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod□s position, this Completion Time begins to be tracked.~~

<u>A.2.1, and A.2.2</u>

When one RPI channel per bank fails, the position of the rod may still be determined indirectly by use of the movable incore detectors and reviewing the parameters of the rod control system for indications of unintended rod movement for the rod with the inoperable position indication. Therefore, verification of RCCA position within 8 hours and every 31days thereafter is ade□uate for allowing continued full power operation as long as a review of the parameters of the rod control system for indications of unintended rod movement for the rod with the inoperable position indication is performed within 16 hours and every 8 hours thereafter. □urthermore, if the rod control system parameters indicate unintended movement or if the rod with an inoperable position indicator is moved greater than 12 steps, then the verification of the RCCA position must be performed within 8 hours. As long as these compensatory actions are met, reactor operation can then continue until the end of the current cycle or until an entry into MODE 5 of sufficient duration that the repair of the inoperable rod position indication can safely be performed.

Re□uired Actions A.2.1,and A.2.2 are modified by a Note directing that these Re□uired Actions may only be applied to one inoperable rod position indicator.

BASES

ACTIONS (continued)

movable incore detectors will minimi□e the potential for rod misalignment. The immediate Completion Time for placing the Rod Control System in manual reflects the urgency with which unplanned rod motion must be prevented while in this Condition.

Monitoring and recording reactor coolant T_{avg} ~~help~~ helps assure that significant changes in power distribution and SDM are avoided. The once per hour Completion Time is acceptable because only minor fluctuations in RCS temperature are expected at steady state plant operating conditions. 5

The position of the rods may be determined indirectly by use of the movable incore detectors. ~~The Re□uired Action may also be satisfied by ensuring at least once per 8 hours that □Q satisfies LCO 3.2.1, □N ΔH satisfies LCO 3.2.2, and SHUTDOWN MARGIN is within the limits provided in the COLR, provided the nonindicating rods have not been moved.~~ Verification of control rod position once per ~~8~~ 12 hours is ade□uate for allowing continued full power operation for a limited, 24 hour period, since the probability of simultaneously having a rod significantly out of position and an event sensitive to that rod position is small. The 24 hour Completion Time provides sufficient time to troubleshoot and restore the ~~D□RPI~~ Rod Position Indication system to operation while avoiding the plant challenges associated with the shutdown without full rod position indication. 3 4 2 5

Based on operating experience, normal power operation does not re□uire excessive rod movement. If one or more rods has been significantly moved~~, the Re□uired Action of C.1 or C.2 below is re□uired~~ ~~INSERT 6~~. STET 4

~~C.1 and C.2~~

~~These Re□uired Actions clarify that when one or more rods with inoperable position indicators have been moved in excess of 24 steps in one direction, since the position was last determined, the Re□uired Actions of A.1 and A.2, □or B.1, as applicable□are still appropriate but must be initiated promptly under Re□uired Action C.1 to begin verifying that these rods are still properly positioned, relative to their group positions.~~ 4

~~If, within □4□ hours, the rod positions have not been determined, THERMAL POWER must be reduced to ≤ 50% RTP within 8 hours to avoid undesirable power distributions that could result from continued operation at □ 50% RTP, if one or more rods are misaligned by more than 24 steps. The allowed Completion Time of □4□ hours provides an acceptable period of time to verify the rod positions.~~ < ≥ 4

4 **~~INSERT 6~~**

~~(in excess of 24 steps in one direction, since the position was last determined), Required Action B.3 is still appropriate, but action must be initiated immediately to begin verifying that the rod is properly positioned, relative to its bank position. In this Required Action, the Completion Time only begins on discovery that both:~~

a. ~~More than one RPI per bank is inoperable; and~~

b. ~~A rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position.~~

~~If at any time during the existence of Condition B (more than one RPI per bank inoperable), a rod with an inoperable position indicator has been moved in excess of 24 steps in one direction since the last determination of the rod's position, this Completion Time begins to be tracked.~~

BASES

ACTIONS (continued)

C

~~D~~.1.1 and ~~D~~.1.2 4

STET

Rod Position Indication

With one demand position indicator per bank inoperable, the rod positions can be determined by the ~~D RPI~~ System. Since normal power operation does not re□uire excessive movement of rods, verification by administrative means that the rod position indicators are OPERABLE and the most withdrawn rod and the least withdrawn rod are ≤ 12 steps apart within the allowed Completion Time of once every ~~8~~ 12 hours is ade□uate. 2 4

C

STE

~~D~~.2 4

□

Reduction of THERMAL POWER to ~~≤~~ 50% RTP puts the core into a condition where rod position is not significantly affecting core peaking factor limits (Ref. 3). The allowed Completion Time of 8 hours provides an acceptable period of time to verify the rod positions ~~per Re□uired Actions C.1.1 and C.1.2~~ or reduce power to ~~≤~~ □ 50% RTP. 4 4 1 5

C.1 C.2

D

~~E~~.1 4

If the Re□uired Actions cannot be completed within the associated Completion Time, the plant must be brought to a MODE in which the re□uirement does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours. The allowed Completion Time is reasonable, based on operating experience, for reaching the re□uired MODE from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.1.7.1

Rod Position Indication

Verification that the ~~D RPI~~ agrees with the demand position within ~~12~~ 12 steps ensures that the ~~D RPI~~ is operating correctly. ~~Since the D RPI does not display the actual shutdown rod positions between 18 and 210 steps, only points within the indicated ranges are re□uired in comparison.~~ 2 1

Rod Position Indication

INSERT 7

This Surveillance is performed prior to reactor criticality after each removal of the reactor head, as there is the potential for unnecessary plant transients if the SR were performed with the reactor at power.

Licensee Response/NRC Response/NRC Question Closure

Id	**408**
NRC Question Number	**MEH-004**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**12/19/2014**
Notification	**Scott Bowman** **Michelle Conner** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Roger Scott**
Added By	**Matthew Hamm**
Date Added	**12/19/2014 12:15 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**186**
NRC Question Number	**MEH-005**
Category	**Technical**
ITS Section	**3.7**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**In a meeting between TVA and NRC on 8/12/2014, TVA stated that the following license amendment application, dated 10/2/2013, will be withdrawn from evaluation:** **SEQUOYAH NUCLEAR PLANT (SQN), UNITS I AND 2 - PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE, "ULTIMATE HEAT SINK (UHS) TEMPERATURE LIMITATIONS SUPPORTING ALTERNATE ESSENTIAL RAW COOLING WATER (ERCW) LOOP ALIGNMENTS (TS-SQN-13-01 AND 13-02)."** **Please provide the marked-up CTS and ITS pages and revised Discussion of Changes with the current licensing basis that pertained license amendment request.**
Attach File 1	
Attach File 2	
Issue Date	**8/20/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**8/20/2014 5:42 PM**
Notification	**Scott Bowman** **Robert Elliott** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**390**
NRC Question Number	**MEH-005**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 for RAI MEH-005.pdf** (2MB)
Attachment 2	
Response Statement	**The ITS submittal has been revised to remove changes that were based on the October 2, 2013, license amendment request (LAR), SEQUOYAH NUCLEAR PLANT (SQN), UNITS 1 AND 2 - PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE, "ULTIMATE HEAT SINK (UHS) TEMPERATURE LIMITATIONS SUPPORTING ALTERNATE ESSENTIAL RAW COOLING WATER (ERCW) LOOP ALIGNMENTS (TS-SQN-13-01 AND 13-02)." The changes made to the ITS submittal are discussed below:**

1. ITS 3.7.8 (ERCW System) Bases LCO Section, Insert 3 has been revised to remove the discussion concerning the alternate alignments allowed for the ERCW system. (Pages 279 and 286 of Enclosure 2, Volume 12)

2. The CTS markups for ITS 3.7.9 (UHS) have been revised to remove proposed changes based on the UHS/ERCW LAR. (Pages 295 - 298 of Enclosure 2, Volume 12)

3. Discussion of Change (DOC) A02 for ITS 3.7.9 (UHS) has been revised to remove the discussion that changes to the CTS are based on the UHS/ERCW LAR. (Page 299)

4. The ISTS markups for ITS 3.7.9 (UHS) have been revised to remove proposed changes based on the UHS/ERCW LAR and align ITS 3.7.9 with CTS 3/4.7.5 (Ultimate Heat Sink). (Pages 302 - 305 and 307 -

310)

5. **Justification for Deviation (JFD) 1 for ITS 3.7.9 has been revised. JFD 6 has been added, as well as JFD 6 indicators, to justify the change made to ISTS SR 3.7.9.2. (Page 304, 309, and 312)**

6. **The ISTS 3.7.9 Bases have been revised to remove proposed changes based on the UHS/ERCW LAR and align the Bases with changes made to the Specification. JFD indicators have been added where necessary to justify changes made to the Bases. (Pages 316 - 325 and 328 - 337)**

7. **Enclosure 6, "Disposition of Existing License Amendment Requests," has been revised to reflect the removal of the UHS/ERCW LAR from the ITS submittal. (Pages E6-1).**

See Attachment 1 for the draft revised ITS submittal affected by the changes discussed above.

Response Date/Time	**12/2/2014 2:10 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**12/2/2014 1:09 PM**
Date Modified	
Modified By	

1

INSERT 3

a. The ERCW system is aligned for ~~normal~~ operation with at least two ERCW pumps OPERABLE per train (with one pump fed from each 6.9 kV shutdown board) and two ERCW supply strainers are OPERABLE per train~~, or the ERCW system is aligned for one ERCW pump per train operation in accordance with Table B 3.7.9-1, or the ERCW system is aligned for one ERCW supply strainer per train operation in accordance with Table B 3.7.9-2~~;

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1 **INSERT 3**

a. The ERCW system is aligned for ~~normal~~ operation with at least two ERCW pumps OPERABLE per train (with one pump fed from each 6.9 kV shutdown board) and two ERCW supply strainers are OPERABLE per train~~, or the ERCW system is aligned for one ERCW pump per train operation in accordance with Table B 3.7.9-1, or the ERCW system is aligned for one ERCW supply strainer per train operation in accordance with Table B 3.7.9-2~~;

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PLANT SYSTEMS

3/4.7.5 ULTIMATE HEAT SINK

LIMITING CONDITION FOR OPERATION

LCO 3.7.9 3.7.5 The ultimate heat sink shall be OPERABLE ~~with:~~ keep

SR 3.7.9.1 ~~a. A minimum water level at or above elevation 674 feet mean sea level USGS datum, and~~

SR 3.7.9.2 ~~b. An average ERCW supply header water temperature of less than or equal to 87°F, when the ERCW System is not in the alignment to support large heavy load lifts associated with the Unit 2 refueling outage 18 steam generator replacement project, and~~

~~c. An average ERCW supply header water temperature of less than or equal to 74°F, when the ERCW System is in the alignment to support large heavy load lifts associated with the Unit 2 refueling outage 18 steam generator replacement project.~~ A02

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

keep

ACTION: ~~INSERT 1~~

ACTION A ~~With the requirements of the above specification not satisfied, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours~~. ~~A02~~

In accordance with the Surveillance Frequency Control Program LA01

SURVEILLANCE REQUIREMENTS

SR 3.7.9.1, SR 3.7.9.2 4.7.5.1 The ultimate heat sink shall be determined OPERABLE ~~at least once per 24 hours~~ by verifying ~~the average ERCW supply header temperature and water level to be within their limits.~~ ~~A02~~

~~INSERT 2~~

keep

ITS

ITS 3.7.9

A02 ~~**INSERT 1**~~

~~ACTION A~~ ~~a. With the average ERCW supply header water temperature > 81°F and ≤ 87°F, and any ERCW loop aligned to support one pump per loop OPERABILITY, and only one ERCW pump is OPERABLE on that loop, immediately declare the associated ERCW loop inoperable and comply with the ACTION requirements of Specification 3.7.4.~~

~~ACTION B~~ ~~b. With the average ERCW supply header water temperature ≥ 83°F and ≤ 87°F, and one ERCW supply strainer inoperable on one or more loops, immediately declare the associated ERCW loop inoperable and comply with the ACTION requirements of Specification 3.7.4.~~

~~ACTION C~~ ~~c. With the UHS not within limits for reasons other than ACTION a or ACTION b, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.~~

A02 ~~**INSERT 2**~~

~~SR 3.7.9.1~~ ~~a. the UHS water level is ≥ 674 feet mean sea level USGS datum, and~~

~~SR 3.7.9.2~~ ~~b. the average ERCW supply header water temperature is:~~

~~1) ≤ 81°F with any ERCW loop aligned to support one pump per loop OPERABILITY and only one ERCW pump OPERABLE on that loop, or~~

~~2) < 83°F with one ERCW supply strainer and two ERCW pumps OPERABLE on that loop, or~~

~~3) ≤ 87°F with two ERCW supply strainers and two ERCW pumps OPERABLE per loop.~~

PLANT SYSTEMS

3/4.7.5 ULTIMATE HEAT SINK

LIMITING CONDITION FOR OPERATION

LCO 3.7.9 3.7.5 The ultimate heat sink shall be OPERABLE ~~with:~~ keep A02

SR 3.7.9.1 ~~a. A minimum water level at or above elevation 674 feet mean sea level USGS datum, and~~

SR 3.7.9.2 ~~b. An average ERCW supply header water temperature of less than or equal to 87°F.~~

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION: ~~INSERT 3~~ keep A02

ACTION A ~~With the requirements of the above specification not satisfied, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.~~

SURVEILLANCE REQUIREMENTS In accordance with the Surveillance Frequency Control Program LA01

SR 3.7.9.1, SR 3.7.9.2 4.7.5.1 The ultimate heat sink shall be determined OPERABLE ~~at least once per 24 hours~~ by verifying ~~the average ERCW supply header temperature and water level to be within their limits.~~ A02

~~INSERT 4~~

keep

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ITS ITS 3.7.9

~~A02~~ ~~**INSERT 3**~~

~~ACTION A~~ ~~a. With the average ERCW supply header water temperature > 79°F and ≤ 87°F, and any ERCW loop aligned to support one pump per loop OPERABILITY, and only one ERCW pump is OPERABLE on that loop, immediately declare the associated ERCW loop inoperable and comply with the ACTION requirements of Specification 3.7.4.~~

~~ACTION B~~ ~~b. With the average ERCW supply header water temperature ≥ 83°F and ≤ 87°F, and one ERCW supply strainer inoperable on one or more loops, immediately declare the associated ERCW loop inoperable and comply with the ACTION requirements of Specification 3.7.4.~~

~~ACTION C~~ ~~c. With the UHS not within limits for reasons other than ACTION a or ACTION b, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.~~

~~A02~~ ~~**INSERT 4**~~

~~SR 3.7.9.1~~ ~~a. the UHS water level is ≥ 674 feet mean sea level USGS datum, and~~

~~SR 3.7.9.2~~ ~~b. the average ERCW supply header water temperature is:~~

~~1) ≤ 79°F with any ERCW loop aligned to support one pump per loop OPERABILITY and only one ERCW pump OPERABLE on that loop, or~~

~~2) < 83°F with one ERCW supply strainer and two ERCW pumps OPERABLE on that loop, or~~

~~3) ≤ 87°F with two ERCW supply strainers and two ERCW pumps OPERABLE per loop.~~

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DISCUSSION OF CHANGES
ITS 3.7.9, ULTIMATE HEAT SINK (UHS)

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable, because they do not result in technical changes to the CTS.

A02 ~~This change is provided consistent with Technical Specification amendment request TS-SQN-13-01 and 13-02, "Sequoyah Nuclear Plant (SQN), Units 1 and 2 – Proposed Technical Specification (TS) Change, "Ultimate Heat Sink (UHS) Temperature Limitations Supporting Alternate Essential Raw Water Cooling Water (ERCW) Loop Alignments (TS-SQN-13-01 and 13-02)," submitted to the USNRC for approval in a letter from J. W. Shea (TVA) to USNRC, dated October 2, 2013 (ADAMS Accession No. ML13280A267). As such, these changes are administrative.~~

SQN Unit 1 CTS LCO 3.7.5.b and 3.7.5.c provide a one-time special restriction when the ERCW System is in the alignment to support large heavy load lifts associated with the Unit 2 refueling outage 18 steam generator replacement project. ITS LCO 3.7.9 does not provide this special restriction. This changes the CTS by deleting a one-time special restriction needed to replace the Unit 2 steam generators.

The purpose of the SQN Unit 1 CTS LCO 3.7.5.b and 3.7.5.c heavy load lift special restriction was to provide a one-time operability restriction to allow a heavy load lift needed to replace the Unit 2 steam generators during the Unit 2 refueling outage 18. This special restriction has been used and refueling outage 18 has passed making this special restriction no longer usable. This change is designated as an administrative change and is acceptable because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

NONE

RELOCATED SPECIFICATIONS

NONE

REMOVED DETAIL CHANGES

LA01 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.7.5.1 requires verification at least once per 24 hours that the average Essential Raw Cooling Water (ERCW) supply header temperature and UHS water level are within their limits. ITS SR 3.7.9.1 and SR 3.7.9.2 require similar Surveillances but specify the periodic Frequency as "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for the SRs to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the

CTS

UHS
3.7.9

3.7 PLANT SYSTEMS

3.7.9 Ultimate Heat Sink (UHS)

3.7.5 LCO 3.7.9 The UHS shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~ACTION a~~ INSERT 1 ~~A. [One or more cooling towers with one cooling tower fan inoperable.~~	A.1 INSERT 2 ~~Restore cooling tower fan(s) to OPERABLE status.~~	Immediately ~~7 days]~~
~~-----REVIEWER'S NOTE----- The [ ]°F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit. ---------------------------------~~ ~~ACTION b~~ INSERT 3 ~~B. [Water temperature of the UHS > [90]°F and ≤ [ ]°F.~~	B.1 INSERT 2 ~~Verify water temperature of the UHS is ≤ [90]°F averaged over the previous 24 hour period.~~	Immediately ~~Once per hour]~~
ACTION ~~c~~ A. ~~C.~~ ~~[Required Action and associated Completion Time of Condition A or B not met.~~ ~~OR]~~ UHS inoperable ~~[for reasons other than Condition A or B]~~ . keep	~~C~~.1 Be in MODE 3. AND A ~~C~~.2 Be in MODE 5.	6 hours 36 hours

1 2 ~~2~~ 3 ~~2~~ 1 4

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2 ~~**INSERT 1**~~

~~ERCW average supply temperature > 81°F and ≤ 87°F and any ERCW train aligned to support one ERCW pump per train operation.~~

2 ~~**INSERT 2**~~

~~Declare associated ERCW train inoperable and enter applicable Conditions and Required Actions of LCO 3.7.8, "ERCW System."~~

2 ~~**INSERT 3**~~

~~ERCW average supply temperature ≥ 83°F and ≤ 87°F and one ERCW supply strainer inoperable on one or more trains.~~

CTS

UHS
3.7.9

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.7.5.1~~,~~ ~~4.7.5.1.a~~	SR 3.7.9.1 ~~[~~ Verify water level of UHS is ≥ ~~[562]~~ 674 ft ~~[~~mean sea level~~]~~ USGS datum.	~~[[24] hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]]~~	4 5 5
4.7.5.1~~,~~ ~~4.7.5.1.b~~	SR 3.7.9.2 ~~[~~ Verify average water temperature ~~of UHS~~ is ≤ ~~[90]~~ 87 °F. ERCW supply header keep keep ~~INSERT 4~~ ~~:~~	~~[24 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]]~~	6 4 5 5
	~~SR 3.7.9.3 [Operate each cooling tower fan for ≥ [15] minutes.~~	~~[31 days~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~	1

2 ~~**INSERT 4**~~

~~a) ≤ 81°F with any ERCW train aligned to support one pump per train operation,~~

~~b) ≤ 83°F with one ERCW supply strainer and two ERCW pumps OPERABLE on that train, and~~

~~c) ≤ 87°F with two ERCW supply strainers and two ERCW pumps OPERABLE per train.~~

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3.7 PLANT SYSTEMS

3.7.9 Ultimate Heat Sink (UHS)

3.7.5 LCO 3.7.9 The UHS shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
~~ACTION a~~	~~A.~~ INSERT 1 ~~[One or more cooling towers with one cooling tower fan inoperable.~~	A.1 INSERT 2 ~~Restore cooling tower fan(s) to OPERABLE status.~~	Immediately ~~7 days]~~	1 ~~2~~
~~ACTION b~~	~~-----REVIEWER'S NOTE----- The [ ]°F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit. ---------------------------------~~ ~~B.~~ INSERT 3 ~~[Water temperature of the UHS > [90]°F and ≤ [ ]°F.~~	B.1 INSERT 2 ~~Verify water temperature of the UHS is ≤ [90]°F averaged over the previous 24 hour period.~~	Immediately ~~Once per hour]~~	~~2~~ 3 ~~2~~
ACTION ~~c~~	~~C.~~ A. ~~[Required Action and associated Completion Time of Condition A or B not met.~~ ~~OR]~~ UHS inoperable ~~[for reasons other than Condition A or B]~~ . keep	~~C~~.1 Be in MODE 3. AND A ~~C~~.2 Be in MODE 5.	6 hours 36 hours	1 4

2 ~~**INSERT 1**~~

~~ERCW average supply temperature > 79°F and ≤ 87°F and any ERCW train aligned to support one ERCW pump per train operation.~~

2 ~~**INSERT 2**~~

~~Declare associated ERCW train inoperable and enter applicable Conditions and Required Actions of LCO 3.7.8, "ERCW System."~~

2 ~~**INSERT 3**~~

~~ERCW average supply temperature ≥ 83°F and ≤ 87°F and one ERCW supply strainer inoperable on one or more trains.~~

CTS

UHS
3.7.9

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.7.5.1~~,~~ ~~4.7.5.1.a~~	SR 3.7.9.1 ~~[~~ Verify water level of UHS is ≥ ~~[562]~~ 674 ft ~~[~~mean sea level~~]~~ USGS datum.	~~[[24] hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]]~~	4 5 5
4.7.5.1~~,~~ ~~4.7.5.1.b~~	SR 3.7.9.2 ~~[~~ Verify average water temperature ~~of UHS~~ ERCW supply header is ≤ ~~[90]~~ 87°F. INSERT 4 keep keep	~~[24 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]]~~	6 4 5 5
	~~SR 3.7.9.3 [Operate each cooling tower fan for ≥ [15] minutes.~~	~~[31 days~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~	1

~~2~~ ~~**INSERT 4**~~

~~a) ≤ 79°F with any ERCW train aligned to support one pump per train operation,~~

~~b) ≤ 83°F with one ERCW supply strainer and two ERCW pumps OPERABLE on that train, and~~

~~c) ≤ 87°F with two ERCW supply strainers and two ERCW pumps OPERABLE per train.~~

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.9, ULTIMATE HEAT SINK (UHS)

,

1. The Sequoyah Nuclear Plant (SQN) cooling towers are not part of the UHS. Therefore, ISTS 3.7.9 ACTION A ~~has been modified and~~ SR 3.7.9.3 and SR 3.7.9.4 have not been included in the SQN ITS.

2. Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

, and subsequent ACTIONS have been renumbered

3. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed in to what is needed to meet this requirement. This is not meant to be retained in the final version of the plant specific submittal. In addition, the SQN UHS analysis does not provide for averaging the UHS (intake temperature) over a 24 hour period. The analysis assumes the initial intake temperature is less than or equal to 87°F. Therefore, the ACTION to verify UHS temperature averaged over 24 hours (ISTS 3.7.9 ACTION B) is not included in the SQN ITS.

4. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

5. ISTS SR 3.7.9.1 and SR 3.7.9.2 (ITS SR 3.7.9.1 and SR 3.7.9.2) provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program.

6. ISTS SR 3.7.9.2 has been changed to "Verify average ERCW supply header water temperature is ≤ 87ºF" to be consistent with the current licensing basis as required in CTS 4.7.5.1.

BASES

APPLICABLE SAFETY ANALYSES

design basis loss of coolant accident (LOCA). Near this time, the unit switches from injection to recirculation and the containment cooling systems and RHR are required to remove the core decay heat.

The operating limits are based on conservative heat transfer analyses for the worst case LOCA. Reference 1 provides the details of the assumptions used in the analysis, which include worst expected meteorological conditions, conservative uncertainties when calculating decay heat, and worst case single active failure (e.g., single failure of a manmade structure). The UHS is designed in accordance with Regulatory Guide 1.27 (Ref. 2), which requires a 30 day supply of cooling water in the UHS.

The UHS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The UHS is required to be OPERABLE and is considered OPERABLE if it contains a sufficient volume of water at or below the maximum temperature that would allow the ERCW system ~~SWS~~ to operate for at least 30 days following the design basis LOCA without the loss of net positive suction head (NPSH), and without exceeding the maximum design temperature of the equipment served by the ERCW system ~~SWS~~. To meet this condition, the average ERCW supply header water ~~UHS~~ temperature should not exceed 87 ~~[90~~°F~~]~~ and the level of the UHS should not fall below 674 ~~[562~~ ft mean sea level USGS datum ~~]~~ during normal unit operation. ~~INSERT 2~~

1 1 3 1 2

APPLICABILITY

In MODES 1, 2, 3, and 4, the UHS is required to support the OPERABILITY of the equipment serviced by the UHS and required to be OPERABLE in these MODES.

In MODE 5 or 6, the OPERABILITY requirements of the UHS are determined by the systems it supports.

ACTIONS

~~[A.1~~

~~INSERT 3~~ ~~If one or more cooling towers have one fan inoperable (i.e., up to one fan per cooling tower inoperable), action must be taken to restore the inoperable cooling tower fan(s) to OPERABLE status within 7 days.~~

~~The 7 day Completion Time is reasonable based on the low probability of an accident occurring during the 7 days that one cooling tower fan is inoperable (in one or more cooling towers), the number of available systems, and the time required to reasonably complete the Required Action.]~~

3 ~~1~~

1 **~~INSERT 2~~**

~~When the ERCW System is in the alignment to support one ERCW pump per train operation, the UHS temperature shall be ≤ 81°F. When the ERCW System is in the alignment to support one ERCW supply strainer per train operation, the UHS temperature shall be < 83°F. The alignment to support one ERCW pump per train operation is described in Table B 3.7.9-1. The alignment to support one ERCW supply strainer per train operation is described in Table B 3.7.9-2.~~

1 **~~INSERT 3~~**

~~With the average ERCW supply header water temperature > 81°F and ≤ 87°F and the associated ERCW train is aligned to support one pump per train operation, the ERCW heat removal capability for that train is less than that assumed in the accident analysis and the associated ERCW train must be immediately declared inoperable.~~

~~In this Condition, the remaining OPERABLE ERCW train is adequate to perform the heat removal function. However, the overall reliability is reduced because a single failure could result in a loss of the UHS function. Therefore, to ensure action is taken to restore the inoperable ERCW train to an OPERABLE status, the affected ERCW train is immediately declared inoperable and the applicable Conditions and Required Actions of LCO 3.7.8, "ERCW System," are entered.~~

BASES

ACTIONS (continued)

[~~B.1~~

~~------------------------------------REVIEWER'S NOTE------------------------------------~~
~~The [ ]°F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit.~~
~~--~~ 4

~~INSERT 4~~

~~With water temperature of the UHS > [90]°F, the design basis assumption associated with initial UHS temperature are bounded provided the temperature of the UHS averaged over the previous 24 hour period is ≤ [90]°F. With the water temperature of the UHS > [90]°F, long term cooling capability of the ECCS loads and DGs may be affected. Therefore, to ensure long term cooling capability is provided to the ECCS loads when water temperature of the UHS is > [90]°F, Required Action B.1 is provided to more frequently monitor the water temperature of the UHS and verify the temperature is ≤ [90]°F when averaged over the previous 24 hour period. The once per hour Completion Time takes into consideration UHS temperature variations and the increased monitoring frequency needed to ensure design basis assumptions and equipment limitations are not exceeded in this condition. If the water temperature of the UHS exceeds [90]°F when averaged over the previous 24 hour period or the water temperature of the UHS exceeds [ ]°F, Condition C must be entered immediately.]~~ 3 ~~1~~

A

[~~C~~.1 and ~~C~~.2 3 ~~2~~

If ~~the Required Actions and Completion Times of Condition [A or B] are not met, or~~ the UHS is inoperable ~~for reasons other than Condition A [or B]~~, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours. 3

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.] 2

SURVEILLANCE REQUIREMENTS

[SR 3.7.9.1 2

This SR verifies that adequate long term (30 day) cooling can be maintained. The specified level also ensures that sufficient NPSH is available to operate the ~~SWS~~ ERCW pumps. ~~[The [24] hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES.~~ This SR verifies that the UHS water level is ≥ ~~[562]~~ 674 ft ~~[mean sea level]~~ USGS datum. 5 2

1 ~~**INSERT 4**~~

~~With the average ERCW supply header water temperature ≥ 83°F and ≤ 87°F and the associated ERCW train(s) is aligned to support one inoperable ERCW supply strainer per train, the ERCW heat removal capability for each affected train is less than that assumed in the accident analysis and the associated ERCW train must be immediately declared inoperable.~~

~~In this Condition, any remaining OPERABLE ERCW train is adequate to perform the heat removal function. However, the overall reliability is reduced because a single failure could result in a loss of the UHS function. Therefore, to ensure action is taken to restore the inoperable ERCW train(s) to an OPERABLE status, the associated ERCW train(s) is immediately declared inoperable and the applicable Conditions and Required Actions of LCO 3.7.8, "ERCW System," are entered.~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~ 5

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 4
~~-----]]~~ 5

~~[~~ SR 3.7.9.2 2

This SR verifies that the ERCW System ~~SWS~~ is available to cool the CCS ~~CCW System~~ to at least its maximum design temperature with the maximum accident or normal design heat loads for 30 days following a Design Basis Accident. ~~[The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES.~~ This SR verifies that the average ERCW supply header water temperature ~~of the UHS~~ is ≤ 87 ~~[90~~°F ~~].~~ ~~INSERT 5~~ 1 5 2 ~~1~~ 3 5 ~~1~~

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 4
~~-----]]~~ 5

~~[SR 3.7.9.3~~

~~Operating each cooling tower fan for ≥[15] minutes ensures that all fans are OPERABLE and that all associated controls are functioning properly. It also ensures that fan or motor failure, or excessive vibration, can be detected for corrective action. [The 31 day Frequency is based on operating experience, the known reliability of the fan units, the redundancy available, and the low probability of significant degradation of the UHS cooling tower fans occurring between surveillances.~~ 3

1

~~INSERT 5~~

~~when the ERCW System is aligned in its normal configuration. In addition, this SR provides temperature limitations for alternate ERCW train alignments.~~

~~When an ERCW train is aligned in accordance with Table B 3.7.9-1 for one OPERABLE ERCW pump per train operation, this SR verifies that the average water temperature of the UHS is ≤ 81°F. When one or more ERCW train(s) is aligned in accordance with Table B 3.7.9-2 for one OPERABLE ERCW supply strainer per train operation, this SR verifies that the average water temperature of the UHS is < 83°F. These actions verify that the ERCW is available to cool the CCS to at least its maximum design temperature with the maximum accident or normal design heat loads for 30 days following a Design Basis Accident when aligned in either the Table B 3.7.9-1 or Table B 3.7.9-2 alternate configuration.~~

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BASES

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]]~~

3

~~[SR 3.7.9.4~~

~~This SR verifies that each cooling tower fan starts and operates on an actual or simulated actuation signal. [The [18] month Frequency is consistent with the typical refueling cycle. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]]~~

3

REFERENCES

1. U FSAR, Section ~~[~~9.2.5~~]~~. 1 2
2. Regulatory Guide 1.27.

~~INSERT 6~~ ~~1~~

~~1~~ ~~**INSERT 6**~~

~~Table B 3.7.9-1 (page 1 of 2)~~
~~ERCW Requirements For One Pump per Train Operation~~

~~Train A One Pump Operation~~

~~1. ERCW System supply header average water temperature is ≤ 81°F.~~

~~2. Unit 2 is in MODE 5 or 6, or defueled.~~

~~3. The ERCW System is aligned as follows:~~

~~a. ERCW flow is isolated to the following components:~~

~~1) 2A-A Diesel Generator Heat Exchangers;~~

~~2) Unit 2 Containment Spray Heat Exchanger 2A;~~

~~3) Unit 2 TDAFW Pump from the "2A" ERCW Main Supply Header;~~

~~4) Lower Containment Vent Cooler 2A, Control Rod Drive Vent Cooler 2A, and Reactor Coolant Pump 2-1 Motor Cooler;~~

~~5) Lower Containment Vent Cooler 2C, Control Rod Drive Vent Cooler 2C, and Reactor Coolant Pump 2-3 Motor Cooler;~~

~~6) Upper Containment Vent Cooler 2A;~~

~~7) Upper Containment Vent Cooler 2C; and~~

~~8) Incore Instrumentation Room Water Coolers 2A.~~

~~b. The following are in service:~~

~~1) Train A ERCW yard header crosstie;~~

~~2) Train A ERCW 16-inch Auxiliary Building header crosstie; and~~

~~3) Train A ERCW 6-inch Engineered Safety Features (ESF) header crosstie.~~

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1

~~INSERT 6 (Continued)~~

~~Table B 3.7.9-1 (page 2 of 2)~~
~~ERCW Requirements For One Pump per Train Operation~~

~~Train B One Pump Operation~~

1. ~~ERCW System supply header average water temperature is ≤ 81°F.~~
2. ~~Unit 2 is in MODE 5, MODE 6, or defueled.~~
3. ~~The ERCW System is aligned as follows:~~
   a. ~~ERCW flow is isolated to the following components:~~
      1) ~~2B-B Diesel Generator Heat Exchangers;~~
      2) ~~Containment Spray Heat Exchanger 2B;~~
      3) ~~Unit 2 TDAFW Pump from the "2B" ERCW Main Supply Header;~~
      4) ~~Lower Containment Ventilation Cooler 2B, Control Rod Drive Vent Cooler 2B, and Reactor Coolant Pump 2-2 Motor Cooler;~~
      5) ~~Lower Containment Ventilation Coolers 2D, Control Rod Drive Vent Cooler 2D, and Reactor Coolant Pump 2-4 Motor Cooler ;~~
      6) ~~Upper Containment Ventilation Coolers 2B;~~
      7) ~~Upper Containment Ventilation Coolers 2D; and~~
      8) ~~Incore Instrumentation Room Water Coolers 2B.~~
   b. ~~The following are in service:~~
      1) ~~Train B ERCW yard header crosstie~~
      2) ~~Train B ERCW 16-inch Auxiliary Building header crosstie~~
      3) ~~Train B ERCW 6-inch Engineered Safety Features (ESF) header crossties.~~
   c. ~~ERCW flow to the 1B Control Rod Drive Vent Cooler is isolated.~~

~~1~~

~~INSERT 6 (Continued)~~

~~Table B 3.7.9-2 (page 1 of 1)~~
~~ERCW Requirements For One Supply Strainer per Train Operation~~

~~FEATURE~~	~~Condition~~
~~Average ERCW System supply header water temperature~~	~~≤ 83°F~~
~~ERCW Yard header crosstie (associated loop)~~	~~In service~~
~~ERCW 16-Inch Auxiliary Building header crossties~~	~~In service or isolated~~
~~ERCW 6-Inch ESF header crossties~~	~~In service or isolated~~

BASES

APPLICABLE SAFETY ANALYSES

design basis loss of coolant accident (LOCA). Near this time, the unit switches from injection to recirculation and the containment cooling systems and RHR are required to remove the core decay heat.

The operating limits are based on conservative heat transfer analyses for the worst case LOCA. Reference 1 provides the details of the assumptions used in the analysis, which include worst expected meteorological conditions, conservative uncertainties when calculating decay heat, and worst case single active failure (e.g., single failure of a manmade structure). The UHS is designed in accordance with Regulatory Guide 1.27 (Ref. 2), which requires a 30 day supply of cooling water in the UHS.

The UHS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The UHS is required to be OPERABLE and is considered OPERABLE if it of the UHS contains a sufficient volume of water at or below the maximum temperature that would allow the ~~SWS~~ ERCW system to operate for at least 30 days following the design basis LOCA without the loss of net positive suction head (NPSH), and without exceeding the maximum design temperature of the equipment served by the ~~SWS~~ ERCW system. To meet this condition, the ~~UHS~~ average ERCW supply header water temperature should not exceed ~~[90~~ 87°F~~]~~ and the level should not fall below ~~[562~~ 674 ft mean sea level~~]~~ USGS datum during normal unit operation. ~~INSERT 2~~

1

3 1

2

APPLICABILITY

In MODES 1, 2, 3, and 4, the UHS is required to support the OPERABILITY of the equipment serviced by the UHS and required to be OPERABLE in these MODES.

In MODE 5 or 6, the OPERABILITY requirements of the UHS are determined by the systems it supports.

ACTIONS

~~[A.1~~

~~INSERT 3~~ ~~If one or more cooling towers have one fan inoperable (i.e., up to one fan per cooling tower inoperable), action must be taken to restore the inoperable cooling tower fan(s) to OPERABLE status within 7 days.~~

3

~~4~~

~~The 7 day Completion Time is reasonable based on the low probability of an accident occurring during the 7 days that one cooling tower fan is inoperable (in one or more cooling towers), the number of available systems, and the time required to reasonably complete the Required Action.]~~

1 ~~**INSERT 2**~~

~~When the ERCW System is in the alignment to support one ERCW pump per train operation, the UHS temperature shall be ≤ 79°F. When the ERCW System is in the alignment to support one ERCW supply strainer per train operation, the UHS temperature shall be ≤ 83°F. The alignment to support one ERCW pump per train operation is described in Table B 3.7.9-1. The alignment to support one ERCW supply strainer per train operation is described in Table B 3.7.9-2.~~

1 ~~**INSERT 3**~~

~~With the average ERCW supply header water temperature > 79°F and ≤ 87°F and the associated ERCW train is aligned to support one pump per train operation, the ERCW heat removal capability for that train is less than that assumed in the accident analysis and the associated ERCW train must be immediately declared inoperable.~~

~~In this Condition, the remaining OPERABLE ERCW train is adequate to perform the heat removal function. However, the overall reliability is reduced because a single failure could result in a loss of the UHS function. Therefore, to ensure action is taken to restore the inoperable ERCW train to an OPERABLE status, the affected ERCW train is immediately declared inoperable and the applicable Conditions and Required Actions of LCO 3.7.8, "ERCW System," are entered.~~

BASES

ACTIONS (continued)

~~[B.1~~

~~------------------------------REVIEWER'S NOTE------------------------------~~
~~The [ ]°F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit.~~
~~---~~

~~INSERT 4~~

~~With water temperature of the UHS > [90]°F, the design basis assumption associated with initial UHS temperature are bounded provided the temperature of the UHS averaged over the previous 24 hour period is ≤ [90]°F. With the water temperature of the UHS > [90]°F, long term cooling capability of the ECCS loads and DGs may be affected. Therefore, to ensure long term cooling capability is provided to the ECCS loads when water temperature of the UHS is > [90]°F, Required Action B.1 is provided to more frequently monitor the water temperature of the UHS and verify the temperature is ≤ [90]°F when averaged over the previous 24 hour period. The once per hour Completion Time takes into consideration UHS temperature variations and the increased monitoring frequency needed to ensure design basis assumptions and equipment limitations are not exceeded in this condition. If the water temperature of the UHS exceeds [90]°F when averaged over the previous 24 hour period or the water temperature of the UHS exceeds [ ]°F, Condition C must be entered immediately.]~~ 4 3

A

~~[~~ ~~C~~.1 and ~~C~~.2 ~~2~~ 3

If ~~the Required Actions and Completion Times of Condition [A or B] are not met, or~~ the UHS is inoperable ~~for reasons other than Condition A [or B]~~, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours. 3

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. ~~]~~ 2

SURVEILLANCE REQUIREMENTS

~~[~~ SR 3.7.9.1 2

This SR verifies that adequate long term (30 day) cooling can be maintained. The specified level also ensures that sufficient NPSH is available to operate the ~~SWS~~ ERCW pumps. ~~[The [24] hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES.~~ This SR verifies that the UHS water level is ≥ ~~[562]~~ 674 ft ~~[~~mean sea level~~]~~ USGS datum. 5 2

1

~~INSERT 4~~

~~With the average ERCW supply header water temperature ≥ 83°F and ≤ 87°F and the associated ERCW train(s) is aligned to support one inoperable ERCW supply strainer per train, the ERCW heat removal capability for each affected train is less than that assumed in the accident analysis and the associated ERCW train must be immediately declared inoperable.~~

~~In this Condition, any remaining OPERABLE ERCW train is adequate to perform the heat removal function. However, the overall reliability is reduced because a single failure could result in a loss of the UHS function. Therefore, to ensure action is taken to restore the inoperable ERCW train(s) to an OPERABLE status, the associated ERCW train(s) is immediately declared inoperable and the applicable Conditions and Required Actions of LCO 3.7.8, "ERCW System," are entered.~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~ 5

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~] 4 5

~~[~~SR 3.7.9.2 2

This SR verifies that the ERCW System ~~SWS~~ is available to cool the CCS ~~CCW System~~ to at least its maximum design temperature with the maximum accident or normal design heat loads for 30 days following a Design Basis Accident. ~~[The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES.~~ This SR verifies that the average ERCW supply header water temperature ~~of the UHS~~ is ≤ ~~[90~~ 87°F~~]~~. ~~INSERT 5~~ 1 5 2 ~~1~~ 3 5 ~~1~~

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~] 4 5

~~[SR 3.7.9.3~~

~~Operating each cooling tower fan for ≥[15] minutes ensures that all fans are OPERABLE and that all associated controls are functioning properly. It also ensures that fan or motor failure, or excessive vibration, can be detected for corrective action. [The 31 day Frequency is based on operating experience, the known reliability of the fan units, the redundancy available, and the low probability of significant degradation of the UHS cooling tower fans occurring between surveillances.~~ 3

1

~~INSERT 5~~

~~when the ERCW System is aligned in its normal configuration. In addition, this SR provides temperature limitations for alternate ERCW train alignments.~~

~~When an ERCW train is aligned in accordance with Table B 3.7.9-1 for one OPERABLE ERCW pump per train operation, this SR verifies that the average water temperature of the UHS is ≤ 79°F. When one or more ERCW train(s) is aligned in accordance with Table B 3.7.9-2 for one OPERABLE ERCW supply strainer per train operation, this SR verifies that the average water temperature of the UHS is < 83°F. These actions verify that the ERCW is available to cool the CCS to at least its maximum design temperature with the maximum accident or normal design heat loads for 30 days following a Design Basis Accident when aligned in either the Table B 3.7.9-1 or Table B 3.7.9-2 alternate configuration.~~

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BASES

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]]~~

3

~~[SR 3.7.9.4~~

~~This SR verifies that each cooling tower fan starts and operates on an actual or simulated actuation signal. [The [18] month Frequency is consistent with the typical refueling cycle. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]]~~

3

REFERENCES

1. U FSAR, Section ~~[~~9.2.5~~]~~. 1 2
2. Regulatory Guide 1.27.

~~INSERT 6~~ ~~1~~

1 **~~INSERT 6~~**

~~Table B 3.7.9-1 (page 1 of 2)~~
~~ERCW Requirements For One Pump per Train Operation~~

~~Train A One Pump Operation~~

1. ~~ERCW System supply header average water temperature is ≤ 79°F.~~
2. ~~Unit 1 is in MODE 5 or 6, or defueled.~~
3. ~~The ERCW System is aligned as follows:~~
   a. ~~ERCW flow is isolated to the following components:~~
      1) ~~1A-A Diesel Generator Heat Exchangers;~~
      2) ~~Containment Spray Heat Exchanger 1A;~~
      3) ~~Unit 1 TDAFW Pump from the "1A" ERCW Main Supply Header;~~
      4) ~~Lower Containment Vent Cooler 1A, Control Rod Drive Vent Cooler 1A, and Unit 1 Reactor Coolant Pump 1-1 Motor Cooler;~~
      5) ~~Lower Containment Vent Cooler 1C, Control Rod Drive Vent Cooler 1C, and Unit 1 Reactor Coolant Pump 1-3 Motor Cooler; and~~
      6) ~~Incore Instrumentation Room Water Coolers 1A.~~
   b. ~~The following are in service:~~
      1) ~~Train A ERCW yard header crosstie;~~
      2) ~~Train A ERCW 16-inch Auxiliary Building header crosstie; and~~
      3) ~~Train A ERCW 6-inch Engineered Safety Features (ESF) header crosstie.~~

1

~~INSERT 6 (Continued)~~

~~Table B 3.7.9-1 (page 2 of 2)~~
~~ERCW Requirements For One Pump per Train Operation~~

~~Train B One Pump Operation~~

1. ~~ERCW System supply header average water temperature is ≤ 79°F.~~

2. ~~Unit 1 is in MODE 5, MODE 6, or defueled.~~

3. ~~The ERCW System is aligned as follows:~~

    a. ~~ERCW flow is isolated to the following components:~~

        1) ~~1B-B Diesel Generator Heat Exchangers;~~

        2) ~~Containment Spray Heat Exchanger 1B;~~

        3) ~~Unit 1 TDAFW Pump from the "1B" ERCW Main Supply Header;~~

        4) ~~Lower Containment Ventilation Cooler 1B, Control Rod Drive Vent Cooler 1B, and Reactor Coolant Pump 1-2 Motor Cooler;~~

        5) ~~Lower Containment Ventilation Coolers 1D, Control Rod Drive Vent Cooler 1D, and Reactor Coolant Pump 1-4 Motor Cooler; and~~

        6) ~~Incore Instrumentation Room Water Coolers 1B.~~

    b. ~~The following are in service:~~

        1) ~~Train B ERCW yard header crosstie~~

        2) ~~Train B ERCW 16-inch Auxiliary Building header crosstie~~

        3) ~~Train B ERCW 6-inch Engineered Safety Features (ESF) header crossties.~~

1 **~~INSERT 6 (Continued)~~**

~~Table B 3.7.9-2 (page 1 of 1)~~
~~ERCW Requirements For One Supply Strainer per Train Operation~~

~~FEATURE~~	~~Condition~~
~~Average ERCW System supply header water temperature~~	~~< 83°F~~
~~ERCW Yard header crosstie (associated loop)~~	~~In service~~
~~ERCW 16-Inch Auxiliary Building header crossties~~	~~In service or isolated~~
~~ERCW 6-Inch ESF header crossties~~	~~In service or isolated~~

DISPOSITION OF EXISTING LICENSE AMENDMENT REQUESTS

The following License Amendment Requests are under NRC review. The following table describes the request, and its affect on the ITS conversion, and its disposition.

DISPOSITION OF EXISTING LICENSE AMENDMENT REQUESTS				
Submittal Date	Description of Change	Affected ITS Submittal Sections/ Specifications	Affected CTS Pages	Disposition
August 10, 2012	Application to Revise Sequoyah Nuclear Plant Units 1 and 2 Updated Final Safety Analysis Report Regarding Changes to Hydrologic Analysis, (SQN-TS-12-02)	None	None	This is currently with the NRC for review.
January 7, 2013	Sequoyah Nuclear Plant, Units 1 and 2 License Renewal	None	None	This is currently with the NRC for review.
July 3, 2013	Application to Modify Ice Condenser Technical Specifications to Address Revisions in Westinghouse Mass and Energy Release Calculation (SQN-TS-12-04)	ITS: 3.6.12	Unit 1 3/4 6-26, 3/4 6-27 Unit 2 3/4 6-27, 3/4 6-28	Proposed changes are already reflected in this ITS submittal. Changes are annotated with an "A" DOC referencing the previously submitted LAR. See ITS 3.6.12 DOC A02.
~~October 2, 2013~~	~~Sequoyah Nuclear Plant (SQN), Units 1 and 2 - Proposed Technical Specification (TS) Change, "Ultimate Heat Sink (UHS) Temperature Limitations Supporting Alternate Essential Raw Cooling Water (ERCW) Loop Alignments (TS-SQN-13-01 and 13-02)"~~	~~ITS: 3.7.9~~ None	~~Units 1 and 2 3/4 7-14~~ None	~~Proposed changes are already reflected in this ITS submittal. Changes are annotated with an "A" DOC referencing the previously submitted LAR. See ITS 3.7.9 DOC A02.~~ This is currently with the NRC for review. Proposed changes are not reflected in the SQN ITS submittal.

Licensee Response/NRC Response/NRC Question Closure

Id	**409**
NRC Question Number	**MEH-005**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**12/19/2014**
Notification	**Scott Bowman** **Michelle Conner** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Roger Scott**
Added By	**Matthew Hamm**
Date Added	**12/19/2014 12:16 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**203**
NRC Question Number	**MEH-006**
Category	**Technical**
ITS Section	**3.7**
ITS Number	**3.7.12**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**Per the STS Bases reviewer's note for STS 3.7.13, conversion of STS 3.7.13 Condition B to ITS 3.7.12 Condition B depends on a commitment from the licensee to have guidance available describing compensatory measures to be taken in the event of an intentional and unintentional entry into Condition B. The table of Regulatory Commitments in LAR Enclosure 8 does not contain such a commitment. Please update the table with the commitment.**
Attach File 1	
Attach File 2	
Issue Date	**12/8/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**12/8/2014 2:40 PM**
Notification	**Scott Bowman** **Michelle Conner** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**397**
NRC Question Number	**MEH-006**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 for RAI MEH-006.pdf** (941KB)
Attachment 2	
Response Statement	**In response to RAI MEH-006, SQN will revise the table of commitments in Enclosure 8 of the ITS submittal. The commitment will state, "Sequoyah will have guidance available describing compensatory measures to be taken in the event of an intentional or unintentional entry into ITS 3.7.12 Condition B." Additionally, the paragraph detailing the number of commitments associated with the ITS conversion license amendment request will be revised to state that the table identifies 12 commitments by TVA for the SQN ITS conversion.** **See Attachment 1 for the draft revised Enclosure 8.**
Response Date/Time	**12/16/2014 8:45 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**12/16/2014 7:46 AM**
Date Modified	
Modified By	

No.	Commitments for TSTF-446	Due Date/Event
9	Sequoyah Unit 1 & Unit 2 will implement the capability to assess the effect on incremental large early release probability when using the extended completion times for containment isolation valves in the program for managing risk in accordance with 10 CFR 50.65(a)(4) and the plant-specific configuration risk management program.	Upon Implementation
No.	**Commitments for TSTF-493**	**Due Date/Event**
10	Sequoyah will revise the UFSAR to include the methodologies used to determine the as-found and as-left tolerances for Limiting Safety Setting System (LSSS) instrument channel setpoints.	Upon Implementation
11	Sequoyah will develop a monitoring program to adequately track the performance of Master Relays, Slave Relays, Logic Cabinets, Universal Logic Cards, Undervoltage Driver Cards, Safeguards Driver Cards, and Reactor Trip Breakers. (Reference Westinghouse Reports Section 3.2 and 3.5)	Upon Implementation

The above table identifies ~~11~~ 12 commitments by TVA in Enclosure 8 for the SQN conversion to Improved Technical Specifications license amendment request (LAR). Any other statements in this LAR submittal are provided for informational purposes and are not considered regulatory commitments.

No.	Commitment for ITS 3.7.12 Condition B	Due Date/Event
12	Sequoyah will have guidance available describing compensatory measures to be taken in the event of an intentional or unintentional entry into ITS 3.7.12 Condition B.	Upon Implementation

Licensee Response/NRC Response/NRC Question Closure

Id	**410**
NRC Question Number	**MEH-006**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**12/19/2014**
Notification	**Scott Bowman** **Michelle Conner** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Roger Scott**
Added By	**Matthew Hamm**
Date Added	**12/19/2014 12:17 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**61**
NRC Question Number	**RPG-001**
Category	**Technical**
ITS Section	**3.9**
ITS Number	**3.9.4**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	**3/4 9-4 (pdf page 107)**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

SQN's CTS LCO 3.9.4 (CTS page 3/4 9-4, pdf page 107), "Containment Building Penetrations," item 3.9.4.b.2 requires that one train of the Auxiliary Building Gas Treatment System is OPERABLE in accordance with Technical Specification 3.9.12. LCO 3.9.4 ACTION 2 states, "With the requirements of the above specification not satisfied for containment airlock doors or penetrations, immediately suspend all operations involving movement of irradiated fuel in the containment building." SQN's proposed change deletes 3.9.4.b.2 and designates the change as Administrative (A03). A03 provides the following justification,

> **"The purpose of CTS 3.9.4.b is to ensure that the Auxiliary Building Gas Treatment System is available when the containment personnel airlock doors are open during movement of recently irradiated fuel within the containment, this is accomplished by referencing CTS 3.9.12. This change is acceptable because the associated requirements referenced by CTS 3.9.4.b in CTS 3.9.12 are being addressed in ITS 3.7.12. Therefore, ITS 3.7.12 contains the appropriate requirements associated with the ABGTS. This change is designated as administrative because it does not result in a technical change to the CTS."**

The Staff review of marked-up LCO 3.7.12 (Ref. Enclosure 2, Volume 12, Rev. 0, Page 448 of 704), noticed that CONDITION D and associated REQUIRED ACTION D.1 state, '……movement of [recently] irradiated fuel assemblies in the auxiliary building.' It should state, '…….movement of

[recently] irradiated fuel assemblies in the containment building,' as stated in CTS 3.9.4 above. Please correct the discrepancy or explain.

Attach File 1	
Attach File 2	
Issue Date	**5/13/2014**
Added By	**Ravinder Grover**
Date Modified	
Modified By	
Date Added	**5/13/2014 3:15 PM**
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**

Licensee Response/NRC Response/NRC Question Closure

Id	**131**
NRC Question Number	**RPG-001**
Select Application	**Licensee Response**
Attachment 1	**RAI RPG-001 Draft Response Attachment 1, Rev 4.pdf** (2MB)
Attachment 2	
Response Statement	**In response to RPG-001, the CTS 3.9.4 markup will be revised to reflect that CTS 3.9.4.b.2 is dispositioned in ITS 3.7.12 and the ITS 3.9.4 discussion of change (DOC) A03 will be deleted.**

For clarity, ITS 3.9.4 DOC A02 will be revised with the addition of a note that references ITS 3.7.12 DOC L08 for the discussion of relaxing the OPERABILITY requirements for ABGTS. The ITS 3.9.4 Bases will be revised by the deletion of Insert 3, because it pertained to the LCO requirements associated with the mitigation capabilities of ABGTS for a fuel handling accident in the containment with both doors of an airlock open. Subsequent ITS 3.9.4 Bases inserts will be renumbered accordingly.

During the process of including the disposition of CTS 3.9.4.b.2 in the ITS 3.7.12 markups, it became apparent that ISTS 3.7.12 (and therefore ITS 3.3.8) was incorrectly adopted. The SQN fuel handling analysis assumes, in part, that the accident occurs 100 hours after shutdown, no credit is taken for natural decay due to holdup in the auxiliary building, and the activity released from the spent fuel pool is released to the environment over a 2-hour period with no credit for filtration through ABGTS. Therefore, a fuel handling accident involving recently irradiated fuel requires mitigation by a redundant ABGTS train. To reflect this requirement, ITS 3.3.8 and ITS 3.7.12 are being revised to require two ABGTS trains to be OPERABLE during the movement of recently irradiated fuel assemblies in the auxiliary building.

The changes to ITS 3.3.8 entail revising CTS Table3.3-6 to require two Spent Fuel Pool Area Radiation Monitor channels to be OPERABLE during the movement of recently irradiated fuel assemblies in the auxiliary building, the removal of the note specifying that the required radiation monitor channel shall be associated with the ABGTS train required to be OPERABLE per LCO 3.7.12, the addition of ISTS 3.3.8 ACTION A as it applies to an inoperable radiation monitor channel and associated changes to the DOCs (deletion of M04, and modification of M06, and M07), and including more detail in DOC L01 for the discussion of applying the Applicability associated with the movement of recently irradiated fuel assemblies in the auxiliary building. Changes to the ISTS markups and associated changes to justification for deviation (JFD) 7 are also made to

reflect the changes made to the CTS.

The changes to ITS 3.7.12 entail deletion of the proposed LCO Note 2, removal of the Applicability modifier proposed to be added to ACTION A, adoption of ISTS 3.7.12, ACTION D (with changes to reflect plant nomenclature), removal of changes to ISTS 3.7.12 ACTION E (with the exception of changes that reflect plant nomenclature) and associated changes to the DOCs (A03, LA04, L01, L02, and L06). These changes will also result in the deletion of JFD 2 and associated changes to the Bases markup. Changes to the CTS 3.9.12 markups will be made to reflect the requirement for two ABGTS trains to be OPERABLE during the movement of recently irradiated fuel assemblies in the auxiliary building and the adoption of ISTS 3.7.12 ACTIONS A and D. In addition, a correction will be made to reflect that the CTS 4.9.12.a requirement to operate the ABGTS trains for 10 hours with the heaters on is proposed to be changed to 15 minutes with the heaters on, consistent with the adoption of TSTF-522 and similar to the proposed change to CTS 4.7.8.a. This change will also be discussed in DOC L04.

An error was also identified within ITS 3.7.12 DOC LA05, whereby the ITS SR 3.7.12.4 requirement for verification that the ABGTS train can maintain a pressure with respect to atmospheric pressure was incorrectly stated as "greater than or equal to -0.25 inches water gauge." This statement will be corrected to state, "...less than or equal to -0.25 inches water gauge."

See Attachment 1 for the draft ITS 3.3.8, ITS 3.7.12, and ITS 3.9.4 changes discussed above.

Response Date/Time	6/20/2014 4:50 AM
Closure Statement	
Question Closure Date	
Notification	Scott Bowman Kristy Bucholtz Michelle Conner Ravinder Grover Matthew Hamm Khadijah Hemphill Andrew Hon Ray Schiele Roger Scott
Added By	Scott Bowman
Date Added	6/20/2014 3:49 AM
Date Modified	6/20/2014 8:39 AM
Modified By	Scott Bowman

ITS A01 ITS 3.9.4

REFUELING OPERATIONS

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

LIMITING CONDITION FOR OPERATION

LCO 3.9.4 3.9.4 The containment building penetrations shall be in the following status:

LCO 3.9.4.a a. The equipment door closed and held in place by a minimum of four bolts,

LCO 3.9.4.b b. A minimum of one door in each airlock is closed, and both doors of both containment personnel airlocks may be open if: A02

1. One personnel airlock door in each airlock is capable of closure, and

~~2. One train of the Auxiliary Building Gas Treatment System is OPERABLE in accordance with Technical Specification 3.9.12, and~~ A03 (See ITS 3.7.12)

LCO 3.9.4.c c. Each penetration* providing direct access from the containment atmosphere to the outside atmosphere shall be either:

LCO 3.9.4.c.1 1. Closed by an isolation valve, blind flange, manual valve, or equivalent, or

LCO 3.9.4.c.2 2. Be capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve.

APPLICABILTY:

Applicability 3.9.4.a. Containment Building Equipment Door - During movement of recently irradiated fuel within the containment.

Applicability 3.9.4.b. and c. Containment Building Airlock Doors and Penetrations - During movement of [recently] irradiated fuel within the containment. L01

ACTION:

ACTION A 1. With the requirements of the above specification not satisfied for the containment building equipment door, immediately suspend all operations involving movement of recently irradiated fuel in the containment building. ~~The provisions of Specification 3.0.3 are not applicable.~~ A04

ACTION A 2. With the requirements of the above specification not satisfied for containment airlock doors or penetrations, immediately suspend all operations involving movement of [recently] irradiated fuel in the containment building. ~~The provisions of Specification 3.0.3 are not applicable.~~ L01 A04

SURVEILLANCE REQUIREMENTS

SR 3.9.4.1, SR 3.9.4.2 4.9.4 Each of the above required containment building penetrations shall be determined to be either in its required condition or capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve ~~once per 7 days~~ during movement of [recently] irradiated fuel in the containment building by: L01

SR 3.9.4.1 A01 a. Verifying the penetrations are in their required condition, [~~once per 7 days~~ In accordance with the Surveillance Frequency Control Program] or LA01

Add proposed SR 3.9.4.2 Note L02

SR 3.9.4.2 b. Verifying the Containment Ventilation isolation valves not locked, sealed, or otherwise secured in position, actuate to the isolation position on an actual or simulated actuation signal [~~18 months~~ In accordance with the Surveillance Frequency Control Program]. LA01

LCO 3.9.4 Note * Penetration flow path(s) providing direct access from the containment atmosphere that transverse and terminate in the Auxiliary Building Secondary Containment Enclosure may be unisolated under administrative controls.

ITS A01 ITS 3.9.4

REFUELING OPERATIONS

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

LIMITING CONDITION FOR OPERATION

LCO 3.9.4 3.9.4 The containment building penetrations shall be in the following status:

LCO 3.9.4.a a. The equipment door closed and held in place by a minimum of four bolts,

LCO 3.9.4.b b. A minimum of one door in each airlock is closed, or both doors of both containment personnel airlocks may be open if: A02

1. One personnel airlock door in each airlock is capable of closure, and

~~2. One train of the Auxiliary Building Gas Treatment System is OPERABLE in accordance with Technical Specification 3.9.12, and~~ A03 (See ITS 3.7.12)

LCO 3.9.4.c c. Each penetration* providing direct access from the containment atmosphere to the outside atmosphere shall be either:

LCO 3.9.4.c.1 1. Closed by an isolation valve, blind flange, manual valve, or equivalent, or

LCO 3.9.4.c.2 2. Be capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve.

APPLICABILITY:

Applicability 3.9.4.a. Containment Building Equipment Door - During movement of recently irradiated fuel within the containment.

Applicability 3.9.4.b. and c. Containment Building Airlock Doors and Penetrations - During movement of recently irradiated fuel within the containment. L01

ACTION:

ACTION A 1. With the requirements of the above specification not satisfied for the containment building equipment door, immediately suspend all operations involving movement of recently irradiated fuel in the containment building. ~~The provisions of Specification 3.0.3 are not applicable.~~ A04

ACTION A 2. With the requirements of the above specification not satisfied for containment airlock doors or penetrations, immediately suspend all operations involving movement of recently irradiated fuel in the containment building. ~~The provisions of Specification 3.0.3 are not applicable.~~ L01 A04

SURVEILLANCE REQUIREMENTS

L02

SR 3.9.4.1, SR 3.9.4.2 4.9.4 Each of the above required containment building penetrations shall be determined to be either in its required condition or capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve ~~once per 7 days~~ during movement of recently irradiated fuel in the containment building by: L01

~~once per 7 days~~ In accordance with the Surveillance Frequency Control Program LA01

SR 3.9.4.1 A01 a. Verifying the penetrations are in their required condition, or

Add proposed SR 3.9.4.2 Note

SR 3.9.4.2 b. Verifying the Containment Ventilation isolation valves not locked, sealed, or otherwise secured in position, actuate to the isolation position on an actual or simulated actuation signal. ~~18 months~~ L02

LA01 In accordance with the Surveillance Frequency Control Program

LCO 3.9.4 Note * Penetration flow path(s) providing direct access from the containment atmosphere that transverse and terminate in the Auxiliary Building Secondary Containment Enclosure may be unisolated under administrative controls.

DISCUSSION OF CHANGES
ITS 3.9.4, CONTAINMENT PENETRATIONS

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.9.4.b requires that a minimum of one door in each airlock is closed, and both doors of both containment personnel airlocks may be open if one personnel airlock door in each airlock is capable of closure and one train of the Auxiliary Building Gas Treatment System is OPERABLE in accordance with Technical Specification 3.9.12. ITS LCO 3.9.4.b requires that one door in each air lock be capable of being closed. This changes the CTS by replacing the prescriptive requirement for control of the air lock doors with a more general requirement that the air lock doors must be capable of being closed. (See ITS 3.7.12 DOC L08 for the discussion of relaxing the OPERABILITY requirements for ABGTS.)

This change is acceptable because the requirements have not changed, one door continues to be capable of being closed in the event of a fuel handling accident. The ITS requirement preserves the intent of the CTS in that should a fuel handling accident occur inside containment, at least one airlock door in each airlock will be closed following an evacuation of containment. This change is designated as administrated because it does not result in a technical change to the CTS.

A03 Not used. ~~CTS 3.9.4.b allows both doors of each containment personnel airlocks to be open provided, in part, that "One train of the Auxiliary Building Gas Treatment System is OPERABLE in accordance with Technical Specification 3.9.12." ITS 3.9.4.b does not contain this specific requirement. This changes the CTS by removing the specific requirement that one train of the Auxiliary Building Gas Treatment System be OPERABLE.~~

~~The purpose of CTS 3.9.4.b is to ensure that the Auxiliary Building Gas Treatment System is available when the containment personnel airlock doors are open during movement of recently irradiated fuel within the containment, this is accomplished by referencing CTS 3.9.12. This change is acceptable because the associated requirements referenced by CTS 3.9.4.b in CTS 3.9.12 are being addressed in ITS 3.7.12. Therefore, ITS 3.7.12 contains the appropriate requirements associated with the ABGTS. This change is designated as administrative because it does not result in a technical change to the CTS.~~

A04 CTS 3.9.4 and CTS 3.9.9 ACTIONS state "The provisions of Specification 3.0.3 are not applicable. ITS 3.9.4 does not include this statement. This changes the CTS by deleting the Specification 3.0.3 exemption.

BASES

LCO (continued)

INSERT 2 2

The LCO is modified by a Note allowing penetration flow paths with direct access from the containment atmosphere ~~to the outside atmosphere~~ that transverse and terminate in the Auxiliary Building Secondary Containment Enclosure to be unisolated under administrative controls. Administrative controls ensure that 1) appropriate personnel are aware of the open status of the penetration flow path during movement of irradiated fuel assemblies within containment, and 2) specified individuals are designated and readily available to isolate the flow path in the event of a fuel handling accident. 2

The containment personnel air lock doors ~~many~~ may be open during movement of ~~[~~recently~~]~~ irradiated fuel in the containment provided that one door is capable of being closed in the event of a fuel handling accident. Should a fuel handling accident occur inside containment, at least one personnel air lock door will be closed following an evacuation of containment. ~~INSERT 3~~ 4 1 2 ~~2~~

APPLICABILITY

The containment penetration requirements are applicable during movement of ~~[~~recently~~]~~ irradiated fuel assemblies within containment because this is when there is a potential for the limiting fuel handling accident. In MODES 1, 2, 3, and 4, containment penetration requirements are addressed by LCO 3.6.1. In MODES 5 and 6, when movement of irradiated fuel assemblies within containment is not being conducted, the potential for a fuel handling accident does not exist. ~~[~~Additionally, due to radioactive decay, a fuel handling accident involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous ~~[x] days~~ 100 hours) will result in doses that are ~~well~~ within the guideline values specified in 10 CFR ~~100~~ 50.67 even without containment closure capability.~~]~~ Therefore, under these conditions no requirements are placed on containment penetration status. 1 1 2

~~-----REVIEWER'S NOTE-----~~
~~The addition of the term "recently" associated with handling irradiated fuel in all of the containment function Technical Specification requirements is only applicable to those licensees who have demonstrated by analysis that after sufficient radioactive decay has occurred, off-site doses resulting from a fuel handling accident remain below the Standard Review Plan limits (well within 10 CFR 100).~~

~~Additionally, licensees adding the term "recently" must make the following commitment which is consistent with NUMARC 93-01, Revision 4, Section 11.3.6.5 "Safety Assessment for Removal of Equipment from Service During Shutdown Conditions," subheading "Containment - Primary (PWR)/Secondary (BWR)."~~ 5

~~"The following guidelines are included in the assessment of systems removed from service during movement irradiated fuel:~~

4

INSERT 2

During movement of recently irradiated fuel assemblies within containment, the equipment hatch is required to be held in place by at least four bolts.

~~2~~

~~**INSERT 3**~~

~~The containment design is such that even though the primary and secondary containments are connected together when the personnel air lock doors are open, the normal auxiliary building ventilation system and Auxiliary Building Gas Treatment System (ABGTS) continue to provide the same fuel handling accident mitigation capability. With the personnel air lock doors open, the consequences of a fuel handling accident in the containment will be mitigated by the design of the ventilation systems (maintenance of a negative pressure during normal and applicable abnormal conditions, automatic isolation on high radiation in the auxiliary building, and automatic startup of emergency ventilation systems) and the leak-tight design of the auxiliary building. Both sets of the containment personnel airlock doors may be open during movement of recently irradiated fuel in containment provided one train of ABGTS is available for operation (LCO 3.7.12, "Auxiliary Building Gas Treatment System (AGBTS)"). The fuel handling accident is analyzed to occur in either the containment or the auxiliary building; however, an ABGTS start may be necessary for a containment fuel handling accident. The requirement for an airlock door to be capable of closure is provided to allow for long-term recovery from a fuel handling accident in containment.~~

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BASES

APPLICABILITY (continued)

~~- During fuel handling/core alterations, ventilation system and radiation monitor availability (as defined in NUMARC 91-06) should be assessed, with respect to filtration and monitoring of releases from the fuel. Following shutdown, radioactivity in the fuel decays away fairly rapidly. The basis of the Technical Specification OPERABILITY amendment is the reduction in doses due to such decay. The goal of maintaining ventilation system and radiation monitor availability is to reduce doses even further below that provided by the natural decay.~~

~~- A single normal or contingency method to promptly close primary or secondary containment penetrations should be developed. Such prompt methods need not completely block the penetration or be capable of resisting pressure.~~

~~The purpose of the "prompt methods" mentioned above are to enable ventilation systems to draw the release from a postulated fuel handling accident in the proper direction such that it can be treated and monitored."~~ 5

ACTIONS

A.1

If the containment equipment hatch, air locks, or any containment penetration ~~that provides direct access from the containment atmosphere to the outside atmosphere~~ is not in the required status, including ~~the~~ automatic Containment ~~Purge and~~ Ventilation ~~Exhaust~~ Isolation ~~System~~ valve(s) not capable of automatic actuation when the ~~purge and exhaust~~ Containment Ventilation isolation valves are open, the unit must be placed in a condition where the isolation function is not needed. This is accomplished by immediately suspending movement of ~~[~~recently~~]~~ irradiated fuel assemblies within containment. Performance of these actions shall not preclude completion of movement of a component to a safe position. 2 1

SURVEILLANCE REQUIREMENTS 3

SR 3.9.4.1

INSERT 4

This Surveillance demonstrates that each ~~of the~~ containment penetration~~s~~ is in its required ~~to be in its closed position is in that position. The Surveillance on the open purge and exhaust valves will demonstrate that the valves are not blocked from closing. Also the Surveillance will demonstrate that each~~ valve operator has motive power~~, which will ensure that each valve is capable of being closed by an OPERABLE automatic containment purge and exhaust isolation signal~~. 6

3

6

INSERT 4

status. The requirement that penetrations are capable of being closed by an OPERABLE automatic containment ventilation isolation valve, can be verified by ensuring that each required containment ventilation isolation

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[The Surveillance is performed every 7 days during movement of [recently] irradiated fuel assemblies within containment. The Surveillance interval is selected to be commensurate with the normal duration of time to complete fuel handling operations. A surveillance before the start of refueling operations will provide two or three surveillance verifications during the applicable period for this LCO. As such, this Surveillance ensures that a postulated fuel handling accident [involving handling recently irradiated fuel] that releases fission product radioactivity within the containment will not result in a release of significant fission product radioactivity to the environment in excess of those recommended by Standard Review Plan Section 15.7.4 (Reference 3).~~

~~OR~~

7

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~

8

SR 3.9.4.2

4

ventilation isolation

This Surveillance demonstrates that each containment ~~purge and exhaust~~ valve INSERT 5 actuates to its isolation position on manual initiation or on an actual or simulated ~~high~~ actuation ~~radiation~~ signal. ~~[The 18 month Frequency maintains consistency with other similar ESFAS instrumentation and valve testing requirements. In LCO 3.3.6, the Containment Purge and Exhaust Isolation instrumentation requires a CHANNEL CHECK every 12 hours and a COT every 92 days to ensure the channel OPERABILITY during refueling operations. Every 18 months a CHANNEL CALIBRATION is performed. The system actuation response time is demonstrated every 18 months, during refueling, on a STAGGERED TEST BASIS. SR 3.6.3.5 demonstrates that the isolation time of each valve is in accordance with the Inservice Testing Program requirements. These Surveillances performed during MODE 6 will ensure that the valves are capable of closing after a postulated fuel handling accident [involving handling recently irradiated fuel] to limit a release of fission product radioactivity from the containment.~~

2 9 10 7

4

9 **INSERT ~~5~~**

, that is not locked, sealed, or otherwise secured in position,

BASES

LCO (continued)

INSERT 2 2

that transverse and terminate in the Auxiliary Building Secondary Containment Enclosure

The LCO is modified by a Note allowing penetration flow paths with direct access from the containment atmosphere ~~to the outside atmosphere~~ to be unisolated under administrative controls. Administrative controls ensure that 1) appropriate personnel are aware of the open status of the penetration flow path during movement of irradiated fuel assemblies within containment, and 2) specified individuals are designated and readily available to isolate the flow path in the event of a fuel handling accident. 2

may

The containment personnel air lock doors ~~many~~ be open during movement of ~~[~~recently~~]~~ irradiated fuel in the containment provided that one door is capable of being closed in the event of a fuel handling accident. Should a fuel handling accident occur inside containment, one personnel air lock door will be closed following an evacuation of containment. 4 1 2

at least

~~INSERT 3~~ ~~2~~

APPLICABILITY

The containment penetration requirements are applicable during movement of ~~[~~recently~~]~~ irradiated fuel assemblies within containment because this is when there is a potential for the limiting fuel handling accident. In MODES 1, 2, 3, and 4, containment penetration requirements are addressed by LCO 3.6.1. In MODES 5 and 6, when movement of irradiated fuel assemblies within containment is not being conducted, the potential for a fuel handling accident does not exist. ~~[~~Additionally, due to radioactive decay, a fuel handling accident involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous ~~[x] days~~) will result in doses that are ~~well~~ within the guideline values specified in 10 CFR ~~100~~ even without containment closure capability.~~]~~ Therefore, under these conditions no requirements are placed on containment penetration status. 1 1 2

100 hours

50.67

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~The addition of the term "recently" associated with handling irradiated fuel in all of the containment function Technical Specification requirements is only applicable to those licensees who have demonstrated by analysis that after sufficient radioactive decay has occurred, off-site doses resulting from a fuel handling accident remain below the Standard Review Plan limits (well within 10 CFR 100).~~

~~Additionally, licensees adding the term "recently" must make the following commitment which is consistent with NUMARC 93-01, Revision 4, Section 11.3.6.5 "Safety Assessment for Removal of Equipment from Service During Shutdown Conditions," subheading "Containment - Primary (PWR)/Secondary (BWR)."~~

~~"The following guidelines are included in the assessment of systems removed from service during movement irradiated fuel:~~ 5

4

INSERT 2

During movement of recently irradiated fuel assemblies within containment, the equipment hatch is required to be held in place by at least four bolts.

2

~~INSERT 3~~

~~The containment design is such that even though the primary and secondary containments are connected together when the personnel air lock doors are open, the normal auxiliary building ventilation system and Auxiliary Building Gas Treatment System (ABGTS) continue to provide the same fuel handling accident mitigation capability. With the personnel air lock doors open, the consequences of a fuel handling accident in the containment will be mitigated by the design of the ventilation systems (maintenance of a negative pressure during normal and applicable abnormal conditions, automatic isolation on high radiation in the auxiliary building, and automatic startup of emergency ventilation systems) and the leak-tight design of the auxiliary building. Both sets of the containment personnel airlock doors may be open during movement of recently irradiated fuel in containment provided one train of ABGTS is available for operation (LCO 3.7.12, "Auxiliary Building Gas Treatment System (AGBTS)"). The fuel handling accident is analyzed to occur in either the containment or the auxiliary building; however, an ABGTS start may be necessary for a containment fuel handling accident. The requirement for an airlock door to be capable of closure is provided to allow for long-term recovery from a fuel handling accident in containment.~~

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BASES

APPLICABILITY (continued)

~~- During fuel handling/core alterations, ventilation system and radiation monitor availability (as defined in NUMARC 91-06) should be assessed, with respect to filtration and monitoring of releases from the fuel. Following shutdown, radioactivity in the fuel decays away fairly rapidly. The basis of the Technical Specification OPERABILITY amendment is the reduction in doses due to such decay. The goal of maintaining ventilation system and radiation monitor availability is to reduce doses even further below that provided by the natural decay.~~

~~- A single normal or contingency method to promptly close primary or secondary containment penetrations should be developed. Such prompt methods need not completely block the penetration or be capable of resisting pressure.~~

~~The purpose of the "prompt methods" mentioned above are to enable ventilation systems to draw the release from a postulated fuel handling accident in the proper direction such that it can be treated and monitored."~~ 5

ACTIONS

A.1

If the containment equipment hatch, air locks, or any containment penetration ~~that provides direct access from the containment atmosphere to the outside atmosphere~~ is not in the required status, including ~~the~~ automatic Containment ~~Purge and~~ Ventilation ~~Exhaust~~ Isolation ~~System~~ valve(s) not capable of automatic actuation when the ~~purge and exhaust~~ Containment Ventilation isolation valves are open, the unit must be placed in a condition where the isolation function is not needed. This is accomplished by immediately suspending movement of ~~[~~recently~~]~~ irradiated fuel assemblies within containment. Performance of these actions shall not preclude completion of movement of a component to a safe position. 2 1

SURVEILLANCE REQUIREMENTS 3

SR 3.9.4.1

This Surveillance demonstrates that each ~~of the~~ containment penetrations is in its required ~~to be in its closed~~ INSERT 4 ~~position is in that position. The Surveillance on the open purge and exhaust valves will demonstrate that the valves are not blocked from closing. Also the Surveillance will demonstrate that each~~ valve operator has motive power~~, which will ensure that each valve is capable of being closed by an OPERABLE automatic containment purge and exhaust isolation signal~~. 6

3

6

INSERT ~~4~~

status. The requirement that penetrations are capable of being closed by an OPERABLE automatic containment ventilation isolation valve, can be verified by ensuring that each required containment ventilation isolation

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BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[The Surveillance is performed every 7 days during movement of [recently] irradiated fuel assemblies within containment. The Surveillance interval is selected to be commensurate with the normal duration of time to complete fuel handling operations. A surveillance before the start of refueling operations will provide two or three surveillance verifications during the applicable period for this LCO. As such, this Surveillance ensures that a postulated fuel handling accident [involving handling recently irradiated fuel] that releases fission product radioactivity within the containment will not result in a release of significant fission product radioactivity to the environment in excess of those recommended by Standard Review Plan Section 15.7.4 (Reference 3).~~ 7

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 8

SR 3.9.4.2

4

ventilation isolation

This Surveillance demonstrates that each containment ~~purge and exhaust~~ valve actuates to its isolation position on manual initiation or on an actual or simulated ~~high radiation~~ signal. ~~[The 18 month Frequency maintains consistency with other similar ESFAS instrumentation and valve testing requirements. In LCO 3.3.6, the Containment Purge and Exhaust Isolation instrumentation requires a CHANNEL CHECK every 12 hours and a COT every 92 days to ensure the channel OPERABILITY during refueling operations. Every 18 months a CHANNEL CALIBRATION is performed. The system actuation response time is demonstrated every 18 months, during refueling, on a STAGGERED TEST BASIS. SR 3.6.3.5 demonstrates that the isolation time of each valve is in accordance with the Inservice Testing Program requirements. These Surveillances performed during MODE 6 will ensure that the valves are capable of closing after a postulated fuel handling accident [involving handling recently irradiated fuel] to limit a release of fission product radioactivity from the containment.~~ 2 9 10 7

INSERT 5

actuation

4

9 **INSERT 5**

, that is not locked, sealed, or otherwise secured in position,

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ITS A01 ITS 3.3.8

Table 3.3.8-1

TABLE 3.3-6

Auxiliary Building Gas Treatment System (ABGTS) A02

~~RADIATION MONITORING~~ INSTRUMENTATION

LA01

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	~~MEASUREMENT RANGE~~	ACTION
Add proposed Table 3.3.8-1 Function 1 (M03)					
1. AREA MONITOR (A01)					
Function 2 a. Fuel ~~Storage~~ Spent Pool Area	~~1~~ 2 ~~(b)~~ (L01) (~~M04~~)	*	≤ 151 mR/hr	~~10^{-1} – 10^{4} mR/hr~~ (LA01)	26
2. PROCESS MONITORS					
a. Containment Purge Air	1	1, 2, 3, 4 & 6	≤ 8.5x 10^{-3} μCi/cc	10 - 10^{7} cpm	28 (See ITS 3.3.6)
b. Containment					
i. Deleted					
ii. Particulate Activity					
RCS Leakage Detection	1	1, 2, 3 & 4	N/A	10 - 10^{7} cpm	27 (See ITS 3.4.15)
c. Control Room Isolation	2	ALL MODES and during movement of irradiated fuel assemblies	≤ 400 cpm**	10 - 10^{7} cpm	29 (See ITS 3.3.7)

Add proposed Table 3.3.8-1 Function 3 M05

~~Add proposed Table 3.3.8-1 Footnote (b)~~ ~~M04~~

Applicability * ~~With fuel in the storage pool or building~~

During movement of recently irradiated fuel assemblies in the auxiliary building L01

** Equivalent to 1.0 x 10^{-5} μCi/cc. See ITS 3.3.7

ITS

A01

ITS 3.3.8

TABLE 3.3-6 (Continued)

ACTION STATEMENTS

Add proposed ACTION Note 2 A03

Add proposed ACTION A L01

Add proposed ACTION B M06

ACTION B

ACTION 26 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, ~~perform area surveys of the monitored area with portable monitoring instrumentation at least once per 24 hours.~~

Add proposed ACTION C for Function 2 M07

ACTION 27 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.4.6.1.

See ITS 3.4.15

ACTION 28 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.9.9 (MODE 6) and 3.3.2.1 (MODES 1, 2, 3, and 4).

See ITS 3.3.6

ACTION 29 -

a. With one channel inoperable, place the associated control room emergency ventilation system (CREVS) train in recirculation mode of operation within 7 days or be at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With two channels inoperable, within 1 hour initiate and maintain operation of one CREVS train in the recirculation mode of operation and enter the required Actions for one CREVS train made inoperable by inoperable CREVS actuation instrumentation.

Or

place both trains in the recirculation mode of operation within one hour.

If the completion time of Action 29b cannot be met in Modes 1, 2, 3, and 4, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

If the completion time of Action 29b cannot be met during the movement of irradiated fuel assemblies, suspend core alterations and suspend movement of irradiated fuel assemblies.

If the completion time of Action 29b cannot be met in Modes 5 and 6, initiate action to restore one CREVS train.

See ITS 3.3.7

Add proposed ACTIONS A, B, C, and D for Function 1 M03

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A01

ITS

ITS 3.3.8

Table 3.3.8-1

TABLE 3.3-6

~~RADIATION MONITORING~~ INSTRUMENTATION

Auxiliary Building Gas Treatment System (ABGTS) A02

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	~~MEASUREMENT RANGE~~	ACTION
1. AREA MONITOR					
a. Fuel ~~Storage~~ Spent Pool Area	~~1~~ 2 (b)	*	≤151 mR/hr	~~10^{-1} - 10^{4} mR/hr~~	26
2. PROCESS MONITORS					
a. Containment Purge Air	1	1, 2, 3, 4 & 6	≤8.5 x 10^{-3} µCi/cc	10 - 10^{7} cpm	28
b. Containment					
i. Deleted					
ii. Particulate Activity					
RCS Leakage Detection	1	1, 2, 3 & 4	N/A	10 - 10^{7} cpm	27
c. Control Room Isolation	2	ALL MODES and during movement of irradiated fuel assemblies	≤ 400 cpm**	10 - 10^{7} cpm	29

LA01 · Add proposed Table 3.3.8-1 Function 1 M03 · A01 · Function 2 · LA01 · L01 · ~~M04~~

See ITS 3.3.6

See ITS 3.4.15

See ITS 3.3.7

~~Add proposed Table 3.3.8-1 Function 3~~ ~~M05~~

Add proposed Table 3.3.8-1 Footnote (b) M04

Applicability

* ~~With fuel in the storage pool or building~~ During movement of recently irradiated fuel assemblies in the auxiliary building L01

** Equivalent to 1.0 x 10^{-5} µCi/cc. See ITS 3.3.7

ITS

Add proposed ACTION A

A01

L01

ITS 3.3.8

TABLE 3.3-6 (Continued)

ACTION STATEMENTS

A03

Add proposed ACTION Note 2

Add proposed ACTION B

M06

ACTION B

ACTION 26 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, ~~perform area surveys of the monitored area with portable monitoring instrumentation at least once per 24 hours~~.

Add proposed ACTION C for Function 2

M07

ACTION 27 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.4.6.1.

See ITS 3.4.15

ACTION 28 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.9.9 (MODE 6) and 3.3.2 (MODES 1, 2, 3, and 4).

See ITS 3.3.6

ACTION 29 -

a. With one channel inoperable, place the associated control room emergency ventilation system (CREVS) train in recirculation mode of operation within 7 days or be at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With two channels inoperable, within 1 hour initiate and maintain operation of one CREVS train in the recirculation mode of operation and enter the required Actions for one CREVS train made inoperable by inoperable CREVS actuation instrumentation.

Or

place both trains in the recirculation mode of operation within one hour.

If the completion time of Action 29b cannot be met in Modes 1, 2, 3, and 4, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

If the completion time of Action 29b cannot be met during the movement of irradiated fuel assemblies, suspend core alterations and suspend movement of irradiated fuel assemblies.

If the completion time of Action 29b cannot be met in Modes 5 and 6, initiate action to restore one CREVS train.

See ITS 3.3.7

Add proposed ACTIONS A, B, C, and D for Function 1

M03

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DISCUSSION OF CHANGES
ITS 3.3.8, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS) ACTUATION INSTRUMENTATION

M03 CTS 3.3.3.1 does not contain a requirement for the manual initiation of ABGTS. ITS Table 3.3.8-1 Function 1 requires two channels of manual initiation for ABGTS to be OPERABLE in MODES 1, 2, 3, and 4 and during movement of recently irradiated fuel assemblies in the auxiliary building. ITS Table 3.3.8-1 Function 1 also requires performance of SR 3.3.8.3. ITS SR 3.3.8.3 requires performance of a TADOT every 18 months. (See DOC LA02 for the discussion related to moving the Surveillance Frequency to the Surveillance Frequency Control Program.) Additionally, ITS SR 3.3.8.3 contains a Note stating that verification of the setpoint is not required. Furthermore, ITS 3.3.8 contains compensatory actions to take if one or both ABGTS manual initiation channels are inoperable. ITS 3.3.8 ACTION A requires, in part, that with one manual initiation channel inoperable, to place one ABGTS train in operation. ITS 3.3.8 ACTION B requires, in part, that with two manual initiation channels inoperable, to place one train of ABGTS in operation immediately and to immediately enter the applicable Conditions and Required Actions of LCO 3.7.12. ITS 3.3.8 ACTION C requires that when the Required Action and associated Completion Time for Condition A or B are not met during movement of recently irradiated fuel assemblies in the auxiliary building, to immediately suspend movement of recently irradiated fuel assemblies in the auxiliary building. ITS 3.3.8 ACTION D requires that when the Required Action and associated Completion Time for Condition A or B are not met in MODE 1, 2, 3, or 4, to be in MODE 3 in 6 hours and in MODE 5 in 36 hours. This changes the CTS by requiring a new Function, Applicability, ACTIONS and Surveillance Requirement for the manual initiation of ABGTS.

The purpose the ABGTS manual initiation is to allow the operator to initiate ABGTS at any time. This change is acceptable because the addition of ABGTS manual initiation requirements will ensure that proper redundancy is maintained. This change is designated as more restrictive because additional requirements are being added to the ITS that were not required in the CTS.

M04 ~~CTS Table 3.3-6 Minimum Channels OPERABLE column requires one channel for Functional Unit 1.a (Area Monitor, Fuel Storage Pool Area). ITS Table 3.3.8-1 Required Channels column requires one channel OPERABLE for Function 2 (Spent Fuel Pool Area Radiation Monitor) modified by footnote (b) that states the Required Channel shall be associated with the ABGTS train required OPERABLE by LCO 3.7.12. This changes the CTS by specifying that the required Spent Fuel Pool Area Radiation Monitor shall be associated with the OPERABLE ABGTS train.~~

Not used.

~~The purpose of CTS Table 3.3-6 Functional Unit 1.a (Area Monitor, Fuel Storage Pool Area) is to provide an indication of abnormal radiation levels and actuate ABGTS if necessary. This change is acceptable because it ensures the required radiation monitoring channel is associated with the OPERABLE ABGTS train. Thus if the radiation monitor's setpoint is exceeded a train of ABGTS will be available to start to mitigate any potential release. This change is designated as more restrictive because additional limitations are placed on what constitutes a required channel.~~

DISCUSSION OF CHANGES
ITS 3.3.8, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS) ACTUATION INSTRUMENTATION

M05 CTS 3.3.3.1 states that the Radiation Monitoring Instrumentation channels shown in Table 3.3-6 shall be OPERABLE. CTS Table 3.3-6 lists the radiation monitor required for the fuel storage pool area. ITS LCO 3.3.8 states that the ABGTS actuation instrumentation for each Function in Table 3.3.8-1 shall be OPERABLE. ITS Table 3.3.8-1 lists the required ABGTS instrument Functions which includes Containment Isolation – Phase A (Function 3). ITS Table 3.3.8-1 Function 3 provides a statement referring to LCO 3.3.2, "ESFAS Instrumentation," Function 3.a for all initiation functions and requirements. This changes the CTS by specifying an additional instrumentation actuation Function for the ABGTS.

The purpose of CTS 3.3.3.1 and Table 3.3-6 is to specify the required Functions and instrumentation to ensure the ABGTS actuates as assumed in the accident analysis. The Containment Isolation – Phase A signal from the ESFAS provides an actuation of ABGTS that is credited in the loss of coolant accident. This change is acceptable because it will result in a more complete listing of the Functions that actuate ABGTS. The inclusion of the Containment Isolation – Phase A signal with the other credited ABGTS instrumentation provides a complete list of the required ABGTS instrumentation with a common set of Actions to assure the unit is placed in a safe condition when the required instrumentation is inoperable. Therefore, the proposed change ensures the radioactive materials in the Auxiliary Building Secondary Containment Enclosure atmosphere following an accident are filtered and adsorbed prior to being exhausted to the environment. This change is designated as more restrictive because more ABGTS actuation instrumentation will be required in ITS than was required in CTS.

M06 CTS Table 3.3-6 "MINIMUM CHANNELS OPERABLE" column, for Instrument 1.a, only requires one Area Monitor – Fuel Storage Pool Area channel to be OPERABLE with fuel in the storage pool or building. CTS Table 3.3-6 ACTION 26 applies when the number of OPERABLE channels is less than required by the Minimum Channels OPERABLE requirement. ACTION 26 requires the performance of an area survey of the monitored area with portable monitoring instrumentation at least once per 24 hours. ITS Table 3.3.8-1 Function 2 requires ~~one~~ two Spent Fuel Pool Area Radiation Monitors to be OPERABLE during movement of recently irradiated fuel assemblies in the auxiliary building. ITS 3.3.8 ACTION B requires that when ~~one required channel is~~ two channels are inoperable, to place one ABGTS train in operation and to enter the applicable Conditions and Required Action for LCO 3.7.12 for one train made inoperable by inoperable actuation instrumentation. This changes the CTS by requiring more stringent ACTIONS for the inoperable channels. (See DOC L01 for a discussion on the change to the Applicability and to the number of channels required to be OPERABLE.)

The purpose of the Spent Fuel Pool Area Radiation Monitor is to provide indication of high radiation in the Fuel Storage Pool area. This change is acceptable because when ~~one required~~ two Spent Fuel Pool Area Radiation Monitor ~~channel is~~ channels are inoperable, placing the ABGTS in operation accomplishes the Spent Fuel Pool Area Radiation Monitor instrument function. Additionally, entering the Conditions and Required Actions for the ABGTS Specification (ITS 3.7.12) will allow 7 days to restore one inoperable ABGTS train to OPERABLE status. This

DISCUSSION OF CHANGES
ITS 3.3.8, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS) ACTUATION INSTRUMENTATION

change is designated as more restrictive because more stringent Required Actions and Completion Times are required in the ITS than were required in the CTS.

M07 CTS 3.3.3.1, Table 3.3-6, ACTION 26, is associated with Functional Unit 1.a (Area Monitor, Fuel Storage Pool Area) and requires that with the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, to perform area surveys of the monitored area with portable monitoring instrumentation at least once per 24 hours. ITS 3.3.8 ACTION C requires if the Required Action and associated Completion Time for Condition A or B~~,~~ ~~one required radiation monitor inoperable,~~ is not met during movement of recently irradiated fuel assemblies in the auxiliary building, to immediately suspend movement of recently irradiated fuel assemblies in the auxiliary building. This changes the CTS by adding explicit Required Actions to exit the MODE of Applicability if remedial action cannot be completed within the allotted time.

The purpose of Required Actions is to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. This change is acceptable because it provides Required Actions to exit the MODE of Applicability that must be taken if the time allotted to establish the required remedial measures or complete the repair of inoperable features is exceeded. This change is designated as more restrictive because more stringent Required Actions and Completion Times are required in the ITS than were required in the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-6 for Radiation Monitoring Instrumentation has five columns stating various requirements for the Radiation Monitoring Instrumentation. These columns are labeled "MINIMUM CHANNELS OPERABLE," "APPLICABLE MODES," ALARM/TRIP SETPOINT," "MEASUREMENT RANGE," AND "ACTION." ITS Table 3.3.8-1 does not contain the "MEASUREMENT RANGE" column. This changes the CTS by moving the information of the "MEASUREMENT RANGE" column to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the number of required channels, the Applicable MODES, the alarm/trip setpoint, and the appropriate Condition to enter if a required channel becomes inoperable. Also, this change is acceptable because the removed information will be

DISCUSSION OF CHANGES
ITS 3.3.8, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS) ACTUATION INSTRUMENTATION

adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA02 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS Table 4.3-3 Instrument 1.a requires a CHANNEL CHECK every shift (12 hours), a CHANNEL FUNCTIONAL TEST every quarter (92 days), and a CHANNEL CALIBRATION every refueling cycle (18 months). In addition, SR 3.3.8.3 has been added for ITS Table 3.3.8-1 Function 1 with a Frequency of 18 months as discussed in DOC M03. ITS SR 3.3.8.1, SR 3.3.8.2, SR 3.3.8.3, and SR 3.3.8.4 require similar Surveillances and specify the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for these SRs and associated Bases to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

<u>LESS RESTRICTIVE CHANGES</u>

L01 ~~*(Category 2 – Relaxation of Applicability)* CTS Table 3.3-6 Instrument 1.a (Area Monitor – Fuel Storage Pool Area) and CTS Table 4.3-3 Instrument 1.a (Area Monitor – Fuel Storage Pool Area) state that the requirements of the Fuel Storage Pool Area Monitors are applicable when there is fuel in the storage pool or building. ITS Table 3.3.8-1 Function 2 states that the Applicable MODE is during movement of recently irradiated fuel assemblies in the auxiliary building. This changes the CTS by only requiring the Spent Fuel Pool Monitors to be OPERABLE when there is a potential for a fuel handling accident in the auxiliary building (i.e., during movement of recently irradiated fuel assemblies in the auxiliary building).~~

Replace with "New" L01.

DISCUSSION OF CHANGES
ITS 3.3.8, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS) ACTUATION INSTRUMENTATION

~~The purpose of CTS Table 3.3-6 Functional Unit 1.a is to ensure that the Fuel Storage Pool Area Monitors are OPERABLE to mitigate the consequences of a fuel handling accident. This change is acceptable because the requirements continue to ensure that the structures, system and components are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. The Sequoyah Nuclear Plant (SQN) fuel handling analysis for the auxiliary building has been analyzed using the methodology from Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors." The SQN fuel handling analysis assumes, in part, that the accident occurs 100 hours after a plant shutdown, radioactive decay during the interval between shutdown and placement of the first spent fuel assembly into the spent fuel pool is taken into account, and a single fuel assembly is damaged with acceptable results. The ITS Bases define a recently irradiated fuel assembly as having occupied part of a critical reactor within the previous 100 hours. Therefore, the ITS imposes the controls on the ABGTS Actuation Instrumentation during movement of recently irradiated fuel assemblies in the auxiliary building. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.~~

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"New" DOC L01

(Category 2 – Relaxation of Applicability) CTS Table 3.3-6 Instrument 1.a (Area Monitor – Fuel Storage Pool Area) requires one channel to be OPERABLE when there is fuel in the storage pool or building. ITS Table 3.3.8-1 Function 2 requires two Spent Fuel Pool Area Radiation Monitor channels to be OPERABLE during movement of recently irradiated fuel assemblies in the auxiliary building. ITS 3.7.12 ACTION A requires with one inoperable Spent Fuel Pool Area Radiation Monitor channel that one train of ABGTS be placed in operation in 7 days. This changes the CTS increasing the number of Spent Fuel Pool Area Radiation Monitor channels required to be OPERABLE, but only when ABGTS is required to mitigate a fuel handling accident (i.e., during movement of recently irradiated fuel assemblies in the auxiliary building).

The purpose of CTS 3.3.3.1 and CTS Tables 3.3-6 and 4.3-3 is to ensure that ABGTS actuates when required to mitigate the consequences of a fuel handling accident in the auxiliary building. This change is acceptable because the requirements continue to ensure that the structures, system and components are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. The Sequoyah Nuclear Plant (SQN) fuel handling analysis for the auxiliary building has been analyzed using the methodology from Regulatory Guide (RG) 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors." The SQN fuel handling analysis inside the auxiliary building assumes, in part, that the accident occurs 100 hours after a plant shutdown, radioactive decay during the interval between shutdown and placement of the first spent fuel assembly into the spent fuel pool is taken into account, and a single fuel assembly is damaged. The damaged fuel assembly is assumed to be the highest powered assembly in the core region to be discharged with a radial peaking factor of 1.70. All of the gap activity in the damaged rods is released to the spent fuel pool and consists of 5% of the total noble gases other than Kr-85, 10% of the Kr-85, 5% of the total radioactive iodine other than I-131, and 8% of the I-131 in the rods at the time of the accident. Noble gases released to the spent fuel pool do not experience retention in the water pool. The iodine gap inventory is composed of 99.85% inorganic species, and 0.15% organic species. The spent fuel pool decontamination factor is 200. No credit is taken for natural decay due to holdup in the auxiliary building or after the activity has been released to the atmosphere. The activity released from the spent fuel pool is all assumed to be released to the environment over a 2-hour period. Doses were determined at the EAB and LPZ for the 2-hour interval over which the releases are assumed to take place, and in the control room for an extended period of time after termination of releases in order to address the continual presence of activity in the control room atmosphere. The accident doses were calculated using the dose model consistent with the use of the alternate source term methodology (RG 1.183). The doses are within the dose acceptance limits of 6.3 rem TEDE for offsite doses and 5.0 rem TEDE for control room doses. Because ABGTS is not credited in the mitigation of a fuel handling accident in the auxiliary building involving fuel that has at least 100 hours of decay time, it is not required to be OPERABLE during that evolution. However, fuel movement could still proceed prior to a decay time of 100 hours. Therefore, to mitigate the consequences of a fuel handling accident involving the movement of recently irradiated fuel, ITS imposes the controls on the ABGTS during movement of recently irradiated fuel assemblies in the auxiliary building. Consistent with NUMARC 93-01, "Safety Assessment for Removal of Equipment from Service During Shutdown Conditions," TVA will implement procedural requirements for a single normal or contingency method to promptly close primary or secondary containment penetrations. Additionally, TVA will implement procedural requirements for one train of ABGTS to be OPERABLE during movement of irradiated fuel assemblies (whether in the auxiliary building or within the containment). This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

CTS

~~FBACS~~ ABGTS Actuation Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.8~~A~~

3.3 INSTRUMENTATION

3.3.8~~A~~ ~~Fuel Building Air Cleanup~~ Auxiliary Building Gas Treatment System (~~FBACS~~ ABGTS) Actuation Instrumentation ~~(Without Setpoint Control Program)~~ 1

3.3.3.1 LCO 3.3.8 The ~~FBACS~~ ABGTS actuation instrumentation for each Function in Table 3.3.8-1 shall be OPERABLE. 1

3.3.3.1 Applicability APPLICABILITY: According to Table 3.3.8-1.

ACTIONS

-----NOTES-----

3.3.3.1 ACTION c 1. LCO 3.0.3 is not applicable.

DOC A03 2. Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC M03 DOC L01 A. One ~~or more Functions with one~~ ~~manual initiation~~ channel ~~or train~~ inoperable. (or more Functions with one)	A.1 Place one ~~FBACS~~ ABGTS train in operation.	7 days 2 1
DOC M03 3.3.3.1 ACTION b Table 3.3-6 ACTION 26 B. ~~One or more Functions with two~~ ~~Two manual initiation~~ channels ~~or two trains~~ inoperable. (One or more Functions with two) ~~OR One required radiation monitoring channel inoperable.~~	B.~~1.~~1 Place one ~~FBACS~~ ABGTS train in operation. AND B.~~1.~~2 Enter applicable Conditions and Required Actions of LCO 3.7.~~13~~ 12, "~~Fuel Building Air Cleanup~~ Auxiliary Building Gas Treatment System (~~FBACS~~ ABGTS)," for one train made inoperable by inoperable actuation instrumentation. ~~OR~~ ~~B.2 Place both trains in emergency [radiation protection] mode.~~	Immediately 3 1 2 Immediately 2 3 4 1 ~~Immediately~~ 3

CTS

~~FBACS~~ ABGTS Actuation Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.8~~A~~

Table 3.3.8-1 (page 1 of 1)
~~FBACS~~ ABGTS Actuation Instrumentation 1

	FUNCTION	APPLICABLE MODES OR SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	TRIP SETPOINT	
DOC M03	1. Manual Initiation	~~[~~1,2,3,4~~]~~, (a)	2	SR 3.3.8.~~4~~ 3	NA	5
	~~2. [Automatic Actuation Logic and Actuation Relays~~	~~1,2,3,4, (a)~~	~~2 trains~~	~~SR 3.3.8.3~~	~~NA]~~	5
Table 3.3-6 Instrument 1.a	~~3~~ 2. Spent Fuel ~~Building~~ Pool Area Radiation Monitor					5 4
	~~a. Gaseous~~	~~[1,2,3,4],~~ (a)	~~[2]~~ 1 (b)	SR 3.3.8.1 SR 3.3.8.2 SR 3.3.8.~~5~~ 4	≤ ~~[2]~~ 151 mR/hr	5 7
	~~b. Particulate~~	~~[1,2,3,4], (a)~~	~~[2]~~	~~SR 3.3.8.1~~ ~~SR 3.3.8.2~~ ~~SR 3.3.8.5~~	~~≤ [2] mR/hr~~	8
DOC M05	3. Containment Isolation - Phase A	Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 3.a for all initiation functions and requirements.				

(a) During movement of ~~[~~recently~~]~~ irradiated fuel assemblies in the ~~fuel~~ auxiliary building. 5 4

~~DOC M04~~ ~~(b) Required Channel shall be associated with the ABGTS train required OPERABLE per LCO 3.7.12~~ 2

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CTS

~~FBACS~~ ABGTS Actuation Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.8~~A~~

3.3 INSTRUMENTATION

3.3.8~~A~~ ~~Fuel Building Air Cleanup~~ Auxiliary Building Gas Treatment System (~~FBACS~~ ABGTS) Actuation Instrumentation ~~(Without Setpoint Control Program)~~ 1

3.3.3.1 LCO 3.3.8 The ~~FBACS~~ ABGTS actuation instrumentation for each Function in Table 3.3.8-1 shall be OPERABLE. 1

3.3.3.1 Applicability APPLICABILITY: According to Table 3.3.8-1.

ACTIONS

-----NOTES-----

3.3.3.1 ACTION c 1. LCO 3.0.3 is not applicable.

DOC A03 2. Separate Condition entry is allowed for each Function.

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC M03 DOC L01	A. One ~~or more Functions with one~~ manual initiation channel ~~or train~~ inoperable. (or more Functions with one)	A.1 Place one ~~FBACS~~ ABGTS train in operation.	7 days	2 1
DOC M03	B. ~~One or more Functions with two~~ ~~Two manual initiation~~ channels ~~or two trains~~ inoperable. (One or more Functions with two) ~~OR One required radiation monitoring channel inoperable.~~	B.~~1.~~1 Place one ~~FBACS~~ ABGTS train in operation.	Immediately	3 1 2
3.3.3.1 ACTION b Table 3.3-6 ACTION 26		AND		
		B.~~1.~~2 Enter applicable Conditions and Required Actions of LCO 3.7.~~13~~ 12, "~~Fuel Building Air Cleanup~~ Auxiliary Building Gas Treatment System (~~FBACS~~ ABGTS)," for one train made inoperable by inoperable actuation instrumentation.	Immediately	2 3 4 1
		~~OR~~		
		~~B.2 Place both trains in emergency [radiation protection] mode.~~	~~Immediately~~	3

CTS

~~FBACS~~ ABGTS Actuation Instrumentation ~~(Without Setpoint Control Program)~~
3.3.8~~A~~ 1

Table 3.3.8-1 (page 1 of 1)
~~FBACS~~ ABGTS Actuation Instrumentation 1

	FUNCTION	APPLICABLE MODES OR SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	TRIP SETPOINT	
DOC M03	1. Manual Initiation	~~[~~1,2,3,4~~]~~, (a)	2	SR 3.3.8.~~4~~ 3	NA	5
	~~2. [Automatic Actuation Logic and Actuation Relays~~	~~1,2,3,4, (a)~~	~~2 trains~~	~~SR 3.3.8.3~~	~~NA]~~	5
Table 3.3-6 Instrument 1.a	~~3~~ 2. Spent Fuel Pool Area ~~Building~~ Radiation Monitor		2 ~~1~~ ~~(b)~~			5 4
	~~a. Gaseous~~	~~[1,2,3,4],~~ (a)	~~[2]~~	SR 3.3.8.1 SR 3.3.8.2 SR 3.3.8.~~5~~ 4	≤ ~~[2]~~ 151 mR/hr	5 7 8
	~~b. Particulate~~	~~[1,2,3,4], (a)~~	~~[2]~~	~~SR 3.3.8.1~~ ~~SR 3.3.8.2~~ ~~SR 3.3.8.5~~	~~≤ [2] mR/hr~~	
DOC M05	3. Containment Isolation - Phase A	Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 3.a for all initiation functions and requirements.				

(a) During movement of ~~[~~recently~~]~~ irradiated fuel assemblies in the ~~fuel~~ auxiliary building. 5 4

~~DOC M04~~ ~~(b) Required Channel shall be associated with the ABGTS train required OPERABLE per LCO 3.7.12~~ 2

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.8, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS) ACTUATION INSTRUMENTATION

1. The type of Setpoint Control Program (Without Setpoint Control Program) and the Specification designator "A" are deleted since they are unnecessary. This information is provided in NUREG 1431, Rev. 4.0 to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in the plant specific implementation. In addition, ISTS 3.3.8B (with Setpoint Control Program Specification) is not used and is not shown. Furthermore, the title of the Specification has been changed from "Fuel Building Air Cleanup System (FBACS) Actuation Instrumentation" to "Auxiliary Building Gas Treatment System (ABGTS) Actuation Instrumentation" since Sequoyah Nuclear Plant (SQN) does not have an FBACS.

2. Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. ISTS 3.3.8 Required Action B.2 provides an option of placing both trains of the FBACS in the emergency [radiation protection] mode immediately when one or more Functions in ISTS Table 3.3.8-1 with two channels or two trains are inoperable. ITS 3.3.8 does not contain this Required Action since the ABGTS does not have an emergency mode of operation. Furthermore, ISTS 3.3.8 Required Actions B.1.1 and B.1.2 have been renumbered as ITS 3.3.8 Required Actions B.1 and B.2 to reflect the removal of the ISTS option. Additionally, the "<u>AND</u>" logic connector has been moved to the correct position due to the deletion of ISTS 3.3.8 Required Action B.2.

4. Changes are made to be consistent with changes made to ISTS LCO 3.7.13. The Title and the number for this specification were changed and are reflected in ITS 3.3.8.

5. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed, the proper plant specific information/value is inserted to reflect the current licensing basis, and subsequent items are renumbered as required.

6. ISTS SR 3.3.8.1, SR 3.3.8.2, SR 3.3.8.4, and SR 3.3.8.5 (ITS SR 3.3.8.1, SR 3.3.8.2, SR 3.3.8.3, and SR 3.3.8.4) provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program.

7. ISTS Table 3.3.8-1 Function 3 specifies two Gaseous Radiation Monitors (Function 3.a) and two Particulate Radiation Monitors (Function 3.b) for the Fuel Storage Radiation Function. ITS Table 3.3.8-1 Function 2 only requires ~~one~~ two Spent Fuel Pool Area Radiation Monitor for Table 3.3.8-1 Function 2. This change is acceptable because the fuel storage pool area radiation monitor is the monitor used in the current licensing bases for the ABGTS actuation.

8. Changes are made to ISTS Table 3.3.8-1 to reflect that the ABGTS receives a signal from Containment Isolation – Phase A which is part of ITS 3.3.2, "Engineered Safety Features Actuation System (ESFAS) Instrumentation."

B 3.3 INSTRUMENTATION

B 3.3.8A ~~Fuel Building Air Cleanup~~ Auxiliary Building Gas Treatment System (~~FBACS~~ ABGTS) Actuation Instrumentation ~~(Without Setpoint Control Program)~~ 1

BASES

BACKGROUND	The ~~FBACS~~ ABGTS ensures that radioactive materials in the ~~fuel~~ auxiliary building atmosphere following a fuel handling accident ~~[~~involving handling recently irradiated fuel~~]~~ or a loss of coolant accident (LOCA) are filtered and adsorbed prior to exhausting to the environment. The system is described in the Bases for LCO 3.7.~~13~~ 12, "~~Fuel Building Air Cleanup~~ Auxiliary Building Gas Treatment System (ABGTS)." INSERT 1 The system initiates filtered ventilation of ~~the fuel building~~ spent fuel pool area automatically following receipt of a high radiation signal ~~(gaseous or particulate)~~ or a ~~safety injection (SI)~~ Containment Phase A Isolation signal. Initiation may also be performed manually as needed from the main control room. 1 2 3 4
	High ~~gaseous and particulate~~ area radiation, ~~each~~ monitored by either of two monitors, provides ~~FBACS~~ ABGTS initiation. Each ~~FBACS~~ ABGTS train is initiated by high radiation detected by a channel dedicated to that train. ~~There are a~~ a ~~total of two channels, one for each train.~~ Keep ~~Each channel contains a gaseous and particulate monitor.~~ High radiation detected by ~~any~~ the required monitor or ~~an SI~~ Containment Phase A Isolation signal from the Engineered Safety Features Actuation System (ESFAS) initiates ~~fuel~~ auxiliary building isolation and starts the ~~FBACS~~ ABGTS. These actions function to prevent exfiltration of contaminated air by initiating filtered ventilation, which imposes a negative pressure on the ~~fuel building~~ Auxiliary Building Secondary Containment Enclosure (ABSCE). ~~Since the radiation monitors include an air sampling system, various components such as sample line valves, sample line heaters, sample pumps, and filter motors are required to support monitor OPERABILITY.~~ Keep 4 1 4 1 4
APPLICABLE SAFETY ANALYSES	The ~~FBACS~~ ABGTS ensures that radioactive materials in the ~~fuel building~~ ABSCE atmosphere following a fuel handling accident ~~[~~involving handling recently irradiated fuel~~]~~ or a LOCA are filtered and adsorbed prior to being exhausted to the environment. This action reduces the radioactive content in the ~~fuel~~ auxiliary building exhaust following a LOCA or fuel handling accident so that offsite doses remain within the limits specified in 10 CFR 100 (Ref. 1) for LOCA or 10 CFR 50.67 (Ref. 2) for fuel handling accident. 1 4 2 4 4
	The ~~FBACS~~ ABGTS actuation instrumentation satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). 1
LCO	The LCO requirements ensure that instrumentation necessary to initiate the ~~FBACS~~ ABGTS is OPERABLE. 1

BASES

LCO (continued)

1. Manual Initiation

The LCO requires two channels OPERABLE. The operator can initiate the ~~FBACS~~ ABGTS at any time by using ~~either of two switches in the control room~~ INSERT 2. This action will cause actuation of all components in the same manner as any of the automatic actuation signals. 1 4

The LCO for Manual Initiation ensures the proper amount of redundancy is maintained in the manual actuation circuitry to ensure the operator has manual initiation capability.

Each channel consists of one ~~push button~~ hand switch and the interconnecting wiring to the actuation logic cabinet. 4

~~2. Automatic Actuation Logic and Actuation Relays~~

~~The LCO requires two trains of Actuation Logic and Relays OPERABLE to ensure that no single random failure can prevent automatic actuation.~~

~~Automatic Actuation Logic and Actuation Relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b., SI, in LCO 3.3.2. The applicable MODES and specified conditions for the FBACS portion of these functions are different and less restrictive than those specified for their SI roles. If one or more of the SI functions becomes inoperable in such a manner that only the FBACS function is affected, the Conditions applicable to their SI function need not be entered. The less restrictive Actions specified for inoperability of the FBACS functions specify sufficient compensatory measures for this case.~~ 5

~~3~~ 2. Spent Fuel ~~Building~~ Pool Area Radiation 5 4

The LCO specifies ~~two required~~ ~~one~~ two ~~Gaseous~~ Spent Fuel Pool Area Radiation Monitor channels ~~and two required Particulate Radiation Monitor channels~~ to ensure that the radiation monitoring instrumentation necessary to initiate the ~~FBACS~~ ABGTS remains OPERABLE. INSERT 3 4 1 4

For sampling systems, channel OPERABILITY involves more than OPERABILITY of channel electronics. OPERABILITY may also require correct valve lineups, sample pump operation, filter motor operation, detector OPERABILITY, if these supporting features are necessary for actuation to occur under the conditions assumed by the safety analyses. INSERT 4 5

4 **INSERT 2**

one of two sets of manual initiation hand switches in the control room. Each Auxiliary Building Isolation (ABI) manual hand switch will initiate its respective train of ABGTS.

4 **INSERT 3**

One radiation monitor is dedicated to each train of ABGTS.

4 ~~5~~ **INSERT 4**

The measurement range for the Spent Fuel Pool Area Monitors is 10^{-1} to 10^{4} mR/hr.

~~The Required Channels value is modified by a footnote stating that the Required Channel shall be associated with the ABGTS train required OPERABLE per LCO 3.7.12. This ensures a valid actuation signal will start a train of ABGTS.~~

3. Containment Isolation - Phase A

Refer to LCO 3.3.2, Function 3.a., for all initiating Functions and requirements.

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BASES

ACTIONS (continued)

A second Note has been added to the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed in Table 3.3.8-1 in the accompanying LCO. The Completion Time(s) of the inoperable channel(s)/train(s) of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function.

A.1

Condition A applies to the ~~actuation logic train function of the Solid State Protection System (SSPS), the~~ ~~radiation monitor functions, and the~~ keep manual function. Condition A applies to the failure of a single ~~actuation logic train,~~ ~~radiation monitor channel, or~~ keep manual channel. If one channel ~~or train~~ is inoperable, a period of 7 days is allowed to restore it to OPERABLE status. If the ~~train~~ channel cannot be restored to OPERABLE status, one ~~FBACS~~ ABGTS train must be placed in operation. This accomplishes the actuation instrumentation function and places the unit in a conservative mode of operation. The 7 day Completion Time is the same as is allowed if one train of the mechanical portion of the system is inoperable. The basis for this time is the same as that provided in LCO 3.7.~~13~~12. 5 1 3

B.~~1.~~1~~,~~ and B.~~1.~~2~~, B.2~~ 5

Condition B applies to the failure of ~~two FBACS actuation logic trains,~~ ~~one required~~ ~~two~~ two radiation monitor~~s,~~ s or two manual channels. The Required Action is to place one ~~FBACS~~ ABGTS train in operation immediately. This accomplishes the actuation instrumentation function that may have been lost and places the unit in a conservative mode of operation. The applicable Conditions and Required Actions of LCO 3.7.~~13~~12 must also be entered for the ~~FBACS~~ ABGTS train made inoperable by the inoperable actuation instrumentation. This ensures appropriate limits are placed on train inoperability as discussed in the Bases for LCO 3.7.~~13~~12. 5 1 3 1 3

~~Alternatively, both trains may be placed in the emergency [radiation protection] mode. This ensures the FBACS Function is performed even in the presence of a single failure.~~ 5

B 3.3 INSTRUMENTATION

B 3.3.8A ~~Fuel Building~~ Auxiliary Building Gas Treatment ~~Air Cleanup~~ System (~~FBACS~~ ABGTS) Actuation Instrumentation ~~(Without Setpoint Control Program)~~ 1

BASES

BACKGROUND

The ~~FBACS~~ ABGTS ensures that radioactive materials in the ~~fuel~~ auxiliary building atmosphere following a fuel handling accident ~~[~~involving handling recently irradiated fuel~~]~~ or a loss of coolant accident (LOCA) are filtered and adsorbed prior to exhausting to the environment. The system is described in the Bases for LCO 3.7.~~13~~ 12, "~~Fuel Building~~ Auxiliary Building Gas Treatment ~~Air Cleanup~~ System (ABGTS)." The system initiates filtered ventilation of INSERT 1 ~~the fuel building~~ automatically following receipt of a spent fuel pool area high radiation signal ~~(gaseous or particulate)~~ or a ~~safety injection (SI)~~ Containment Phase A Isolation signal. Initiation may also be performed manually as needed from the main control room. 1 2 3 4

High ~~gaseous and particulate~~ area radiation, ~~each~~ monitored by either of two monitors, provides ~~FBACS~~ ABGTS initiation. Each ~~FBACS~~ ABGTS train is initiated by high radiation detected by a channel dedicated to that train. ~~There are a total of two channels, one for each train.~~ Keep ~~Each channel contains a~~ a ~~the~~ required ~~gaseous and particulate monitor.~~ High radiation detected by ~~any~~ monitor or ~~an SI~~ Containment Phase A Isolation signal from the Engineered Safety Features Actuation System (ESFAS) initiates ~~fuel~~ auxiliary building isolation and starts the ~~FBACS~~ ABGTS. These actions function to prevent exfiltration of contaminated air by initiating filtered ventilation, which imposes a negative pressure on the ~~fuel building~~ Auxiliary Building Secondary Containment Enclosure (ABSCE). ~~Since the radiation monitors include an air sampling system, various components such as sample line valves, sample line heaters, sample pumps, and filter motors are required to support monitor OPERABILITY.~~ 4 1 4 1 4

APPLICABLE SAFETY ANALYSES

The ~~FBACS~~ ABGTS ensures that radioactive materials in the ~~fuel building~~ ABSCE atmosphere following a fuel handling accident ~~[~~involving handling recently irradiated fuel~~]~~ or a LOCA are filtered and adsorbed prior to being exhausted to the environment. This action reduces the radioactive content in the ~~fuel~~ auxiliary building exhaust following a LOCA or fuel handling accident so that offsite doses remain within the limits specified in 10 CFR 100 (Ref. 1) for LOCA or 10 CFR 50.67 (Ref. 2) for fuel handling accident. 1 4 2 4 4

The ~~FBACS~~ ABGTS actuation instrumentation satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). 1

LCO

The LCO requirements ensure that instrumentation necessary to initiate the ~~FBACS~~ ABGTS is OPERABLE. 1

BASES

LCO (continued)

1. Manual Initiation

The LCO requires two channels OPERABLE. The operator can initiate the ~~FBACS~~ ABGTS at any time by using ~~either of two switches in the control room~~ INSERT 2. This action will cause actuation of all components in the same manner as any of the automatic actuation signals. 1 4

The LCO for Manual Initiation ensures the proper amount of redundancy is maintained in the manual actuation circuitry to ensure the operator has manual initiation capability.

Each channel consists of one ~~push button~~ hand switch and the interconnecting wiring to the actuation logic cabinet. 4

~~2. Automatic Actuation Logic and Actuation Relays~~

~~The LCO requires two trains of Actuation Logic and Relays OPERABLE to ensure that no single random failure can prevent automatic actuation.~~

~~Automatic Actuation Logic and Actuation Relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b., SI, in LCO 3.3.2. The applicable MODES and specified conditions for the FBACS portion of these functions are different and less restrictive than those specified for their SI roles. If one or more of the SI functions becomes inoperable in such a manner that only the FBACS function is affected, the Conditions applicable to their SI function need not be entered. The less restrictive Actions specified for inoperability of the FBACS functions specify sufficient compensatory measures for this case.~~ 5

~~3~~ 2. Spent Fuel ~~Building~~ Pool Area Radiation 5 4

The LCO specifies ~~two~~ two ~~one~~ ~~two required Gaseous~~ Spent Fuel Pool Area Radiation Monitor channel~~s~~ s ~~and two required Particulate Radiation Monitor channels~~ to ensure that the radiation monitoring instrumentation necessary to initiate the ~~FBACS~~ ABGTS remains OPERABLE. INSERT 3 4 1 4

For sampling systems, channel OPERABILITY involves more than OPERABILITY of channel electronics. OPERABILITY may also require correct valve lineups, sample pump operation, filter motor operation, detector OPERABILITY, if these supporting features are necessary for actuation to occur under the conditions assumed by the safety analyses. INSERT 4 5

4 **INSERT 2**

one of two sets of manual initiation hand switches in the control room. Each Auxiliary Building Isolation (ABI) manual hand switch will initiate its respective train of ABGTS.

4 **INSERT 3**

One radiation monitor is dedicated to each train of ABGTS.

$\boxed{4}$ ~~5~~ **INSERT 4**

The measurement range for the Spent Fuel Pool Area Monitors is 10^{-1} to 10^{4} mR/hr.

~~The Required Channels value is modified by a footnote stating that the Required Channel shall be associated with the ABGTS train required OPERABLE per LCO 3.7.12. This ensures a valid actuation signal will start a train of ABGTS.~~

3. Containment Isolation - Phase A

Refer to LCO 3.3.2, Function 3.a., for all initiating Functions and requirements.

BASES

ACTIONS (continued)

A second Note has been added to the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed in Table 3.3.8-1 in the accompanying LCO. The Completion Time(s) of the inoperable channel(s)/train(s) of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function.

A.1

Condition A applies to the ~~actuation logic train function of the Solid State Protection System (SSPS), the radiation monitor functions, and the~~ keep manual function. Condition A applies to the failure of a single ~~actuation logic train,~~ keep ~~radiation monitor channel, or~~ manual channel. If one channel ~~or train~~ is inoperable, a period of 7 days is allowed to restore it to OPERABLE status. If the ~~train~~ channel cannot be restored to OPERABLE status, one ~~FBACS~~ ABGTS train must be placed in operation. This accomplishes the actuation instrumentation function and places the unit in a conservative mode of operation. The 7 day Completion Time is the same as is allowed if one train of the mechanical portion of the system is inoperable. The basis for this time is the same as that provided in LCO 3.7.~~13~~12. 5 1 3

B.~~1.~~1~~,~~ and B.~~1.~~2~~, B.2~~ 5

Condition B applies to the failure of ~~two FBACS actuation logic trains, two~~ ~~one reqired~~ two radiation monitor~~s,~~s or two manual channels. The Required Action is to place one ~~FBACS~~ ABGTS train in operation immediately. This accomplishes the actuation instrumentation function that may have been lost and places the unit in a conservative mode of operation. The applicable Conditions and Required Actions of LCO 3.7.~~13~~12 must also be entered for the ~~FBACS~~ ABGTS train made inoperable by the inoperable actuation instrumentation. This ensures appropriate limits are placed on train inoperability as discussed in the Bases for LCO 3.7.~~13~~12. 5 1 3 1 3

~~Alternatively, both trains may be placed in the emergency [radiation protection] mode. This ensures the FBACS Function is performed even in the presence of a single failure.~~ 5

A01

ITS ITS 3.7.12

REFUELING OPERATIONS

3/4.9.12 AUXILIARY BUILDING GAS TREATMENT SYSTEM

LIMITING CONDITION FOR OPERATION

Two L06

LCO 3.7.12 ~~Note 2~~ 3.9.12 ~~One~~ auxiliary building gas treatment filter train shall be OPERABLE.

Applicability APPLICABILITY: ~~Whenever irradiated fuel is in the storage pool.~~

During movement of recently irradiated fuel assemblies in the auxiliary building. L06

ACTION: Add proposed ACTION A L06 Add proposed Required Action ~~D~~.1 E L06

E ACTION ~~D~~ a. With no auxiliary building gas treatment filter train OPERABLE, ~~suspend all operations involving movement of fuel within the spent fuel pit or crane operation with loads over the spent fuel pit until at least one auxiliary building gas treatment filter train is restored to OPERABLE status~~.

ACTIONS Note b. The provisions of Specification 3.0.3 are not applicable.

Add proposed ACTION D L06

SURVEILLANCE REQUIREMENTS ~~L06~~

SR 3.7.12.1, SR 3.7.12.3 4.9.12 The above required auxiliary buildings gas treatment filter train shall be demonstrated OPERABLE:

In accordance with the Surveillance Frequency Control Program LA02

L03

SR 3.7.12.1 a. ~~At least once per 31 days on a STAGGERED TEST BASIS~~ by initiating, ~~from the control room, flow through the HEPA filters and charcoal adsorbers~~ and verifying that the system operates for at least ~~10 hours~~ with the heaters on. LA03

15 continuous minutes L04

Add proposed SR 3.7.12.2 A02

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978 (except for the provisions of ANSI N510 Sections 8 and 9), and the system flow rate is 9000 cfm ± 10%.

2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, shows the methyl iodide penetration less than 2.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86°F) and a relative humidity of 70%.

3. Verifying a system flow rate of 9000 cfm ± 10% during system operations when tested in accordance with ANSI N510-1975.

See ITS 5.5.9

REFUELING OPERATIONS

3/4.9.12 AUXILIARY BUILDING GAS TREATMENT SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.7.12 ~~Note 2~~ Two L06

3.9.12 ~~One~~ auxiliary building gas treatment filter train shall be OPERABLE.

Applicability

APPLICABILITY: ~~Whenever irradiated fuel is in the storage pool.~~ During movement of recently irradiated fuel assemblies in the auxiliary building. L06

ACTION: Add proposed ACTION A L06 Add proposed Required Action ~~D~~.1 L06 E

E ACTION ~~D~~

a. With no auxiliary building gas treatment filter train OPERABLE, ~~suspend all operations involving movement of fuel within the spent fuel pit or crane operation with loads over the spent fuel pit until at least one auxiliary building gas treatment filter train is restored to OPERABLE status~~.

ACTIONS Note

b. The provisions of Specification 3.0.3 are not applicable.

Add proposed ACTION D L06

SURVEILLANCE REQUIREMENTS

SR 3.7.12.1, SR 3.7.12.3

4.9.12 The above required auxiliary building gas treatment filter train shall be demonstrated OPERABLE:

In accordance with the Surveillance Frequency Control Program LA02 L03 LA03

SR 3.7.12.1

a. ~~At least once per 31 days on a STAGGERED TEST BASIS~~ by initiating, ~~from the control room, flow through the HEPA filters and charcoal adsorbers~~ and verifying that the system operates for at least ~~10 hours~~ 15 continuous minutes with the heaters on. L04

Add proposed SR 3.7.12.2 A02

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978 (except for the provisions of ANSI N510 Sections 8 and 9), and the system flow rate is 9000 cfm $\pm$ 10%.

2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, shows the methyl iodide penetration less than 2.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86° F) and a relative humidity of 70%.

3. Verifying a system flow rate of 9000 cfm $\pm$ 10% during system operation when tested in accordance with ANSI N510-1975.

See ITS 5.5.9

REFUELING OPERATIONS

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

LIMITING CONDITION FOR OPERATION

3.9.4 The containment building penetrations shall be in the following status:

a. The equipment door closed and held in place by a minimum of four bolts,

b. A minimum of one door in each airlock is closed, and both doors of both containment personnel airlocks may be open if:

1. One personnel airlock door in each airlock is capable of closure, and

~~2. One train of the Auxiliary Building Gas Treatment System is OPERABLE in accordance with Technical Specification 3.9.12, and~~

(See ITS 3.9.4)

L08

c. Each penetration* providing direct access from the containment atmosphere to the outside atmosphere shall be either:

1. Closed by an isolation valve, blind flange, manual valve, or equivalent, or

2. Be capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve.

APPLICABILTY:

3.9.4.a. Containment Building Equipment Door - During movement of recently irradiated fuel within the containment.

3.9.4.b. and c. Containment Building Airlock Doors and Penetrations - During movement of irradiated fuel within the containment.

ACTION:

1. With the requirements of the above specification not satisfied for the containment building equipment door, immediately suspend all operations involving movement of recently irradiated fuel in the containment building. The provisions of Specification 3.0.3 are not applicable.

2. With the requirements of the above specification not satisfied for containment airlock doors or penetrations, immediately suspend all operations involving movement of irradiated fuel in the containment building. The provisions of Specification 3.0.3 are not applicable.

(See ITS 3.9.4)

SURVEILLANCE REQUIREMENTS

4.9.4 Each of the above required containment building penetrations shall be determined to be either in its required condition or capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve once per 7 days during movement of irradiated fuel in the containment building by:

a. Verifying the penetrations are in their required condition, or

b. Verifying the Containment Ventilation isolation valves not locked, sealed, or otherwise secured in position, actuate to the isolation position on an actual or simulated actuation signal.

* Penetration flow path(s) providing direct access from the containment atmosphere that transverse and terminate in the Auxiliary Building Secondary Containment Enclosure may be unisolated under administrative controls.

ITS

A01

ITS 3.7.12

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

LIMITING CONDITION FOR OPERATION

3.9.4 The containment building penetrations shall be in the following status:

a. The equipment door closed and held in place by a minimum of four bolts,

b. A minimum of one door in each airlock is closed, or both doors of both containment personnel airlocks may be open if:

1. One personnel airlock door in each airlock is capable of closure, and

~~2. One train of the Auxiliary Building Gas Treatment System is OPERABLE in accordance with Technical Specification 3.9.12, and~~

(See ITS 3.9.4)

L08

c. Each penetration* providing direct access from the containment atmosphere to the outside atmosphere shall be either:

1. Closed by an isolation valve, blind flange, manual valve, or equivalent, or

2. Be capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve.

APPLICABILITY:

3.9.4.a. Containment Building Equipment Door - During movement of recently irradiated fuel within the containment.

3.9.4.b. and c. Containment Building Airlock Doors and Penetrations - During movement of irradiated fuel within the containment.

ACTION:

1. With the requirements of the above specification not satisfied for the containment building equipment door, immediately suspend all operations involving movement of recently irradiated fuel in the containment building. The provisions of Specification 3.0.3 are not applicable.

2. With the requirements of the above specification not satisfied for containment airlock doors or penetrations, immediately suspend all operations involving movement of irradiated fuel in the containment building. The provisions of Specification 3.0.3 are not applicable.

(See ITS 3.9.4)

SURVEILLANCE REQUIREMENTS

4.9.4 Each of the above required containment building penetrations shall be determined to be either in its required condition or capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve once per 7 days during movement of irradiated fuel in the containment building by:

a. Verifying the penetrations are in their required condition, or

b. Verifying the Containment Ventilation isolation valves not locked, sealed, or otherwise secured in position, actuate to the isolation position on an actual or simulated actuation signal.

* Penetration flow path(s) providing direct access from the containment atmosphere that transverse and terminate in the Auxiliary Building Secondary Containment Enclosure may be unisolated under administrative controls.

DISCUSSION OF CHANGES
ITS 3.7.12, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS)

DOC L07 for a discussion of specifying that the actuation signal may be either actual or simulated. See DOC L06 for a discussion on limiting the Applicability of the ABGTS to the conditions during which it is required to mitigate a fuel handling accident ~~is postulated to occur~~.)

The purpose of CTS 3.7.8 is to ensure the ABGTS trains are OPERABLE during the plant conditions that a loss of coolant accident is postulated to occur (MODES 1, 2, 3 and 4). The purpose of CTS 3.9.12 is to ensure that radioactive material that is released from an irradiated fuel assembly during a fuel handling accident is processed through filtration prior to release to the atmosphere (during the movement of recently irradiated fuel assemblies in the auxiliary building). ITS 3.7.12 combines CTS 3.7.8 and 3.9.12 into one Specification with an Applicability of MODES 1, 2, 3 and 4 and during the movement of recently irradiated fuel assemblies in the auxiliary building. This results in the need to specify the plant conditions in which each actuation signal is required to actuate ABGTS to mitigate the associated accident. The plant conditions under which each ABGTS actuation signal is required to be OPERABLE remains unchanged between CTS and ITS. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 4.7.8.d.3 requires verification that each ABGTS system can maintain the spent fuel storage area and the ESF pump rooms at a pressure equal to or less than - 0.25 inches water gauge relative to the outside atmosphere while maintaining a total system flow of 9,000 cfm plus or minus 10% every 18 months in MODES 1, 2, 3 and 4. ITS SR 3.7.12.4 requires the same verification every 18 months on a STAGGERED TEST BASIS in MODES 1, 2, 3 and 4 and during movement of recently irradiated fuel assemblies in the auxiliary building. This changes the CTS by adding a Surveillance Requirement to verify the ABGTS can maintain a negative pressure at the required flow rate during movement of recently irradiated fuel assemblies in the auxiliary building. (See DOC L05 for the discussion regarding the change of the testing Frequency to "on a STAGGERED TEST BASIS." See DOC LA02 for the discussion regarding movement of the Surveillance Frequency to the Surveillance Frequency Control Program.)

This change is acceptable because the ABGTS is required to be OPERABLE during movement of recently irradiated fuel assemblies in the auxiliary building. The Surveillance Requirement is required to verify that the ABGTS can perform its required safety function during this Applicability. This change is designated as more restrictive because an additional Surveillance Requirement is being required that was not in the CTS.

RELOCATED SPECIFICATIONS

None

DISCUSSION OF CHANGES
ITS 3.7.12, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS)

adequate protection of public health and safety. ITS 3.7.12 retains the requirement to verify that each ABGTS train will automatically start as designed ~~that two ABGTS trains are required to be OPERABLE~~. Also, this change is acceptable because these types of details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA05 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.7.8.d.3 requires verification that the ABGTS system maintains the spent fuel storage area and the ESF pump rooms at a pressure equal to or more negative than minus 1/4 inch water gage relative to the outside atmosphere while maintaining a total system flow of 9000 cfm plus or minus 10%. ITS 3.7.12.4 requires verification that the ABGTS train can maintain a pressure less ~~greater~~ than or equal to -0.25 inches water gauge with respect to atmospheric pressure at a flow rate greater than or equal to 8,100 and less than or equal to 9,900 cfm. This changes the CTS by moving the statement that the system maintains the spent fuel storage area and the ESF pump rooms at the specified pressure to the Bases.

The removal of these details for performing a Surveillance Requirement from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirements to verify the ABGTS train can maintain a pressure less ~~greater~~ than or equal to -0.25 inches water gauge with respect to atmospheric pressure at a flow rate of greater than or equal to 8,100 and less than or equal to 9,900 cfm. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specifications are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 1 – Relaxation of LCO Requirements)* CTS 3.7.8 requires two ABGTS trains to be OPERABLE. ITS LCO 3.7.12 includes the same ABGTS OPERABILITY requirements but is modified by a Note ~~1~~, which states "The Auxiliary Building Secondary Containment Enclosure (ABSCE) boundary may be opened intermittently under administrative control." This changes the CTS by allowing the ABSCE boundary to be opened under administrative controls when the ABGTS is required to be OPERABLE.

The purpose of CTS 3.7.8 is to maintain the air pressure in the auxiliary building below atmospheric, reduce the concentration of nuclides in air releases from the Auxiliary Building Secondary Containment Enclosure (ABSCE), and to minimize the spread of airborne radioactivity within the Auxiliary Building following an

DISCUSSION OF CHANGES
ITS 3.7.12, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS)

accidental release in the fuel handling areas. ITS LCO 3.7.12 Note ~~1~~ will allow the ABSCE boundary to be opened under administrative controls when the ABGTS is required to be OPERABLE. This change is acceptable because the administrative controls are described in the Bases. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for auxiliary building isolation is indicated. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

L02 *(Category 4 – Relaxation of Required Action)* CTS 3.7.8 ACTION contains compensatory actions to take when one auxiliary building gas treatment filter train is inoperable in MODES 1, 2, 3 and 4. CTS 3.7.8 does not contain compensatory actions to take when both auxiliary building gas treatment filter trains are inoperable. Therefore, CTS 3.0.3 would be entered for two auxiliary building gas treatment filter trains inoperable. CTS 3.0.3 requires action to be initiated within one hour to be in HOT STANDBY (equivalent to ITS MODE 3) in the following 6 hours, to be in HOT SHUTDOWN (equivalent to ITS MODE 4) in the following 6 hours, and to be in COLD SHUTDOWN (equivalent to ITS MODE 5) in the subsequent 36 hours. ITS 3.7.12 ACTIONS contain a Note stating LCO 3.0.3 is not applicable. ITS 3.7.12 ACTION B states with two ABGTS trains inoperable due to an inoperable Auxiliary Building Secondary Containment Enclosure (ABSCE) boundary in MODE 1, 2, 3, or 4 to restore the auxiliary building boundary to OPERABLE status within 24 hours. Additionally, ITS 3.7.12 ACTION C states, in part, when two ABGTS trains are inoperable for reasons other than Condition B (i.e., an inoperable ABSCE boundary) or if the Required Action and associated Completion Time of Condition B is not met in MODE 1, 2, 3, or 4 to be in MODE 3 within 6 hours and to be in MODE 5 within 36 hours. This changes the CTS by not requiring entry into LCO 3.0.3 when two ABGTS trains are inoperable in MODE 1, 2, 3, or 4, and adds compensatory actions to take when two ABGTS trains are inoperable in MODE 1, 2, 3, or 4.

ITS 3.7.12 is applicable during movement of recently irradiated fuel assemblies in the auxiliary building in addition to MODE 1, 2, 3, or 4. Since the movement of recently irradiated fuel assemblies can occur in MODES 1, 2, 3, and 4, it is necessary to add an ACTIONS Note stating that LCO 3.0.3 is not applicable because the movement of fuel is independent of reactor operations. This change is acceptable because ITS 3.7.12 ACTIONS B and C will provide compensatory measures to take when two trains of ABGTS are inoperable in MODE 1, 2, 3, or 4. ITS 3.7.12 ACTION B applies when two ABGTS trains are inoperable because of an inoperable ABSCE boundary in MODE 1, 2, 3, or 4 and provides 24 hours to restore the inoperable auxiliary building boundary to OPERABLE status. During these 24 hours, compensatory measures will be taken to protect plant personnel from potential hazards, and preplanned compensatory measures will be in place to address both the intentional and unintentional inoperability of the ABSCE boundary. Furthermore, the 24 hour Completion Time is based on the low probability of a DBA occurring during this time period and the compensatory measures that will be taken. ITS 3.7.12 ACTION C applies when the Required Action and associated Completion Time of Condition B is not met or when two ABGTS trains

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are in operable for reasons other than Condition B in MODE 1, 2, 3, or 4. ITS 3.7.12 ACTION C provides 6 hours to be in MODE 3 and 36 hours to be in MODE 5. This change is acceptable because ITS continues to require the unit to be placed outside of the MODE of Applicability when two ABGTS trains are inoperable in MODE 1, 2, 3, or 4, for reasons other than an inoperable ABSCE boundary, or if one ABGTS train is not restored to an OPERABLE status within 24 hours. This change is designated as less restrictive because the less stringent requirements are being applied in the ITS than were applied in the CTS.

L03 *(Category 7 – Relaxation of Surveillance Frequency)* CTS 4.7.8.a and 4.9.12.a require the operation of each ABGTS train every 31 days on a STAGGERED TEST BASIS. ITS SR 3.7.12.1 requires the operation of each ABGTS train every 31 days. This changes the CTS by deleting the requirement to perform the verification on a STAGGERED TEST BASIS. (See DOC LA02 for the discussion on moving the 31 day Frequency to the Surveillance Frequency Control Program.)

The purpose of CTS 4.7.8.b and 4.9.12.a is to ensure that ABGTS is OPERABLE. The CTS 1.35 STAGGERED TEST BASIS definition, defines a testing schedule for n systems, subsystems, or trains by dividing the specified test interval into n equal subintervals, with the testing of one system, subsystem, or train occurring at the beginning of each subinterval. In other words, a Surveillance Requirement to verify the OPERABILITY of each train in a two train system at a Frequency of 31 days on a STAGGERED TEST BASIS would result in each train being verified OPERABLE every 31 days, with one train being verified in alternating 15.5 day subintervals. Removal of the STAGGERED TEST BASIS scheduling requirement does not change the requirement to verify the OPERABILITY of each train every 31 days, but rather removes the requirement to schedule testing every 15.5 days. The new Surveillance Frequency will not change the testing Frequency of each train. The intent of the CTS staggered testing requirement is to evenly distribute testing of each ABGTS train across the system. However, as each ABGTS train is independent, no increase in reliability or safety is achieved by evenly staggering the testing subintervals. This change is acceptable, because removal of the staggered testing requirement will increase operational and scheduling flexibility without decreasing safety or system reliability. This change is designated as less restrictive, because the intervals between performances of the Surveillances for the ABGTS trains can be larger or smaller under the ITS than under the CTS.

L04 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.7.8.a and CTS 4.9.12.a require~~s~~ the periodic operation of each ABGTS train for at least 10 hours with the heaters on. ITS SR 3.7.12.1 requires the periodic operation of each ABGTS train for at least 15 continuous minutes with the heaters on. This changes the CTS by reducing the amount of time each ABGTS train is required to be operated.

The purpose of CTS 4.7.8.b and CTS 4.9.12.a is to periodically verify that each train of ABGTS can operate properly. The requirement to operate each train for at least 10 hours per month with the heaters on in order to reduce the buildup of moisture on the adsorbers and HEPA filters was derived from the guidance provided in Regulatory Guide (RG) 1.52, "Design, Testing, and Maintenance Criteria for Post

DISCUSSION OF CHANGES
ITS 3.7.12, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS)

Replace with "New" L06.

L06 ~~*(Category 2 – Relaxation of Applicability)* CTS 3.9.12 states that the requirements of the ABGTS are applicable "Whenever irradiated fuel is in the storage pool." CTS 3.9.12 ACTION a requires when no ABGTS is OPERABLE, suspend all operations involving movement of fuel within the spent fuel pit or crane operation with loads over the spent fuel pit until at least one ABGTS train is restored to an OPERABLE stratus. ITS 3.7.12 states, in part, that the requirements of the ABGTS are applicable "During movement of recently irradiated fuel assemblies in the auxiliary building." ITS 3.7.12 ACTION D requires when two ABGTS trains are inoperable during movement of recently irradiated fuel assemblies in the auxiliary building immediately to suspend movement of recently irradiated fuel assemblies in the auxiliary building. This changes the CTS by restricting the ABGTS Specification to only when there is a potential for a fuel handling accident (i.e., during movement of recently irradiated fuel assemblies in the auxiliary building).~~

~~The purpose of CTS 3.9.12 is to ensure the ABGTS is OPERABLE to mitigate the consequences of a fuel handling accident in the auxiliary building. This change is acceptable because the requirements continue to ensure that the structures, system and components are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. The Sequoyah Nuclear Plant (SQN) fuel handling analysis for the auxiliary building has been analyzed using the methodology from Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors." The SQN fuel handling analysis assumes, in part, that the accident occurs within 100 hours after a plant shutdown, radioactive decay during the interval between shutdown and placement of the first spent fuel assembly into the spent fuel pool is taken into account, and a single fuel assembly is damaged. Additionally, a fuel handling accident is only assumed to occur when a recently irradiated fuel assembly is being moved. Therefore, the ITS imposes the controls on the ABGTS during movement of recently irradiated fuel assemblies in the auxiliary building. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.~~

L07 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.7.8.d.2 requires verification that the filter trains start on a Containment Phase A Isolation test signal. CTS 4.9.12.d.2 requires verification that the filter train starts on a high radiation signal from the fuel pool radiation monitoring system. ITS SR 3.7.12.3 requires verification that each ABGTS train actuates on an actual or simulated actuation signal. This changes the CTS by specifying that the actuation signal may be either actual or simulated. (See DOC LA04 for a discussion of moving the details of the test signal to the Bases.)

The purpose of CTS 4.7.8.d.2 and 4.9.12.d.2 is to verify that each ABGTS train operates correctly upon a receipt of an actuation signal. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its safety function. Equipment cannot discriminate between an "actual" or "simulated" signal; therefore, the results of testing are unaffected by the type of signal used to initiate the test.

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"New" DOC L06

(Category 2 – Relaxation of Applicability) CTS 3.9.12 states that the requirements of the ABGTS are applicable "Whenever irradiated fuel is in the storage pool." CTS 3.9.12 ACTION a requires when no ABGTS train is OPERABLE, suspend all operations involving movement of fuel within the spent fuel pit or crane operation with loads over the spent fuel pit until at least one ABGTS train is restored to an OPERABLE status. ITS 3.7.12 states, in part, that two ABGTS trains are required to be OPERABLE "During movement of recently irradiated fuel assemblies in the auxiliary building." ITS 3.7.12 ACTION A requires one inoperable ABGTS train to be restored to an OPERABLE status in 7 days. ITS 3.7.12 ACTION D provides actions to either place a train of ABGTS in operation or suspend movement of recently irradiated fuel assemblies in the auxiliary building if the Required Actions and associated Completion Time of Condition A are not met. ITS 3.7.12 ACTION E requires when two ABGTS trains are inoperable during movement of recently irradiated fuel assemblies in the auxiliary building immediately to suspend movement of recently irradiated fuel assemblies in the auxiliary building. This changes the CTS by restricting the ABGTS Specification to only when ABGTS is required to mitigate a fuel handling accident (i.e., during movement of recently irradiated fuel assemblies in the auxiliary building).

The purpose of CTS 3.9.12 is to ensure the ABGTS is OPERABLE to mitigate the consequences of a fuel handling accident in the auxiliary building. This change is acceptable because the requirements continue to ensure that the structures, system and components are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. The Sequoyah Nuclear Plant (SQN) fuel handling analysis for the auxiliary building has been analyzed using the methodology from Regulatory Guide (RG) 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors." The SQN fuel handling analysis inside the auxiliary building assumes, in part, that the accident occurs 100 hours after a plant shutdown, radioactive decay during the interval between shutdown and placement of the first spent fuel assembly into the spent fuel pool is taken into account, and a single fuel assembly is damaged. The damaged fuel assembly is assumed to be the highest powered assembly in the core region to be discharged with a radial peaking factor of 1.70. All of the gap activity in the damaged rods is released to the spent fuel pool and consists of 5% of the total noble gases other than Kr-85, 10% of the Kr-85, 5% of the toal radioactive iodine other than I-131, and 8% of the I-131 in the rods at the time of the accident. Noble gases released to the spent fuel pool do not experience retention in the water pool. The iodine gap inventory is composed of 99.85% inorganic species, and 0.15% organic species. The spent fuel pool decontamination factor is 200. No credit is taken for natural decay due to holdup in the auxiliary building or after the activity has been released to the atmosphere. The activity released from the spent fuel pool is all assumed to be released to the environment over a 2-hour period. Doses were determined at the EAB and LPZ for the 2-hour interval over which the releases are assumed to take place, and in the control room for an extended period of time after termination of releases in order to address the continual presence of activity in the control room atmosphere. The accident doses were calculated using the dose model consistent with the use of the alternate source term methodology (RG 1.183). The doses are within the dose acceptance limits of 6.3 rem TEDE for offsite doses and 5.0 rem TEDE for control room doses. Because ABGTS is not credited in the mitigation of a fuel handling accident in the auxiliary building involving fuel that has at least 100 hours of decay time, it is not required to be OPERABLE during that evolution. However, fuel movement could still proceed prior to a decay time of 100 hours. Therefore, to mitigate the consequences of a fuel handling accident involving the movement of recently irradiated fuel, ITS imposes the controls on the ABGTS during movement of recently irradiated fuel assemblies in the auxiliary building. Consistent with NUMARC 93-01, "Safety Assessment for Removal of Equipment from Service During Shutdown Conditions," TVA will

implement procedural requirements for a single normal or contingency method to promptly close primary or secondary containment penetrations. Additionally, TVA will implement procedural requirements for one train of ABGTS to be OPERABLE during movement of irradiated fuel assemblies (whether in the auxiliary building or within the containment). This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

DISCUSSION OF CHANGES
ITS 3.7.12, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS)

This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L08 *(Category 1 - Relaxation of LCO Requirements)* CTS 3.9.4 states that one train of ABGTS is required to be OPERABLE with both doors of one or both containment personnel airlock(s) open "During movement of irradiated fuel within the containment." ITS 3.7.12 states, in part, that two trains of ABGTS are required to be OPERABLE "During movement of recently irradiated fuel assemblies in the auxiliary building." This changes the CTS by restricting the ABGTS requirement to only when ABGTS is required to mitigate a design basis fuel handling accident (FHA) (i.e., during movement of recently irradiated fuel assemblies in the auxiliary building).

The purpose of CTS 3.9.4 is to ensure the ABGTS is OPERABLE to mitigate a FHA in the auxiliary building. Although ABGTS is not credited in the mitigation of a FHA within the containment, the requirement for one train of ABGTS to be OPERABLE was added to the CTS with Amendments 209 and 199 for Units 1 and 2, respectively (ADAMS Accession number ML013320204). The amendments allowed both doors in one or both containment personnel airlock(s) to be open during core alterations and during the movement of irradiated fuel within the containment, provided one door in each airlock is capable of closure and one train of ABGTS remains OPERABLE. The change to restrict the ABGTS requirement to only when the system is required to mitigate a design basis FHA is acceptable because the requirements continue to ensure that the structures, system and components are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. The Sequoyah Nuclear Plant (SQN) fuel handling accident has been analyzed using the methodology from Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors." For the FHA within the containment, the time after shutdown is assumed to be 100 hours. The containment equipment hatch and personnel air locks may be open during fuel handling operations, and although the purge line would be quickly isolated, activity release is assumed to continue through these open penetrations. The accident postulates that a spent fuel assembly is dropped after refueling. All of the fuel rods in the assembly are assumed to rupture, releasing the radionuclides within the reactor cavity water. Fission products released from the damaged fuel are decontaminated by passage through the reactor cavity water. The fission products released are exhausted by the building purge system. On detection of increased radiation levels in the containment, the purge system automatically isolates (assumed 300 seconds following accident). After purge is isolated, the remaining fission products in the containment are assumed to leak to the environment through containment penetrations within 2 hours with no credit for holdup, dilution, or filtration of the release. The accident doses are within the acceptable dose limits of 6.3 rem TEDE for offsite doses (RG 1.183) and 5.0 rem TEDE for control room dose (GDC 19). Therefore, the removal of the requirement for one train of ABGTS to be OPERABLE with both doors of one or both personnel airlocks open during movement of irradiated fuel assemblies in the containment is justified. Consistent with NUMARC 93-01, "Safety Assessment for Removal of Equipment from Service During Shutdown Conditions," TVA will implement procedural requirements for a single normal or contingency method to promptly close primary or secondary containment penetrations. Additionally, TVA will implement procedural requirements for one train of ABGTS to be OPERABLE during movement of irradiated fuel assemblies (whether in the auxiliary building or within the containment). This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

CTS

3.7 PLANT SYSTEMS

3.7.~~13~~ 12 ~~Fuel Building Air Cleanup~~ Auxiliary Building Gas Treatment System ~~(FBACS)~~ ABGTS 1

3.7.8 3.9.12 — LCO 3.7.~~13~~ 12 Two ~~FBACS~~ ABGTS trains shall be OPERABLE. 1

DOC L01 ~~3.9.12~~

------------------------------NOTE~~S~~------------------------------

~~1.~~ The ~~fuel building~~ Auxiliary Building Secondary Containment Enclosure (ABSCE) boundary may be opened intermittently under administrative control. 3 ~~2~~

~~INSERT 1~~

3.7.8 Applicability, 3.9.12 Applicability

APPLICABILITY: ~~[~~MODES 1, 2, 3, and 4, ~~]~~
During movement of ~~[~~recently~~]~~ irradiated fuel assemblies in the ~~fuel~~ auxiliary building. 4 3

ACTIONS

DOC L02, 3.9.12 ACTION b

------------------------------NOTE------------------------------

LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ~~FBACS~~ ABGTS train inoperable ~~in MODE 1, 2, 3, or 4~~.	A.1 Restore ~~FBACS~~ ABGTS train to OPERABLE status.	7 days
B. Two ~~FBACS~~ ABGTS trains inoperable due to inoperable ~~fuel building~~ ABSCE boundary ~~in MODE 1, 2, 3, or 4~~.	B.1 Restore ~~fuel building~~ ABSCE boundary to OPERABLE status.	24 hours

3.7.8 ACTION DOC L06 (Condition A) — 1 ~~2~~

DOC L02 (Condition B) — 1 3

~~CTS~~ ~~3.7.12~~

~~2~~

~~INSERT 1~~

~~3.9.12~~ ~~2. Only one ABGTS train is required to be OPERABLE during movement of recently irradiated fuel assemblies in the auxiliary building.~~

CTS

ABGTS ~~FBACS~~ 1
3.7.~~13~~ 12

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
3.7.8 ACTION C. [Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4. OR DOC L02 Two ABGTS ~~FBACS~~ trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 4 36 hours] 4 1
DOC L06 ~~D. Required Action and associated Completion Time [of Condition A] not met during movement of [recently] irradiated fuel assemblies in the fuel building.~~ auxiliary	~~D.1 Place OPERABLE FBACS train in operation.~~ ABGTS ~~OR~~ ~~D.2 Suspend movement of [recently] irradiated fuel assemblies in the fuel building.~~ auxiliary	~~Immediately~~ ~~Immediately~~ Keep, with changes indicated in black. 1 4 4 3 4 3
3.9.12 ACTION a E D. ~~Two~~ ~~One required~~ two ABGTS ~~FBACS~~ trains inoperable during movement of [recently] irradiated fuel assemblies in the auxiliary ~~fuel~~ building.	E D.1 Suspend movement of [recently] irradiated fuel assemblies in the auxiliary ~~fuel~~ building.	Immediately 1 4 4 3 3

CTS

ABGTS ~~FBACS~~
3.7.~~13~~ 12 1

3.7 PLANT SYSTEMS

3.7.~~13~~ 12 Auxiliary Building Gas Treatment ~~Fuel Building Air Cleanup~~ System ABGTS ~~(FBACS)~~ 1

3.7.8
3.9.12

LCO 3.7.~~13~~ 12 Two ABGTS ~~FBACS~~ trains shall be OPERABLE. 1

DOC L01
~~3.9.12~~

~~S~~
---NOTE---
~~1.~~ The Auxiliary Building Secondary Containment Enclosure (ABSCE) ~~fuel building~~ boundary may be opened intermittently under administrative control. 3 ~~2~~

~~INSERT 1~~

3.7.8 Applicability, 3.9.12 Applicability

APPLICABILITY: ~~[~~MODES 1, 2, 3, and 4, ~~]~~
During movement of ~~[~~recently~~]~~ irradiated fuel assemblies ~~in the~~ ~~fuel~~ auxiliary ~~building~~. 4 3

ACTIONS

DOC L02, 3.9.12 ACTION b

---NOTE---
LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ABGTS ~~FBACS~~ train inoperable~~.~~ ~~In MODE 1, 2, 3, or 4~~	A.1 Restore ABGTS ~~FBACS~~ train to OPERABLE status.	7 days
B. Two ABGTS ~~FBACS~~ trains inoperable due to inoperable ABSCE ~~fuel building~~ boundary ~~in MODE 1, 2, 3, or 4.~~	B.1 Restore ABSCE ~~fuel building~~ boundary to OPERABLE status.	24 hours

Row A margin: 3.7.8 ACTION, DOC L06; 1 ~~2~~
Row B margin: DOC L02; 1 3

~~CTS~~ ~~3.7.12~~

~~2~~

~~INSERT 1~~

~~3.9.12~~ ~~2. Only one ABGTS train is required to be OPERABLE during movement of recently irradiated fuel assemblies in the auxiliary building.~~

CTS

ABGTS ~~FBACS~~
3.7.~~13~~ 12 1

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
3.7.8 ACTION	C. [Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4. OR	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours]	4 4
DOC L02	Two ABGTS ~~FBACS~~ trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.		Keep, with changes indicated in black.	1
DOC L06	~~D. Required Action and associated Completion Time [of Condition A] not met during movement of [recently] irradiated fuel assemblies in the fuel building.~~ auxiliary	~~D.1 Place OPERABLE FBACS train in operation.~~ ABGTS ~~OR~~ ~~D.2 Suspend movement of [recently] irradiated fuel assemblies in the fuel building.~~ auxiliary	~~Immediately~~ ~~Immediately~~	1 4 ~~2~~ 4 3 4 3
two E 3.9.12 ACTION a	~~E~~ D. ~~One required~~ ~~Two FBACS~~ ABGTS trains inoperable during movement of [recently] irradiated fuel assemblies in the ~~fuel~~ auxiliary building.	~~E~~ D.1 Suspend movement of [recently] irradiated fuel assemblies in the ~~fuel~~ auxiliary building.	Immediately	~~2~~ 1 4 4 3 3

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.12, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS)

1. Sequoyah Nuclear Plant (SQN) design does not include the ISTS 3.7.12, "Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)." Therefore, ISTS 3.7.13, "Fuel Building Air Cleanup System (FBACS)" has been renumbered as ITS 3.7.12. Additionally, SQN refers to the Fuel Building Air Cleanup System (FBACS) as the Auxiliary Building Gas Treatment System (ABGTS).

Not used.

2. ~~ISTS 3.7.13 ACTION A has been revised to only apply in MODES 1, 2, 3, or 4 and ACTION D has been deleted, as the SQN current licensing basis only credits one train of ABGTS to mitigate a fuel handling accident involving the movement of recently irradiated fuel assemblies in the auxiliary building. Therefore, the only applicable ACTION for the required ABGTS train being inoperable during the movement of recently irradiated fuel assemblies in the auxiliary building is ISTS 3.7.13 ACTION E (ITS 3.7.12 ACTION D).~~

3. Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

4. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

5. ISTS SR 3.7.13.1, SR 3.7.13.3 and SR 3.7.13.4 (ITS SR 3.7.12.1, SR 3.7.12.3 and SR 3.7.12.4, respectively) provides two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program.

6. Changes made for consistency with the Applicability of the ABGTS actuation functions provided in ITS 3.3.8.

BASES

APPLICABLE SAFETY ANALYSES (continued)

~~material provided by the one remaining train of this filtration system.~~ The amount of fission products available for release from the auxiliary ~~fuel handling~~ building is determined for a fuel handling accident and for a LOCA. ~~[~~Due to radioactive decay, ABGTS ~~FBACS~~ is only required to isolate during fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 100 hours ~~[X] days~~).~~]~~ These assumptions and the analysis follow the guidance provided in Regulatory Guide ~~1.25~~ 1.183 (Ref. ~~4~~ 3). 2 1 3 1 3 2

The ABGTS ~~FBACS~~ satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). 1

LCO

Two independent and redundant trains of the ABGTS ~~FBACS~~ are required to be OPERABLE to ensure that at least one train is available, assuming a single failure that disables the other train, coincident with a loss of offsite power. Total system failure could result in the atmospheric release from the auxiliary ~~fuel handling~~ building exceeding the 10 CFR 100 (Ref. 4 ~~5~~) limits in the event of a LOCA ~~fuel handling accident [involving handling recently irradiated fuel]~~. INSERT 2 1 1 2 2

The ABGTS ~~FBACS~~ is considered OPERABLE when the individual components necessary to control exposure in the auxiliary ~~fuel handling~~ building are OPERABLE in both trains. An ABGTS ~~FBACS~~ train is considered OPERABLE when its associated: 1

a. Fan is OPERABLE,

b. HEPA filter and charcoal adsorber are not excessively restricting flow, and are capable of performing their filtration function, and

c. Heater, ~~demister,~~ ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained. 1

a Note allowing → ~~two Notes. Note 1 allows~~

The LCO is modified by ~~a Note allowing~~ the Auxiliary Building Secondary Containment Enclosure (ABSCE) ~~fuel building~~ boundary to be opened intermittently under administrative controls. For entry and exit through doors the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for auxiliary ~~fuel~~ building isolation is indicated. 1 1

~~INSERT 3~~ ~~4~~

2

INSERT 2

One train of the ABGTS is required to be OPERABLE to mitigate the consequences of a fuel handling accident involving handling recently irradiated fuel to limit releases to the environment to within the 10 CFR 50.67 limits.

~~4~~

~~**INSERT 3**~~

~~Note 2 specifies that only one ABGTS train is required to be OPERABLE during the movement of recently irradiated fuel assemblies in the auxiliary building.~~

BASES

APPLICABILITY

In MODE 1, 2, 3, or 4, the ABGTS ~~FBACS~~ is required to be OPERABLE to provide fission product removal associated with ECCS leaks due to a LOCA and leakage from containment and annulus. 1

In MODE 5 or 6, the ABGTS ~~FBACS~~ is not required to be OPERABLE since the ECCS is not required to be OPERABLE. 1

During movement of ~~[~~recently~~]~~ irradiated fuel in the auxiliary building ~~fuel handling area~~, the ABGTS ~~FBACS~~ is required to be OPERABLE to alleviate the consequences of a fuel handling accident. 3 2 1

ACTIONS

LCO 3.0.3 is not applicable while in MODE 5 or 6. However, since irradiated fuel assembly movement can occur in MODE 1, 2, 3, or 4, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operations. Entering LCO 3.0.3, while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

A.1

With one ABGTS ~~FBACS~~ train inoperable, ~~in MODE 1, 2, 3, or 4~~ action must be taken to restore OPERABLE status within 7 days. During this period, the remaining OPERABLE train is adequate to perform the ABGTS ~~FBACS~~ function. The 7 day Completion Time is based on the risk from an event occurring requiring the inoperable ABGTS ~~FBACS~~ train, and the remaining ABGTS ~~FBACS~~ train providing the required protection. ~~4~~ 1

B.1

~~-----REVIEWER'S NOTE-----~~
~~Adoption of Condition B is dependent on a commitment from the licensee to have guidance available describing compensatory measures to be taken in the event of an intentional and unintentional entry into Condition B.~~
~~-----~~ 5

If the ABSCE ~~fuel building~~ boundary is inoperable in MODE 1, 2, 3, or 4, the ABGTS ~~FBACS~~ trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE ABSCE ~~fuel building~~ boundary within 24 hours. During the period that the ABSCE ~~fuel building~~ boundary is inoperable, appropriate compensatory measures ~~[~~consistent with the intent, as 1 3

BASES

ACTIONS (continued)

applicable, of GDC 19, 60, 61, 63, 64 and 10 CFR Part 100~~]~~ should be utilized to protect plant personnel from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the ~~fuel building~~ ABSCE boundary.

~~[~~ C.1 and C.2

In MODE 1, 2, 3, or 4, when Required Action A.1 or B.1 cannot be completed within the associated Completion Time, or when both ~~FBACS~~ ABGTS trains are inoperable for reasons other than an inoperable ~~fuel building~~ ABSCE boundary (i.e., Condition B), the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in MODE 3 within 6 hours, and in MODE 5 within 36 hours. The Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. ~~]~~

Keep with changes marked in black.

~~D.1 and D.2~~

~~When Required Action A.1 cannot be completed within the required Completion Time, during movement of [recently] irradiated fuel assemblies in the fuel building, the OPERABLE FBACS train must be started immediately or [recently] irradiated fuel movement suspended. This action ensures that the remaining train is OPERABLE, that no undetected failures preventing system operation will occur, and that any active failure will be readily detected.~~

auxiliary ABGTS

~~If the system is not placed in operation, this action requires suspension of [recently] irradiated fuel movement, which precludes a fuel handling accident [involving handling recently irradiated fuel]. This does not preclude the movement of fuel assemblies to a safe position.~~

BASES

ACTIONS (continued)

E D ~~E~~.1

two the required S ABGTS ~~is~~ are

When ~~two~~ trains ~~of the FBACS are~~ inoperable during movement of auxiliary ~~[~~recently~~]~~ irradiated fuel assemblies in the ~~fuel~~ building, action must be taken to place the unit in a condition in which the LCO does not apply. Action must be taken immediately to suspend movement of ~~[~~recently~~]~~ auxiliary irradiated fuel assemblies in the ~~fuel~~ building. This does not preclude the movement of fuel to a safe position. ~~4~~ ~~4~~ 2 3 1 3 1

SURVEILLANCE REQUIREMENTS

SR 3.7.~~13~~ 12.1 1

Standby systems should be checked periodically to ensure that they function properly. As the environmental and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on this system.

3 INSERT 4 ~~Monthly heater operation dries out any moisture accumulated in the charcoal from humidity in the ambient air. [Systems with heaters must be operated for ≥10 continuous hours with the heaters energized. Systems without heaters need only be operated for ≥15 minutes to demonstrate the function of the system.] [The 31 day Frequency is based on the known reliability of the equipment and the two train redundancy available.~~ TSTF-522

~~OR~~ 6

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ 5

~~[~~ SR 3.7.~~13~~ 12.2 3

This SR verifies that the required ABGTS ~~FBACS~~ testing is performed in accordance with the ~~[~~Ventilation Filter Testing Program (VFTP)~~]~~. The ~~[~~VFTP~~]~~ includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the ~~[~~VFTP~~]~~. ~~]~~ 2 3 3

TSTF-522

INSERT ~~4~~ 3

Operation [with heaters on] for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that [heater failure,] blockage, fan or motor failure, or excessive vibration can be detected for corrective action. 3 3

Operation will be demonstrated by initiating, from the control room, flow through the HEPA filter and charcoal adsorber train. 2

BASES

SURVEILLANCE REQUIREMENTS (continued)

[SR 3.7.~~13~~12.3 3 1

This SR verifies that each ~~FBACS~~ ABGTS train starts and operates on an actual or simulated actuation signal. INSERT 5 ~~[The [18] month Frequency is consistent with Reference 6.]~~ 1 4 6

4

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ 5

SR 3.7.~~13~~12.4 1

This SR verifies the integrity of the ~~fuel~~ auxiliary building enclosure (i.e., spent fuel storage area and the ESF pump rooms). The ability of the ~~fuel~~ auxiliary building to maintain negative pressure with respect to potentially uncontaminated adjacent areas is periodically tested to verify proper function of the ~~FBACS~~ ABGTS. During the ~~[~~post accident~~]~~ mode of operation, the ~~FBACS~~ ABGTS is designed to maintain a slight negative pressure in the ~~fuel~~ auxiliary building, to prevent unfiltered LEAKAGE. The ~~FBACS~~ ABGTS is designed to maintain a ≤ ~~[-0.125]~~ - 0.25 inches water gauge with respect to atmospheric pressure at a flow rate ~~of [20,000]~~ ≥ 8,100 and ≤ 9,900 cfm to the ~~fuel~~ auxiliary building. ~~[The Frequency of [18] months is consistent with the guidance provided in NUREG-0800, Section 6.5.1 (Ref. 7).~~ 2 1 3 3 1 6

~~An [18] month Frequency (on a STAGGERED TEST BASIS) is consistent with Reference 6.~~

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

6

INSERT ~~5~~ $\boxed{4}$

The SR is modified by two Notes that specify when verification of ABGTS actuation for each actuation signal is required to be met. ABGTS actuation on a Containment Phase A isolation signal is required to be met in MODES 1, 2, 3 and 4. ABGTS actuation on fuel storage pool area high radiation signal is required to be met during movement of recently irradiated fuel assemblies in the auxiliary building.

BASES

APPLICABLE SAFETY ANALYSES (continued)

~~material provided by the one remaining train of this filtration system.~~ The amount of fission products available for release from the ~~fuel handling~~ auxiliary building is determined for a fuel handling accident and for a LOCA. ~~[~~Due to radioactive decay, ~~FBACS~~ ABGTS is only required to isolate during fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous ~~[X] days~~ 100 hours).~~]~~ These assumptions and the analysis follow the guidance provided in Regulatory Guide ~~1.25~~ 1.183 (Ref. ~~4~~ 3). 2 1 3 1 3 2

The ~~FBACS~~ ABGTS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). 1

LCO Two independent and redundant trains of the ~~FBACS~~ ABGTS are required to be OPERABLE to ensure that at least one train is available, assuming a single failure that disables the other train, coincident with a loss of offsite power. Total system failure could result in the atmospheric release from the ~~fuel handling~~ auxiliary building exceeding the 10 CFR 100 (Ref. ~~5~~ 4) limits in the event of a ~~fuel handling accident [involving handling recently irradiated fuel]~~ LOCA. INSERT 2 1 1 2 2

The ~~FBACS~~ ABGTS is considered OPERABLE when the individual components necessary to control exposure in the ~~fuel handling~~ auxiliary building are OPERABLE in both trains. An ~~FBACS~~ ABGTS train is considered OPERABLE when its associated: 1

a. Fan is OPERABLE,

b. HEPA filter and charcoal adsorber are not excessively restricting flow, and are capable of performing their filtration function, and

c. Heater, ~~demister,~~ ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained. 1

The LCO is modified by ~~a Note allowing~~ ~~two Notes. Note 1 allows~~ a Note allowing the ~~fuel building~~ Auxiliary Building Secondary Containment Enclosure (ABSCE) boundary to be opened intermittently under administrative controls. For entry and exit through doors the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for ~~fuel~~ auxiliary building isolation is indicated. 1 1

~~INSERT 3~~ ~~4~~

2

INSERT 2

One train of the ABGTS is required to be OPERABLE to mitigate the consequences of a fuel handling accident involving handling recently irradiated fuel to limit releases to the environment to within the 10 CFR 50.67 limits.

~~4~~

~~**INSERT 3**~~

~~Note 2 specifies that only one ABGTS train is required to be OPERABLE during the movement of recently irradiated fuel assemblies in the auxiliary building.~~

BASES

APPLICABILITY

In MODE 1, 2, 3, or 4, the ABGTS ~~FBACS~~ is required to be OPERABLE to provide fission product removal associated with ECCS leaks due to a LOCA and leakage from containment and annulus. 1

In MODE 5 or 6, the ABGTS ~~FBACS~~ is not required to be OPERABLE since the ECCS is not required to be OPERABLE. 1

During movement of ~~[~~recently~~]~~ irradiated fuel in the auxiliary building ~~fuel handling area~~, the ABGTS ~~FBACS~~ is required to be OPERABLE to alleviate the consequences of a fuel handling accident. 3 2 1

ACTIONS

LCO 3.0.3 is not applicable while in MODE 5 or 6. However, since irradiated fuel assembly movement can occur in MODE 1, 2, 3, or 4, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operations. Entering LCO 3.0.3, while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

A.1

With one ABGTS ~~FBACS~~ train inoperable ~~in MODE 1, 2, 3, or 4~~, action must be taken to restore OPERABLE status within 7 days. During this period, the remaining OPERABLE train is adequate to perform the ABGTS ~~FBACS~~ function. The 7 day Completion Time is based on the risk from an event occurring requiring the inoperable ABGTS ~~FBACS~~ train, and the remaining ABGTS ~~FBACS~~ train providing the required protection. ~~4~~ 1

B.1

~~------------------------------REVIEWER'S NOTE------------------------~~
~~Adoption of Condition B is dependent on a commitment from the licensee to have guidance available describing compensatory measures to be taken in the event of an intentional and unintentional entry into Condition B.~~
~~---~~ 5

If the ABSCE ~~fuel building~~ boundary is inoperable in MODE 1, 2, 3, or 4, the ABGTS ~~FBACS~~ trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE ABSCE ~~fuel building~~ boundary within 24 hours. During the period that the ABSCE ~~fuel building~~ boundary is inoperable, appropriate compensatory measures ~~[~~consistent with the intent, as 1 3

BASES

ACTIONS (continued)

applicable, of GDC 19, 60, 61, 63, 64 and 10 CFR Part 100~~]~~ should be utilized to protect plant personnel from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the ~~fuel building~~ ABSCE boundary. 3 1

~~[~~ C.1 and C.2 3

In MODE 1, 2, 3, or 4, when Required Action A.1 or B.1 cannot be completed within the associated Completion Time, or when both ~~FBACS~~ ABGTS trains are inoperable for reasons other than an inoperable ~~fuel building~~ ABSCE boundary (i.e., Condition B), the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in MODE 3 within 6 hours, and in MODE 5 within 36 hours. The Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. ~~]~~ 1 3

Keep with changes marked in black.

~~D.1 and D.2~~

~~When Required Action A.1 cannot be completed within the required Completion Time, during movement of [recently] irradiated fuel assemblies in the fuel building, the OPERABLE FBACS train must be started immediately or [recently] irradiated fuel movement suspended. This action ensures that the remaining train is OPERABLE, that no undetected failures preventing system operation will occur, and that any active failure will be readily detected.~~

auxiliary ABGTS

~~If the system is not placed in operation, this action requires suspension of [recently] irradiated fuel movement, which precludes a fuel handling accident [involving handling recently irradiated fuel]. This does not preclude the movement of fuel assemblies to a safe position.~~

3 1 3 ~~4~~ 3 3

ABGTS ~~FBACS~~ 1
B 3.7.~~13~~ 12

BASES

ACTIONS (continued)

~~E~~ D E .1

When ~~two~~ the required two train~~s~~ s ~~of the FBACS are~~ ABGTS is are inoperable during movement of ~~[~~recently~~]~~ irradiated fuel assemblies in the ~~fuel~~ auxiliary building, action must be taken to place the unit in a condition in which the LCO does not apply. Action must be taken immediately to suspend movement of ~~[~~recently~~]~~ irradiated fuel assemblies in the ~~fuel~~ auxiliary building. This does not preclude the movement of fuel to a safe position.

SURVEILLANCE REQUIREMENTS

SR 3.7.~~13~~ 12.1

Standby systems should be checked periodically to ensure that they function properly. As the environmental and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on this system.

3 INSERT 4

~~Monthly heater operation dries out any moisture accumulated in the charcoal from humidity in the ambient air. [Systems with heaters must be operated for ≥10 continuous hours with the heaters energized. Systems without heaters need only be operated for ≥15 minutes to demonstrate the function of the system.] [The 31 day Frequency is based on the known reliability of the equipment and the two train redundancy available.~~ TSTF-522

~~OR~~ 6

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 5

~~[~~ SR 3.7.~~13~~ 12.2

This SR verifies that the required ~~FBACS~~ ABGTS testing is performed in accordance with the ~~[~~Ventilation Filter Testing Program (VFTP)~~]~~. The ~~[~~VFTP~~]~~ includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the ~~[~~VFTP~~]~~. ~~]~~

TSTF-522

3

INSERT ~~4~~

Operation [with heaters on] for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that [heater failure,] blockage, fan or motor failure, or excessive vibration can be detected for corrective action. 3 3

Operation will be demonstrated by initiating, from the control room, flow through the HEPA filter and charcoal adsorber train. 2

ABGTS ~~FBACS~~ 1
B 3.7.~~13~~ 12

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[~~ SR 3.7.~~13~~ 12.3 3 1

This SR verifies that each ~~FBACS~~ ABGTS train starts and operates on an actual or simulated actuation signal. INSERT ~~5~~ 4 ~~[The [18] month Frequency is consistent with Reference 6.]~~ 1 4 6

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ 5

SR 3.7.~~13~~ 12.4 1

This SR verifies the integrity of the ~~fuel~~ auxiliary building enclosure (i.e., spent fuel storage area and the ESF pump rooms). The ability of the ~~fuel~~ auxiliary building to maintain negative pressure with respect to potentially uncontaminated adjacent areas is periodically tested to verify proper function of the ~~FBACS~~ ABGTS. During the ~~[~~post accident~~]~~ mode of operation, the ~~FBACS~~ ABGTS is designed to maintain a slight negative pressure in the ~~fuel~~ auxiliary building, to prevent unfiltered LEAKAGE. The ~~FBACS~~ ABGTS is designed to maintain a ≤ ~~[-0.125]~~ - 0.25 inches water gauge with respect to atmospheric pressure at a flow rate ~~of [20,000]~~ ≥ 8,100 and ≤ 9,900 cfm to the ~~fuel~~ auxiliary building. ~~[The Frequency of [18] months is consistent with the guidance provided in NUREG-0800, Section 6.5.1 (Ref. 7).~~ 2 1 3 3 1 6

~~An [18] month Frequency (on a STAGGERED TEST BASIS) is consistent with Reference 6.~~

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

6

INSERT ~~5~~ $\boxed{4}$

The SR is modified by two Notes that specify when verification of ABGTS actuation for each actuation signal is required to be met. ABGTS actuation on a Containment Phase A isolation signal is required to be met in MODES 1, 2, 3 and 4. ABGTS actuation on fuel storage pool area high radiation signal is required to be met during movement of recently irradiated fuel assemblies in the auxiliary building.

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Licensee Response/NRC Response/NRC Question Closure

Id	**303**
NRC Question Number	**RPG-001**
Select Application	**Licensee Response**
Attachment 1	**RAI RPG-001 Supplemental Response Attachment.pdf** (466KB)
Attachment 2	
Response Statement	**This response supplements the response to RAI RPG-001. During review, it was identified that Attachment 1 to the response for RAI RPG-001 contained an error associated with the SQN Unit 2 ISTS markups for ITS 3.7.12. Specifically, for SQN Unit 2, ITS 3.7.12 Mode of Applicability should be, "MODES 1, 2, 3, and 4, During movement of recently irradiated fuel assemblies in the auxiliary building." vice "MODES 1, 2, 3, and 4, During movement of recently irradiated fuel assemblies."** **See Attachment 1 for the draft revised SQN Unit 2, ITS 3.7.12 Mode of Applicability.**
Response Date/Time	**8/28/2014 6:15 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**8/28/2014 5:16 AM**
Date Modified	
Modified By	

CTS

ABGTS ~~FBACS~~ 1
3.7.~~13~~ 12

3.7 PLANT SYSTEMS

3.7.~~13~~ 12 Auxiliary Building Gas Treatment ~~Fuel Building Air Cleanup~~ System ABGTS ~~(FBACS)~~ 1

3.7.8
3.9.12

LCO 3.7.~~13~~ 12 Two ABGTS ~~FBACS~~ trains shall be OPERABLE. 1

DOC L01
~~3.9.12~~

Auxiliary Building Secondary Containment Enclosure (ABSCE)

~~S~~

------NOTE~~S~~------

~~1.~~ The ~~fuel building~~ boundary may be opened intermittently under administrative control. 3 ~~2~~

~~INSERT 1~~

3.7.8 Applicability, 3.9.12 Applicability

APPLICABILITY: ~~[~~MODES 1, 2, 3, and 4, ~~]~~
During movement of ~~[~~recently~~]~~ irradiated fuel assemblies in the ~~fuel~~ auxiliary building. 4 3

ACTIONS

DOC L02, 3.9.12 ACTION b

------NOTE------

LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ABGTS ~~FBACS~~ train inoperable~~.~~ ~~In MODE 1, 2, 3, or 4~~	A.1 Restore ABGTS ~~FBACS~~ train to OPERABLE status.	7 days
B. Two ABGTS ~~FBACS~~ trains inoperable due to inoperable ABSCE ~~fuel building~~ boundary ~~in MODE 1, 2, 3, or 4.~~	B.1 Restore ABSCE ~~fuel building~~ boundary to OPERABLE status.	24 hours

3.7.8 ACTION
DOC L06
1 ~~2~~

DOC L02
1 3

Enclosure 2, Volume 12, Rev. 0, Page 452 of 704

Licensee Response/NRC Response/NRC Question Closure

Id	**386**
NRC Question Number	**RPG-001**
Select Application	**NRC Response**
Attachment 1	
Attachment 2	

Response Statement

The Staff's follow-up response to RPG-001:

Ref. ITS TABLE 3.3.8-1 (CTS TABLE 3.3-6, "RADIATION MONITORING ISTRUMENTATION") (ENCLOSURE 2, VOLUME 8, Rev 0)

1. **The proposed change on TS page 3/4 3-41 for Sequoyah unit 2 (page 1035 of 1148 of Enclosure 2 Volume 8), in the attachment to the licensee's 6/20/14 response to RPG-001, shows deletion of a wrong note. The change deletes the note, "ADD proposed Table 3.3.8-1 Function 3," associated with M05, instead of deleting the note, "Add proposed Table 3.3.8-1 Footnote (b)," associated with M04.**

2. **New DOC L01 (Text added after page 1044) incorrectly references ITS 3.7.12 Action A in the first paragraph. It should have referenced ITS 3.3.8 Action A.**

Please correct these discrepancies or provide justification for the proposed changes.

Please note, since the ITS 3.9.4 related proposed changes are dependent on the Staff's approval of the FHA, the Staff believes that RPG-001 should remain open, If the FHA is not approved by the Staff, Sequoyah will have to remove the applicability of 'recently' irradiated fuel and return the applicability to irradiated fuel.

Response Date/Time	**11/25/2014 6:00 PM**
Closure Statement	
Question Closure Date	
Notification	**Mark Blumberg**

	Scott Bowman **Kristy Bucholtz** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Ravinder Grover**
Date Added	**11/25/2014 4:43 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**392**
NRC Question Number	**RPG-001**
Select Application	**Licensee Response**
Attachment 1	**RAI RPG-001 Revised Attachment 1 for Response to NRC Response.pdf** (2MB)
Attachment 2	
Response Statement	**Based on the Staff's response to RAI RPG-001, Attachment 1, provided with the initial RAI response and supplemented by a subsequent licensee response, will be revised. Specifically, Attachment 1 (page 1035 of 1148 of Enclosure 2, Volume 8) will be revised to retain the proposed insert and indicator associated with Discussion of Change (DOC) M05, and delete the proposed insert and indicator associated with DOC M04. Additionally, new DOC L01 (insert page following page 1044 of 1148) will be revised to reference ITS 3.3.8 ACTION A vice ITS 3.7.12 ACTION A in the first paragraph.** **See Attachment 1 for the draft revised changes to the ITS submittal. Attachment 1 is a rollup of changes based on the original RAI response, the supplemental RAI response, and the proposed changes discussed above. Because the revised Attachment 1 is a reflection of changes to the ITS submittal, originally proposed changes in the initial RAI response that were incorrect will not be reflected in the rollup.**
Response Date/Time	**12/3/2014 6:00 AM**
Closure Statement	
Question Closure Date	
Notification	**Mark Blumberg** **Scott Bowman** **Kristy Bucholtz** **Michelle Conner**

	Ravinder Grover Matthew Hamm Khadijah Hemphill Andrew Hon Ray Schiele
Added By	**Scott Bowman**
Date Added	**12/3/2014 5:02 AM**
Date Modified	
Modified By	

ITS A01 ITS 3.9.4

REFUELING OPERATIONS

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

LIMITING CONDITION FOR OPERATION

LCO 3.9.4 3.9.4 The containment building penetrations shall be in the following status:

LCO 3.9.4.a a. The equipment door closed and held in place by a minimum of four bolts,

LCO 3.9.4.b b. A minimum of one door in each airlock is closed, and both doors of both containment personnel airlocks may be open if: A02

1. One personnel airlock door in each airlock is capable of closure, and

~~2. One train of the Auxiliary Building Gas Treatment System is OPERABLE in accordance with Technical Specification 3.9.12, and~~ A03 (See ITS 3.7.12)

LCO 3.9.4.c c. Each penetration* providing direct access from the containment atmosphere to the outside atmosphere shall be either:

LCO 3.9.4.c.1 1. Closed by an isolation valve, blind flange, manual valve, or equivalent, or

LCO 3.9.4.c.2 2. Be capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve.

APPLICABILTY:

Applicability 3.9.4.a. Containment Building Equipment Door - During movement of recently irradiated fuel within the containment.

Applicability 3.9.4.b. and c. Containment Building Airlock Doors and Penetrations - During movement of recently irradiated fuel within the containment. L01

ACTION:

ACTION A 1. With the requirements of the above specification not satisfied for the containment building equipment door, immediately suspend all operations involving movement of recently irradiated fuel in the containment building. ~~The provisions of Specification 3.0.3 are not applicable.~~ A04

ACTION A 2. With the requirements of the above specification not satisfied for containment airlock doors or penetrations, immediately suspend all operations involving movement of recently irradiated fuel in the containment building. ~~The provisions of Specification 3.0.3 are not applicable.~~ L01 A04

SURVEILLANCE REQUIREMENTS

SR 3.9.4.1, SR 3.9.4.2 4.9.4 Each of the above required containment building penetrations shall be determined to be either in its required condition or capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve ~~once per 7 days~~ during movement of recently irradiated fuel in the containment building by: L01

A01

SR 3.9.4.1 a. Verifying the penetrations are in their required condition ~~once per 7 days~~ In accordance with the Surveillance Frequency Control Program, or LA01

SR 3.9.4.2 b. Add proposed SR 3.9.4.2 Note Verifying the Containment Ventilation isolation valves not locked, sealed, or otherwise secured in position, actuate to the isolation position on an actual or simulated actuation signal ~~18 months~~ In accordance with the Surveillance Frequency Control Program. L02 LA01

LCO 3.9.4 Note * Penetration flow path(s) providing direct access from the containment atmosphere that transverse and terminate in the Auxiliary Building Secondary Containment Enclosure may be unisolated under administrative controls.

ITS A01 ITS 3.9.4

REFUELING OPERATIONS

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

LIMITING CONDITION FOR OPERATION

LCO 3.9.4 3.9.4 The containment building penetrations shall be in the following status:

LCO 3.9.4.a a. The equipment door closed and held in place by a minimum of four bolts,

LCO 3.9.4.b b. A minimum of one door in each airlock is closed, or both doors of both containment personnel airlocks may be open if: A02

1. One personnel airlock door in each airlock is capable of closure, and

~~2. One train of the Auxiliary Building Gas Treatment System is OPERABLE in accordance with Technical Specification 3.9.12, and~~ ~~A03~~ (See ITS 3.7.12)

LCO 3.9.4.c c. Each penetration* providing direct access from the containment atmosphere to the outside atmosphere shall be either:

LCO 3.9.4.c.1 1. Closed by an isolation valve, blind flange, manual valve, or equivalent, or

LCO 3.9.4.c.2 2. Be capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve.

APPLICABILITY:

Applicability 3.9.4.a. Containment Building Equipment Door - During movement of recently irradiated fuel within the containment.

Applicability 3.9.4.b. and c. Containment Building Airlock Doors and Penetrations - During movement of recently irradiated fuel within the containment. L01

ACTION:

ACTION A 1. With the requirements of the above specification not satisfied for the containment building equipment door, immediately suspend all operations involving movement of recently irradiated fuel in the containment building. ~~The provisions of Specification 3.0.3 are not applicable.~~ A04

ACTION A 2. With the requirements of the above specification not satisfied for containment airlock doors or penetrations, immediately suspend all operations involving movement of recently irradiated fuel in the containment building. ~~The provisions of Specification 3.0.3 are not applicable.~~ L01 A04

SURVEILLANCE REQUIREMENTS

L02

SR 3.9.4.1, SR 3.9.4.2 4.9.4 Each of the above required containment building penetrations shall be determined to be either in its required condition or capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve ~~once per 7 days~~ In accordance with the Surveillance Frequency Control Program during movement of recently irradiated fuel in the containment building by: L01 LA01

SR 3.9.4.1 A01 a. Verifying the penetrations are in their required condition, or

Add proposed SR 3.9.4.2 Note

SR 3.9.4.2 b. Verifying the Containment Ventilation isolation valves not locked, sealed, or otherwise secured in position, actuate to the isolation position on an actual or simulated actuation signal ~~18 months~~ In accordance with the Surveillance Frequency Control Program. L02 LA01

LCO 3.9.4 Note * Penetration flow path(s) providing direct access from the containment atmosphere that transverse and terminate in the Auxiliary Building Secondary Containment Enclosure may be unisolated under administrative controls.

DISCUSSION OF CHANGES
ITS 3.9.4, CONTAINMENT PENETRATIONS

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.9.4.b requires that a minimum of one door in each airlock is closed, and both doors of both containment personnel airlocks may be open if one personnel airlock door in each airlock is capable of closure and one train of the Auxiliary Building Gas Treatment System is OPERABLE in accordance with Technical Specification 3.9.12. ITS LCO 3.9.4.b requires that one door in each air lock be capable of being closed. This changes the CTS by replacing the prescriptive requirement for control of the air lock doors with a more general requirement that the air lock doors must be capable of being closed.

(See ITS 3.7.12 DOC L08 for the discussion of relaxing the OPERABILITY requirements for ABGTS.)

This change is acceptable because the requirements have not changed, one door continues to be capable of being closed in the event of a fuel handling accident. The ITS requirement preserves the intent of the CTS in that should a fuel handling accident occur inside containment, at least one airlock door in each airlock will be closed following an evacuation of containment. This change is designated as administrated because it does not result in a technical change to the CTS.

Not used.

A03 ~~CTS 3.9.4.b allows both doors of each containment personnel airlocks to be open provided, in part, that "One train of the Auxiliary Building Gas Treatment System is OPERABLE in accordance with Technical Specification 3.9.12." ITS 3.9.4.b does not contain this specific requirement. This changes the CTS by removing the specific requirement that one train of the Auxiliary Building Gas Treatment System be OPERABLE.~~

~~The purpose of CTS 3.9.4.b is to ensure that the Auxiliary Building Gas Treatment System is available when the containment personnel airlock doors are open during movement of recently irradiated fuel within the containment, this is accomplished by referencing CTS 3.9.12. This change is acceptable because the associated requirements referenced by CTS 3.9.4.b in CTS 3.9.12 are being addressed in ITS 3.7.12. Therefore, ITS 3.7.12 contains the appropriate requirements associated with the ABGTS. This change is designated as administrative because it does not result in a technical change to the CTS.~~

A04 CTS 3.9.4 and CTS 3.9.9 ACTIONS state "The provisions of Specification 3.0.3 are not applicable. ITS 3.9.4 does not include this statement. This changes the CTS by deleting the Specification 3.0.3 exemption.

Enclosure 2, Volume 14, Rev. 0, Page 109 of 236

BASES

LCO (continued)

INSERT 2 2

that transverse and terminate in the Auxiliary Building Secondary Containment Enclosure

The LCO is modified by a Note allowing penetration flow paths with direct access from the containment atmosphere ~~to the outside atmosphere~~ to be unisolated under administrative controls. Administrative controls ensure that 1) appropriate personnel are aware of the open status of the penetration flow path during movement of irradiated fuel assemblies within containment, and 2) specified individuals are designated and readily available to isolate the flow path in the event of a fuel handling accident. 2

may

The containment personnel air lock doors ~~many~~ be open during movement of ~~[~~recently~~]~~ irradiated fuel in the containment provided that one door is capable of being closed in the event of a fuel handling accident. Should a fuel handling accident occur inside containment, at least one personnel air lock door will be closed following an evacuation of containment. ~~INSERT 3~~ 4 1 2 ~~2~~

APPLICABILITY

The containment penetration requirements are applicable during movement of ~~[~~recently~~]~~ irradiated fuel assemblies within containment because this is when there is a potential for the limiting fuel handling accident. In MODES 1, 2, 3, and 4, containment penetration requirements are addressed by LCO 3.6.1. In MODES 5 and 6, when movement of irradiated fuel assemblies within containment is not being conducted, the potential for a fuel handling accident does not exist. ~~[~~Additionally, due to radioactive decay, a fuel handling accident involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous ~~[x] days~~ 100 hours) will result in doses that are ~~well~~ within the guideline values specified in 10 CFR ~~100~~ 50.67 even without containment closure capability.~~]~~ Therefore, under these conditions no requirements are placed on containment penetration status. 1 1 2

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~The addition of the term "recently" associated with handling irradiated fuel in all of the containment function Technical Specification requirements is only applicable to those licensees who have demonstrated by analysis that after sufficient radioactive decay has occurred, off-site doses resulting from a fuel handling accident remain below the Standard Review Plan limits (well within 10 CFR 100).~~

~~Additionally, licensees adding the term "recently" must make the following commitment which is consistent with NUMARC 93-01, Revision 4, Section 11.3.6.5 "Safety Assessment for Removal of Equipment from Service During Shutdown Conditions," subheading "Containment - Primary (PWR)/Secondary (BWR)."~~

~~"The following guidelines are included in the assessment of systems removed from service during movement irradiated fuel:~~ 5

4

INSERT 2

During movement of recently irradiated fuel assemblies within containment, the equipment hatch is required to be held in place by at least four bolts.

~~2~~

~~INSERT 3~~

~~The containment design is such that even though the primary and secondary containments are connected together when the personnel air lock doors are open, the normal auxiliary building ventilation system and Auxiliary Building Gas Treatment System (ABGTS) continue to provide the same fuel handling accident mitigation capability. With the personnel air lock doors open, the consequences of a fuel handling accident in the containment will be mitigated by the design of the ventilation systems (maintenance of a negative pressure during normal and applicable abnormal conditions, automatic isolation on high radiation in the auxiliary building, and automatic startup of emergency ventilation systems) and the leak-tight design of the auxiliary building. Both sets of the containment personnel airlock doors may be open during movement of recently irradiated fuel in containment provided one train of ABGTS is available for operation (LCO 3.7.12, "Auxiliary Building Gas Treatment System (AGBTS)"). The fuel handling accident is analyzed to occur in either the containment or the auxiliary building; however, an ABGTS start may be necessary for a containment fuel handling accident. The requirement for an airlock door to be capable of closure is provided to allow for long-term recovery from a fuel handling accident in containment.~~

BASES

APPLICABILITY (continued)

~~- During fuel handling/core alterations, ventilation system and radiation monitor availability (as defined in NUMARC 91-06) should be assessed, with respect to filtration and monitoring of releases from the fuel. Following shutdown, radioactivity in the fuel decays away fairly rapidly. The basis of the Technical Specification OPERABILITY amendment is the reduction in doses due to such decay. The goal of maintaining ventilation system and radiation monitor availability is to reduce doses even further below that provided by the natural decay.~~

~~- A single normal or contingency method to promptly close primary or secondary containment penetrations should be developed. Such prompt methods need not completely block the penetration or be capable of resisting pressure.~~

~~The purpose of the "prompt methods" mentioned above are to enable ventilation systems to draw the release from a postulated fuel handling accident in the proper direction such that it can be treated and monitored."~~

~~--~~

5

ACTIONS

A.1

If the containment equipment hatch, air locks, or any containment penetration ~~that provides direct access from the containment atmosphere to the outside atmosphere~~ is not in the required status, including ~~the~~ automatic Containment ~~Purge and~~ Ventilation ~~Exhaust~~ Isolation ~~System~~ valve(s) not capable of automatic actuation when the ~~purge and exhaust~~ Containment Ventilation isolation valves are open, the unit must be placed in a condition where the isolation function is not needed. This is accomplished by immediately suspending movement of ~~[~~recently~~]~~ irradiated fuel assemblies within containment. Performance of these actions shall not preclude completion of movement of a component to a safe position.

2

1

SURVEILLANCE REQUIREMENTS 3

SR 3.9.4.1

This Surveillance demonstrates that each ~~of the~~ containment penetration~~s~~ required is in its ~~to be in its closed~~ position ~~is in that position. The Surveillance on the open purge and exhaust valves will demonstrate that the valves are not blocked from closing. Also the Surveillance will demonstrate that each~~ valve operator has motive power~~, which will ensure that each valve is capable of being closed by an OPERABLE automatic containment purge and exhaust isolation signal~~.

INSERT 4

6

3

6

INSERT 4

status. The requirement that penetrations are capable of being closed by an OPERABLE automatic containment ventilation isolation valve, can be verified by ensuring that each required containment ventilation isolation

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[The Surveillance is performed every 7 days during movement of [recently] irradiated fuel assemblies within containment. The Surveillance interval is selected to be commensurate with the normal duration of time to complete fuel handling operations. A surveillance before the start of refueling operations will provide two or three surveillance verifications during the applicable period for this LCO. As such, this Surveillance ensures that a postulated fuel handling accident [involving handling recently irradiated fuel] that releases fission product radioactivity within the containment will not result in a release of significant fission product radioactivity to the environment in excess of those recommended by Standard Review Plan Section 15.7.4 (Reference 3).~~ 7

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 8

SR 3.9.4.2

4

INSERT 5

This Surveillance demonstrates that each containment ~~purge and exhaust~~ ventilation isolation valve actuates to its isolation position on manual initiation or on an actual or simulated ~~high~~ actuation ~~radiation~~ signal. ~~[The 18 month Frequency maintains consistency with other similar ESFAS instrumentation and valve testing requirements. In LCO 3.3.6, the Containment Purge and Exhaust Isolation instrumentation requires a CHANNEL CHECK every 12 hours and a COT every 92 days to ensure the channel OPERABILITY during refueling operations. Every 18 months a CHANNEL CALIBRATION is performed. The system actuation response time is demonstrated every 18 months, during refueling, on a STAGGERED TEST BASIS. SR 3.6.3.5 demonstrates that the isolation time of each valve is in accordance with the Inservice Testing Program requirements. These Surveillances performed during MODE 6 will ensure that the valves are capable of closing after a postulated fuel handling accident [involving handling recently irradiated fuel] to limit a release of fission product radioactivity from the containment.~~ 2 9 10 7

4

9 **INSERT 5**

, that is not locked, sealed, or otherwise secured in position,

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BASES

LCO (continued)

INSERT 2 2

that transverse and terminate in the Auxiliary Building Secondary Containment Enclosure

The LCO is modified by a Note allowing penetration flow paths with direct access from the containment atmosphere ~~to the outside atmosphere~~ to be unisolated under administrative controls. Administrative controls ensure that 1) appropriate personnel are aware of the open status of the penetration flow path during movement of irradiated fuel assemblies within containment, and 2) specified individuals are designated and readily available to isolate the flow path in the event of a fuel handling accident. 2

may

The containment personnel air lock doors ~~many~~ be open during movement of ~~[~~recently~~]~~ irradiated fuel in the containment provided that one door is capable of being closed in the event of a fuel handling accident. Should a fuel handling accident occur inside containment, at least one personnel air lock door will be closed following an evacuation of containment. ~~INSERT 3~~ 4 1 2 ~~2~~

APPLICABILITY

The containment penetration requirements are applicable during movement of ~~[~~recently~~]~~ irradiated fuel assemblies within containment because this is when there is a potential for the limiting fuel handling accident. In MODES 1, 2, 3, and 4, containment penetration requirements are addressed by LCO 3.6.1. In MODES 5 and 6, when movement of irradiated fuel assemblies within containment is not being conducted, the potential for a fuel handling accident does not exist. ~~[~~Additionally, due to radioactive decay, a fuel handling accident involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous ~~[x] days~~ 100 hours) will result in doses that are ~~well~~ within the guideline values specified in 10 CFR ~~100~~ 50.67 even without containment closure capability.~~]~~ Therefore, under these conditions no requirements are placed on containment penetration status. 1 1 2

~~-----REVIEWER'S NOTE-----~~
~~The addition of the term "recently" associated with handling irradiated fuel in all of the containment function Technical Specification requirements is only applicable to those licensees who have demonstrated by analysis that after sufficient radioactive decay has occurred, off-site doses resulting from a fuel handling accident remain below the Standard Review Plan limits (well within 10 CFR 100).~~

~~Additionally, licensees adding the term "recently" must make the following commitment which is consistent with NUMARC 93-01, Revision 4, Section 11.3.6.5 "Safety Assessment for Removal of Equipment from Service During Shutdown Conditions," subheading "Containment - Primary (PWR)/Secondary (BWR)."~~

~~"The following guidelines are included in the assessment of systems removed from service during movement irradiated fuel:~~ 5

4

INSERT 2

During movement of recently irradiated fuel assemblies within containment, the equipment hatch is required to be held in place by at least four bolts.

2

~~INSERT 3~~

~~The containment design is such that even though the primary and secondary containments are connected together when the personnel air lock doors are open, the normal auxiliary building ventilation system and Auxiliary Building Gas Treatment System (ABGTS) continue to provide the same fuel handling accident mitigation capability. With the personnel air lock doors open, the consequences of a fuel handling accident in the containment will be mitigated by the design of the ventilation systems (maintenance of a negative pressure during normal and applicable abnormal conditions, automatic isolation on high radiation in the auxiliary building, and automatic startup of emergency ventilation systems) and the leak-tight design of the auxiliary building. Both sets of the containment personnel airlock doors may be open during movement of recently irradiated fuel in containment provided one train of ABGTS is available for operation (LCO 3.7.12, "Auxiliary Building Gas Treatment System (AGBTS)"). The fuel handling accident is analyzed to occur in either the containment or the auxiliary building; however, an ABGTS start may be necessary for a containment fuel handling accident. The requirement for an airlock door to be capable of closure is provided to allow for long-term recovery from a fuel handling accident in containment.~~

BASES

APPLICABILITY (continued)

~~- During fuel handling/core alterations, ventilation system and radiation monitor availability (as defined in NUMARC 91-06) should be assessed, with respect to filtration and monitoring of releases from the fuel. Following shutdown, radioactivity in the fuel decays away fairly rapidly. The basis of the Technical Specification OPERABILITY amendment is the reduction in doses due to such decay. The goal of maintaining ventilation system and radiation monitor availability is to reduce doses even further below that provided by the natural decay.~~

~~- A single normal or contingency method to promptly close primary or secondary containment penetrations should be developed. Such prompt methods need not completely block the penetration or be capable of resisting pressure.~~

~~The purpose of the "prompt methods" mentioned above are to enable ventilation systems to draw the release from a postulated fuel handling accident in the proper direction such that it can be treated and monitored."~~

~~---~~ 5

ACTIONS

A.1

If the containment equipment hatch, air locks, or any containment penetration ~~that provides direct access from the containment atmosphere to the outside atmosphere~~ is not in the required status, including ~~the~~ automatic Containment ~~Purge and Exhaust~~ Ventilation Isolation ~~System~~ valve(s) not capable of automatic actuation when the ~~purge and exhaust~~ Containment Ventilation isolation valves are open, the unit must be placed in a condition where the isolation function is not needed. This is accomplished by immediately suspending movement of ~~[~~recently~~]~~ irradiated fuel assemblies within containment. Performance of these actions shall not preclude completion of movement of a component to a safe position. 2 1

SURVEILLANCE REQUIREMENTS 3

SR 3.9.4.1

This Surveillance demonstrates that each ~~of the~~ containment penetrations is in its required ~~to be in its closed position is in that position. The Surveillance on the open purge and exhaust valves will demonstrate that the valves are not blocked from closing. Also the Surveillance will demonstrate that each~~ INSERT 4 valve operator has motive power~~, which will ensure that each valve is capable of being closed by an OPERABLE automatic containment purge and exhaust isolation signal~~. 6

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3

6 **INSERT ~~4~~**

status. The requirement that penetrations are capable of being closed by an OPERABLE automatic containment ventilation isolation valve, can be verified by ensuring that each required containment ventilation isolation

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BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[The Surveillance is performed every 7 days during movement of [recently] irradiated fuel assemblies within containment. The Surveillance interval is selected to be commensurate with the normal duration of time to complete fuel handling operations. A surveillance before the start of refueling operations will provide two or three surveillance verifications during the applicable period for this LCO. As such, this Surveillance ensures that a postulated fuel handling accident [involving handling recently irradiated fuel] that releases fission product radioactivity within the containment will not result in a release of significant fission product radioactivity to the environment in excess of those recommended by Standard Review Plan Section 15.7.4 (Reference 3).~~ 7

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ 8

SR 3.9.4.2

4

ventilation isolation

INSERT 5

actuation

This Surveillance demonstrates that each containment ~~purge and exhaust~~ valve actuates to its isolation position on manual initiation or on an actual or simulated ~~high radiation~~ signal. ~~[The 18 month Frequency maintains consistency with other similar ESFAS instrumentation and valve testing requirements. In LCO 3.3.6, the Containment Purge and Exhaust Isolation instrumentation requires a CHANNEL CHECK every 12 hours and a COT every 92 days to ensure the channel OPERABILITY during refueling operations. Every 18 months a CHANNEL CALIBRATION is performed. The system actuation response time is demonstrated every 18 months, during refueling, on a STAGGERED TEST BASIS. SR 3.6.3.5 demonstrates that the isolation time of each valve is in accordance with the Inservice Testing Program requirements. These Surveillances performed during MODE 6 will ensure that the valves are capable of closing after a postulated fuel handling accident [involving handling recently irradiated fuel] to limit a release of fission product radioactivity from the containment.~~

2 9 10 7

4

9 **INSERT 5**

, that is not locked, sealed, or otherwise secured in position,

ITS A01 ITS 3.3.8

Table 3.3.8-1

TABLE 3.3-6

Auxiliary Building Gas Treatment System (ABGTS) A02

~~RADIATION MONITORING~~ INSTRUMENTATION

LA01

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	~~MEASUREMENT RANGE~~	ACTION	
Add proposed Table 3.3.8-1 Function 1						M03
1. AREA MONITOR						A01
Function 2 a. Fuel ~~Storage~~ Spent Pool Area	~~1~~ 2 (~~b~~)	*	≤ 151 mR/hr	~~10^{-1} – 10^{4} mR/hr~~	26	LA01 L01 ~~M04~~
2. PROCESS MONITORS						
a. Containment Purge Air	1	1, 2, 3, 4 & 6	≤ 8.5x 10^{-3} µCi/cc	10 - 10^{7} cpm	28	See ITS 3.3.6
b. Containment						
i. Deleted						
ii. Particulate Activity						See ITS 3.4.15
RCS Leakage Detection	1	1, 2, 3 & 4	N/A	10 - 10^{7} cpm	27	
c. Control Room Isolation	2	ALL MODES and during movement of irradiated fuel assemblies	≤ 400 cpm**	10 - 10^{7} cpm	29	See ITS 3.3.7

Add proposed Table 3.3.8-1 Function 3 M05

~~Add proposed Table 3.3.8-1 Footnote (b)~~ ~~M04~~

Applicability * ~~With fuel in the storage pool or building~~

During movement of recently irradiated fuel assemblies in the auxiliary building L01

** Equivalent to 1.0 x 10^{-5} µCi/cc. See ITS 3.3.7

ITS

A01

ITS 3.3.8

TABLE 3.3-6 (Continued)

ACTION STATEMENTS

Add proposed ACTION Note 2

A03

Add proposed ACTION A

L01

Add proposed ACTION B

M06

ACTION B

ACTION 26 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, ~~perform area surveys of the monitored area with portable monitoring instrumentation at least once per 24 hours.~~

Add proposed ACTION C for Function 2

M07

ACTION 27 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.4.6.1.

See ITS 3.4.15

ACTION 28 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.9.9 (MODE 6) and 3.3.2.1 (MODES 1, 2, 3, and 4).

See ITS 3.3.6

ACTION 29 -

a. With one channel inoperable, place the associated control room emergency ventilation system (CREVS) train in recirculation mode of operation within 7 days or be at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With two channels inoperable, within 1 hour initiate and maintain operation of one CREVS train in the recirculation mode of operation and enter the required Actions for one CREVS train made inoperable by inoperable CREVS actuation instrumentation.

Or

place both trains in the recirculation mode of operation within one hour.

If the completion time of Action 29b cannot be met in Modes 1, 2, 3, and 4, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

If the completion time of Action 29b cannot be met during the movement of irradiated fuel assemblies, suspend core alterations and suspend movement of irradiated fuel assemblies.

If the completion time of Action 29b cannot be met in Modes 5 and 6, initiate action to restore one CREVS train.

See ITS 3.3.7

Add proposed ACTIONS A, B, C, and D for Function 1

M03

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ITS A01 ITS 3.3.8

Table 3.3.8-1

TABLE 3.3-6
~~RADIATION MONITORING~~ INSTRUMENTATION
Auxiliary Building Gas Treatment System (ABGTS) A02

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	~~MEASUREMENT RANGE~~	ACTION
1. AREA MONITOR					
a. Fuel ~~Storage~~ Spent Pool Area (Function 2)	~~1~~ 2 (b)	*	≤151 mR/hr	~~10^{-1} - 10^{4} mR/hr~~	26
2. PROCESS MONITORS					
a. Containment Purge Air	1	1, 2, 3, 4 & 6	≤8.5 x 10^{-3} µCi/cc	10 - 10^{7} cpm	28
b. Containment					
i. Deleted					
ii. Particulate Activity					
RCS Leakage Detection	1	1, 2, 3 & 4	N/A	10 - 10^{7} cpm	27
c. Control Room Isolation	2	ALL MODES and during movement of irradiated fuel assemblies	≤ 400 cpm**	10 - 10^{7} cpm	29

LA01 M03 Add proposed Table 3.3.8-1 Function 1

A01 LA01 L01 ~~M04~~

See ITS 3.3.6

See ITS 3.4.15

See ITS 3.3.7

Add proposed Table 3.3.8-1 Function 3 M05

~~Add proposed Table 3.3.8-1 Footnote (b)~~ ~~M04~~

Applicability

* ~~With fuel in the storage pool or building~~ During movement of recently irradiated fuel assemblies in the auxiliary building L01

** Equivalent to 1.0 x 10^{-5} µCi/cc. See ITS 3.3.7

ITS

Add proposed ACTION A

A01

L01

ITS 3.3.8

TABLE 3.3-6 (Continued)

ACTION STATEMENTS

A03

Add proposed ACTION Note 2

Add proposed ACTION B

M06

ACTION B

ACTION 26 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, ~~perform area surveys of the monitored area with portable monitoring instrumentation at least once per 24 hours~~.

Add proposed ACTION C for Function 2

M07

ACTION 27 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.4.6.1.

See ITS 3.4.15

ACTION 28 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.9.9 (MODE 6) and 3.3.2 (MODES 1, 2, 3, and 4).

See ITS 3.3.6

ACTION 29 -

a. With one channel inoperable, place the associated control room emergency ventilation system (CREVS) train in recirculation mode of operation within 7 days or be at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With two channels inoperable, within 1 hour initiate and maintain operation of one CREVS train in the recirculation mode of operation and enter the required Actions for one CREVS train made inoperable by inoperable CREVS actuation instrumentation.

Or

place both trains in the recirculation mode of operation within one hour.

If the completion time of Action 29b cannot be met in Modes 1, 2, 3, and 4, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

If the completion time of Action 29b cannot be met during the movement of irradiated fuel assemblies, suspend core alterations and suspend movement of irradiated fuel assemblies.

If the completion time of Action 29b cannot be met in Modes 5 and 6, initiate action to restore one CREVS train.

See ITS 3.3.7

Add proposed ACTIONS A, B, C, and D for Function 1

M03

DISCUSSION OF CHANGES
ITS 3.3.8, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS) ACTUATION INSTRUMENTATION

M03 CTS 3.3.3.1 does not contain a requirement for the manual initiation of ABGTS. ITS Table 3.3.8-1 Function 1 requires two channels of manual initiation for ABGTS to be OPERABLE in MODES 1, 2, 3, and 4 and during movement of recently irradiated fuel assemblies in the auxiliary building. ITS Table 3.3.8-1 Function 1 also requires performance of SR 3.3.8.3. ITS SR 3.3.8.3 requires performance of a TADOT every 18 months. (See DOC LA02 for the discussion related to moving the Surveillance Frequency to the Surveillance Frequency Control Program.) Additionally, ITS SR 3.3.8.3 contains a Note stating that verification of the setpoint is not required. Furthermore, ITS 3.3.8 contains compensatory actions to take if one or both ABGTS manual initiation channels are inoperable. ITS 3.3.8 ACTION A requires, in part, that with one manual initiation channel inoperable, to place one ABGTS train in operation. ITS 3.3.8 ACTION B requires, in part, that with two manual initiation channels inoperable, to place one train of ABGTS in operation immediately and to immediately enter the applicable Conditions and Required Actions of LCO 3.7.12. ITS 3.3.8 ACTION C requires that when the Required Action and associated Completion Time for Condition A or B are not met during movement of recently irradiated fuel assemblies in the auxiliary building, to immediately suspend movement of recently irradiated fuel assemblies in the auxiliary building. ITS 3.3.8 ACTION D requires that when the Required Action and associated Completion Time for Condition A or B are not met in MODE 1, 2, 3, or 4, to be in MODE 3 in 6 hours and in MODE 5 in 36 hours. This changes the CTS by requiring a new Function, Applicability, ACTIONS and Surveillance Requirement for the manual initiation of ABGTS.

The purpose the ABGTS manual initiation is to allow the operator to initiate ABGTS at any time. This change is acceptable because the addition of ABGTS manual initiation requirements will ensure that proper redundancy is maintained. This change is designated as more restrictive because additional requirements are being added to the ITS that were not required in the CTS.

M04 ~~CTS Table 3.3-6 Minimum Channels OPERABLE column requires one channel for Functional Unit 1.a (Area Monitor, Fuel Storage Pool Area). ITS Table 3.3.8-1 Required Channels column requires one channel OPERABLE for Function 2 (Spent Fuel Pool Area Radiation Monitor) modified by footnote (b) that states the Required Channel shall be associated with the ABGTS train required OPERABLE by LCO 3.7.12. This changes the CTS by specifying that the required Spent Fuel Pool Area Radiation Monitor shall be associated with the OPERABLE ABGTS train.~~

Not used.

~~The purpose of CTS Table 3.3-6 Functional Unit 1.a (Area Monitor, Fuel Storage Pool Area) is to provide an indication of abnormal radiation levels and actuate ABGTS if necessary. This change is acceptable because it ensures the required radiation monitoring channel is associated with the OPERABLE ABGTS train. Thus if the radiation monitor's setpoint is exceeded a train of ABGTS will be available to start to mitigate any potential release. This change is designated as more restrictive because additional limitations are placed on what constitutes a required channel.~~

DISCUSSION OF CHANGES
ITS 3.3.8, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS) ACTUATION INSTRUMENTATION

M05 CTS 3.3.3.1 states that the Radiation Monitoring Instrumentation channels shown in Table 3.3-6 shall be OPERABLE. CTS Table 3.3-6 lists the radiation monitor required for the fuel storage pool area. ITS LCO 3.3.8 states that the ABGTS actuation instrumentation for each Function in Table 3.3.8-1 shall be OPERABLE. ITS Table 3.3.8-1 lists the required ABGTS instrument Functions which includes Containment Isolation – Phase A (Function 3). ITS Table 3.3.8-1 Function 3 provides a statement referring to LCO 3.3.2, "ESFAS Instrumentation," Function 3.a for all initiation functions and requirements. This changes the CTS by specifying an additional instrumentation actuation Function for the ABGTS.

The purpose of CTS 3.3.3.1 and Table 3.3-6 is to specify the required Functions and instrumentation to ensure the ABGTS actuates as assumed in the accident analysis. The Containment Isolation – Phase A signal from the ESFAS provides an actuation of ABGTS that is credited in the loss of coolant accident. This change is acceptable because it will result in a more complete listing of the Functions that actuate ABGTS. The inclusion of the Containment Isolation – Phase A signal with the other credited ABGTS instrumentation provides a complete list of the required ABGTS instrumentation with a common set of Actions to assure the unit is placed in a safe condition when the required instrumentation is inoperable. Therefore, the proposed change ensures the radioactive materials in the Auxiliary Building Secondary Containment Enclosure atmosphere following an accident are filtered and adsorbed prior to being exhausted to the environment. This change is designated as more restrictive because more ABGTS actuation instrumentation will be required in ITS than was required in CTS.

M06 CTS Table 3.3-6 "MINIMUM CHANNELS OPERABLE" column, for Instrument 1.a, only requires one Area Monitor – Fuel Storage Pool Area channel to be OPERABLE with fuel in the storage pool or building. CTS Table 3.3-6 ACTION 26 applies when the number of OPERABLE channels is less than required by the Minimum Channels OPERABLE requirement. ACTION 26 requires the performance of an area survey of the monitored area with portable monitoring instrumentation at least once per 24 hours. ITS Table 3.3.8-1 Function 2 requires ~~one~~ two Spent Fuel Pool Area Radiation Monitors to be OPERABLE during movement of recently irradiated fuel assemblies in the auxiliary building. ITS 3.3.8 ACTION B requires that when ~~one required channel is~~ two channels are inoperable, to place one ABGTS train in operation and to enter the applicable Conditions and Required Action for LCO 3.7.12 for one train made inoperable by inoperable actuation instrumentation. This changes the CTS by requiring more stringent ACTIONS for the inoperable channels. (See DOC L01 for a discussion on the change to the Applicability and to the number of channels required to be OPERABLE.)

The purpose of the Spent Fuel Pool Area Radiation Monitor is to provide indication of high radiation in the Fuel Storage Pool area. This change is acceptable because when ~~one required~~ two Spent Fuel Pool Area Radiation Monitor ~~channel is~~ channels are inoperable, placing the ABGTS in operation accomplishes the Spent Fuel Pool Area Radiation Monitor instrument function. Additionally, entering the Conditions and Required Actions for the ABGTS Specification (ITS 3.7.12) will allow 7 days to restore one inoperable ABGTS train to OPERABLE status. This

DISCUSSION OF CHANGES
ITS 3.3.8, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS) ACTUATION INSTRUMENTATION

change is designated as more restrictive because more stringent Required Actions and Completion Times are required in the ITS than were required in the CTS.

M07 CTS 3.3.3.1, Table 3.3-6, ACTION 26, is associated with Functional Unit 1.a (Area Monitor, Fuel Storage Pool Area) and requires that with the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, to perform area surveys of the monitored area with portable monitoring instrumentation at least once per 24 hours. ITS 3.3.8 ACTION C requires if the Required Action and associated Completion Time for Condition A or B~~, one required radiation monitor inoperable,~~ is not met during movement of recently irradiated fuel assemblies in the auxiliary building, to immediately suspend movement of recently irradiated fuel assemblies in the auxiliary building. This changes the CTS by adding explicit Required Actions to exit the MODE of Applicability if remedial action cannot be completed within the allotted time.

The purpose of Required Actions is to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. This change is acceptable because it provides Required Actions to exit the MODE of Applicability that must be taken if the time allotted to establish the required remedial measures or complete the repair of inoperable features is exceeded. This change is designated as more restrictive because more stringent Required Actions and Completion Times are required in the ITS than were required in the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-6 for Radiation Monitoring Instrumentation has five columns stating various requirements for the Radiation Monitoring Instrumentation. These columns are labeled "MINIMUM CHANNELS OPERABLE," "APPLICABLE MODES," ALARM/TRIP SETPOINT," "MEASUREMENT RANGE," AND "ACTION." ITS Table 3.3.8-1 does not contain the "MEASUREMENT RANGE" column. This changes the CTS by moving the information of the "MEASUREMENT RANGE" column to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the number of required channels, the Applicable MODES, the alarm/trip setpoint, and the appropriate Condition to enter if a required channel becomes inoperable. Also, this change is acceptable because the removed information will be

DISCUSSION OF CHANGES
ITS 3.3.8, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS) ACTUATION INSTRUMENTATION

adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA02 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS Table 4.3-3 Instrument 1.a requires a CHANNEL CHECK every shift (12 hours), a CHANNEL FUNCTIONAL TEST every quarter (92 days), and a CHANNEL CALIBRATION every refueling cycle (18 months). In addition, SR 3.3.8.3 has been added for ITS Table 3.3.8-1 Function 1 with a Frequency of 18 months as discussed in DOC M03. ITS SR 3.3.8.1, SR 3.3.8.2, SR 3.3.8.3, and SR 3.3.8.4 require similar Surveillances and specify the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for these SRs and associated Bases to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 ~~*(Category 2 – Relaxation of Applicability)* CTS Table 3.3-6 Instrument 1.a (Area Monitor – Fuel Storage Pool Area) and CTS Table 4.3-3 Instrument 1.a (Area Monitor – Fuel Storage Pool Area) state that the requirements of the Fuel Storage Pool Area Monitors are applicable when there is fuel in the storage pool or building. ITS Table 3.3.8-1 Function 2 states that the Applicable MODE is during movement of recently irradiated fuel assemblies in the auxiliary building. This changes the CTS by only requiring the Spent Fuel Pool Monitors to be OPERABLE when there is a potential for a fuel handling accident in the auxiliary building (i.e., during movement of recently irradiated fuel assemblies in the auxiliary building).~~

Replace with "New" L01.

DISCUSSION OF CHANGES
ITS 3.3.8, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS) ACTUATION INSTRUMENTATION

~~The purpose of CTS Table 3.3-6 Functional Unit 1.a is to ensure that the Fuel Storage Pool Area Monitors are OPERABLE to mitigate the consequences of a fuel handling accident. This change is acceptable because the requirements continue to ensure that the structures, system and components are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. The Sequoyah Nuclear Plant (SQN) fuel handling analysis for the auxiliary building has been analyzed using the methodology from Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors." The SQN fuel handling analysis assumes, in part, that the accident occurs 100 hours after a plant shutdown, radioactive decay during the interval between shutdown and placement of the first spent fuel assembly into the spent fuel pool is taken into account, and a single fuel assembly is damaged with acceptable results. The ITS Bases define a recently irradiated fuel assembly as having occupied part of a critical reactor within the previous 100 hours. Therefore, the ITS imposes the controls on the ABGTS Actuation Instrumentation during movement of recently irradiated fuel assemblies in the auxiliary building. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.~~

<u>"New" DOC L01</u>

(Category 2 – Relaxation of Applicability) CTS Table 3.3-6 Instrument 1.a (Area Monitor – Fuel Storage Pool Area) requires one channel to be OPERABLE when there is fuel in the storage pool or building. ITS Table 3.3.8-1 Function 2 requires two Spent Fuel Pool Area Radiation Monitor channels to be OPERABLE during movement of recently irradiated fuel assemblies in the auxiliary building. ITS 3.3.8 ACTION A requires with one inoperable Spent Fuel Pool Area Radiation Monitor channel that one train of ABGTS be placed in operation in 7 days. This changes the CTS increasing the number of Spent Fuel Pool Area Radiation Monitor channels required to be OPERABLE, but only when ABGTS is required to mitigate a fuel handling accident (i.e., during movement of recently irradiated fuel assemblies in the auxiliary building).

The purpose of CTS 3.3.3.1 and CTS Tables 3.3-6 and 4.3-3 is to ensure that ABGTS actuates when required to mitigate the consequences of a fuel handling accident in the auxiliary building. This change is acceptable because the requirements continue to ensure that the structures, system and components are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. The Sequoyah Nuclear Plant (SQN) fuel handling analysis for the auxiliary building has been analyzed using the methodology from Regulatory Guide (RG) 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors." The SQN fuel handling analysis inside the auxiliary building assumes, in part, that the accident occurs 100 hours after a plant shutdown, radioactive decay during the interval between shutdown and placement of the first spent fuel assembly into the spent fuel pool is taken into account, and a single fuel assembly is damaged. The damaged fuel assembly is assumed to be the highest powered assembly in the core region to be discharged with a radial peaking factor of 1.70. All of the gap activity in the damaged rods is released to the spent fuel pool and consists of 5% of the total noble gases other than Kr-85, 10% of the Kr-85, 5% of the total radioactive iodine other than I-131, and 8% of the I-131 in the rods at the time of the accident. Noble gases released to the spent fuel pool do not experience retention in the water pool. The iodine gap inventory is composed of 99.85% inorganic species, and 0.15% organic species. The spent fuel pool decontamination factor is 200. No credit is taken for natural decay due to holdup in the auxiliary building or after the activity has been released to the atmosphere. The activity released from the spent fuel pool is all assumed to be released to the environment over a 2-hour period. Doses were determined at the EAB and LPZ for the 2-hour interval over which the releases are assumed to take place, and in the control room for an extended period of time after termination of releases in order to address the continual presence of activity in the control room atmosphere. The accident doses were calculated using the dose model consistent with the use of the alternate source term methodology (RG 1.183). The doses are within the dose acceptance limits of 6.3 rem TEDE for offsite doses and 5.0 rem TEDE for control room doses. Because ABGTS is not credited in the mitigation of a fuel handling accident in the auxiliary building involving fuel that has at least 100 hours of decay time, it is not required to be OPERABLE during that evolution. However, fuel movement could still proceed prior to a decay time of 100 hours. Therefore, to mitigate the consequences of a fuel handling accident involving the movement of recently irradiated fuel, ITS imposes the controls on the ABGTS during movement of recently irradiated fuel assemblies in the auxiliary building. Consistent with NUMARC 93-01, "Safety Assessment for Removal of Equipment from Service During Shutdown Conditions," TVA will implement procedural requirements for a single normal or contingency method to promptly close primary or secondary containment penetrations. Additionally, TVA will implement procedural requirements for one train of ABGTS to be OPERABLE during movement of irradiated fuel assemblies (whether in the auxiliary building or within the containment). This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

CTS

~~FBACS~~ ABGTS Actuation Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.8~~A~~

3.3 INSTRUMENTATION

3.3.8~~A~~ ~~Fuel Building Air Cleanup~~ Auxiliary Building Gas Treatment System (~~FBACS~~ ABGTS) Actuation Instrumentation ~~(Without Setpoint Control Program)~~ 1

3.3.3.1 LCO 3.3.8 The ~~FBACS~~ ABGTS actuation instrumentation for each Function in Table 3.3.8-1 shall be OPERABLE. 1

3.3.3.1 Applicability APPLICABILITY: According to Table 3.3.8-1.

ACTIONS

---NOTES---

3.3.3.1 ACTION c 1. LCO 3.0.3 is not applicable.

DOC A03 2. Separate Condition entry is allowed for each Function.

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC M03 DOC L01	A. One ~~or more Functions with one~~ [or more Functions with one] ~~manual initiation~~ channel ~~or train~~ inoperable.	A.1 Place one ~~FBACS~~ ABGTS train in operation.	7 days	2 1
DOC M03 3.3.3.1 ACTION b Table 3.3-6 ACTION 26	B. ~~One or more Functions with two~~ [One or more Functions with two] ~~Two manual initiation~~ channels ~~or two trains~~ inoperable. ~~OR One required radiation monitoring channel inoperable.~~	B.~~1.~~1 Place one ~~FBACS~~ ABGTS train in operation.	Immediately	3 1 2
		AND		
		B.~~1.~~2 Enter applicable Conditions and Required Actions of LCO 3.7.~~13~~12, "~~Fuel Building Air Cleanup~~ Auxiliary Building Gas Treatment System (~~FBACS~~ ABGTS)," for one train made inoperable by inoperable actuation instrumentation.	Immediately	2 3 4 1
		~~OR~~		
		~~B.2 Place both trains in emergency [radiation protection] mode.~~	~~Immediately~~	3

CTS

~~FBACS~~ ABGTS Actuation Instrumentation ~~(Without Setpoint Control Program)~~
3.3.8~~A~~ 1

Table 3.3.8-1 (page 1 of 1)
~~FBACS~~ ABGTS Actuation Instrumentation 1

	FUNCTION	APPLICABLE MODES OR SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	TRIP SETPOINT	
DOC M03	1. Manual Initiation	~~[~~1,2,3,4~~]~~, (a)	2	SR 3.3.8.~~4~~ 3	NA	5
	~~2. [Automatic Actuation Logic and Actuation Relays~~	~~1,2,3,4, (a)~~	~~2 trains~~	~~SR 3.3.8.3~~	~~NA]~~	5
Table 3.3-6 Instrument 1.a	~~3~~ 2. Spent Fuel ~~Building~~ Pool Area Radiation Monitor					5 4
	~~a. Gaseous~~	~~[1,2,3,4],~~ (a)	~~[2]~~ ~~1~~ ~~(b)~~ 2	SR 3.3.8.1 SR 3.3.8.2 SR 3.3.8.~~5~~ 4	≤ ~~[2]~~ 151 mR/hr	5 7
	~~b. Particulate~~	~~[1,2,3,4], (a)~~	~~[2]~~	~~SR 3.3.8.1~~ ~~SR 3.3.8.2~~ ~~SR 3.3.8.5~~	~~≤ [2] mR/hr~~	8
DOC M05	3. Containment Isolation - Phase A	Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 3.a for all initiation functions and requirements.				

(a) During movement of ~~[~~recently~~]~~ irradiated fuel assemblies in the ~~fuel~~ auxiliary building. 5 4

~~DOC M04~~ ~~(b) Required Channel shall be associated with the ABGTS train required OPERABLE per LCO 3.7.12~~ 2

CTS

~~FBACS~~ ABGTS Actuation Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.8~~A~~

3.3 INSTRUMENTATION

3.3.8~~A~~ ~~Fuel Building Air Cleanup~~ Auxiliary Building Gas Treatment System (~~FBACS~~ ABGTS) Actuation Instrumentation ~~(Without Setpoint Control Program)~~ 1

3.3.3.1 LCO 3.3.8 The ~~FBACS~~ ABGTS actuation instrumentation for each Function in Table 3.3.8-1 shall be OPERABLE. 1

3.3.3.1 Applicability APPLICABILITY: According to Table 3.3.8-1.

ACTIONS

-----NOTES-----

3.3.3.1 ACTION c 1. LCO 3.0.3 is not applicable.

DOC A03 2. Separate Condition entry is allowed for each Function.

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC M03 DOC L01	A. One ~~or more Functions with one~~ manual initiation channel ~~or train~~ inoperable. (or more Functions with one)	A.1 Place one ~~FBACS~~ ABGTS train in operation.	7 days	2 1
DOC M03 3.3.3.1 ACTION b Table 3.3-6 ACTION 26	B. ~~One or more Functions with two~~ Two manual initiation channels ~~or two trains~~ inoperable. (One or more Functions with two) ~~OR One required radiation monitoring channel inoperable.~~	B.~~1.~~1 Place one ~~FBACS~~ ABGTS train in operation.	Immediately	3 1 2
		AND		
		B.~~1.~~2 Enter applicable Conditions and Required Actions of LCO 3.7.~~13~~ 12, "~~Fuel Building Air Cleanup~~ Auxiliary Building Gas Treatment System (~~FBACS~~ ABGTS)," for one train made inoperable by inoperable actuation instrumentation.	Immediately	2 3 4 1
		~~OR~~		
		~~B.2 Place both trains in emergency [radiation protection] mode.~~	~~Immediately~~	3

CTS

~~FBACS~~ ABGTS Actuation Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.8~~A~~

Table 3.3.8-1 (page 1 of 1)
~~FBACS~~ ABGTS Actuation Instrumentation 1

	FUNCTION	APPLICABLE MODES OR SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	TRIP SETPOINT	
DOC M03	1. Manual Initiation	~~[~~1,2,3,4~~]~~, (a)	2	SR 3.3.8.~~4~~ 3	NA	5
	~~2. [Automatic Actuation Logic and Actuation Relays~~	~~1,2,3,4, (a)~~	~~2 trains~~	~~SR 3.3.8.3~~	~~NA]~~	5
Table 3.3-6 Instrument 1.a	~~3~~ 2. Spent Fuel Pool Area ~~Building~~ Radiation Monitor					5 4
	~~a. Gaseous~~	~~[1,2,3,4],~~ (a)	~~[2]~~ ~~1~~ 2 ~~(b)~~	SR 3.3.8.1 SR 3.3.8.2 SR 3.3.8.~~5~~ 4	≤ ~~[2]~~ 151 mR/hr	5 7
	~~b. Particulate~~	~~[1,2,3,4], (a)~~	~~[2]~~	~~SR 3.3.8.1~~ ~~SR 3.3.8.2~~ ~~SR 3.3.8.5~~	~~≤ [2] mR/hr~~	8
DOC M05	3. Containment Isolation - Phase A	Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 3.a for all initiation functions and requirements.				

(a) During movement of ~~[~~recently~~]~~ irradiated fuel assemblies in the ~~fuel~~ auxiliary building. 5 4

~~DOC M04~~ ~~(b) Required Channel shall be associated with the ABGTS train required OPERABLE per LCO 3.7.12~~ 2

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.8, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS) ACTUATION INSTRUMENTATION

1. The type of Setpoint Control Program (Without Setpoint Control Program) and the Specification designator "A" are deleted since they are unnecessary. This information is provided in NUREG 1431, Rev. 4.0 to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in the plant specific implementation. In addition, ISTS 3.3.8B (with Setpoint Control Program Specification) is not used and is not shown. Furthermore, the title of the Specification has been changed from "Fuel Building Air Cleanup System (FBACS) Actuation Instrumentation" to "Auxiliary Building Gas Treatment System (ABGTS) Actuation Instrumentation" since Sequoyah Nuclear Plant (SQN) does not have an FBACS.

2. Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. ISTS 3.3.8 Required Action B.2 provides an option of placing both trains of the FBACS in the emergency [radiation protection] mode immediately when one or more Functions in ISTS Table 3.3.8-1 with two channels or two trains are inoperable. ITS 3.3.8 does not contain this Required Action since the ABGTS does not have an emergency mode of operation. Furthermore, ISTS 3.3.8 Required Actions B.1.1 and B.1.2 have been renumbered as ITS 3.3.8 Required Actions B.1 and B.2 to reflect the removal of the ISTS option. Additionally, the "<u>AND</u>" logic connector has been moved to the correct position due to the deletion of ISTS 3.3.8 Required Action B.2.

4. Changes are made to be consistent with changes made to ISTS LCO 3.7.13. The Title and the number for this specification were changed and are reflected in ITS 3.3.8.

5. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed, the proper plant specific information/value is inserted to reflect the current licensing basis, and subsequent items are renumbered as required.

6. ISTS SR 3.3.8.1, SR 3.3.8.2, SR 3.3.8.4, and SR 3.3.8.5 (ITS SR 3.3.8.1, SR 3.3.8.2, SR 3.3.8.3, and SR 3.3.8.4) provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program.

7. ISTS Table 3.3.8-1 Function 3 specifies two Gaseous Radiation Monitors (Function 3.a) and two Particulate Radiation Monitors (Function 3.b) for the Fuel Storage Radiation Function. ITS Table 3.3.8-1 Function 2 only requires ~~one~~ two Spent Fuel Pool Area Radiation Monitor for Table 3.3.8-1 Function 2. This change is acceptable because the fuel storage pool area radiation monitor is the monitor used in the current licensing bases for the ABGTS actuation.

8. Changes are made to ISTS Table 3.3.8-1 to reflect that the ABGTS receives a signal from Containment Isolation – Phase A which is part of ITS 3.3.2, "Engineered Safety Features Actuation System (ESFAS) Instrumentation."

B 3.3 INSTRUMENTATION

B 3.3.8~~A~~ ~~Fuel Building Air Cleanup~~ Auxiliary Building Gas Treatment System (~~FBACS~~ ABGTS) Actuation Instrumentation ~~(Without Setpoint Control Program)~~ 1

BASES

BACKGROUND

The ~~FBACS~~ ABGTS ensures that radioactive materials in the ~~fuel~~ auxiliary building 1
atmosphere following a fuel handling accident ~~[~~involving handling recently 2
irradiated fuel~~]~~ or a loss of coolant accident (LOCA) are filtered and
adsorbed prior to exhausting to the environment. The system is
described in the Bases for LCO 3.7.~~13~~ 12, "~~Fuel Building Air Cleanup~~ Auxiliary Building Gas Treatment 3
System (ABGTS)." The system initiates filtered ventilation of INSERT 1 ~~the fuel building~~
automatically following receipt of a spent fuel pool area high radiation signal ~~(gaseous or~~ 4
~~particulate)~~ or a ~~safety injection (SI)~~ Containment Phase A Isolation signal. Initiation may also be
performed manually as needed from the main control room.

High ~~gaseous and particulate~~ area radiation, ~~each~~ monitored by either of two 4
monitors, provides ~~FBACS~~ ABGTS initiation. Each ~~FBACS~~ ABGTS train is initiated by 1
high radiation detected by a channel dedicated to that train. Keep ~~There are a~~
Keep ~~total of two channels, one for each train.~~ ~~Each channel contains a~~ 4
~~gaseous and particulate monitor.~~ High radiation detected by ~~any~~ ~~the~~ a required monitor
or ~~an SI~~ Containment Phase A Isolation signal from the Engineered Safety Features Actuation System
(ESFAS) initiates ~~fuel~~ auxiliary building isolation and starts the ~~FBACS~~ ABGTS. These 1
actions function to prevent exfiltration of contaminated air by initiating
filtered ventilation, which imposes a negative pressure on the ~~fuel~~
~~building~~ Auxiliary Building Secondary Containment Enclosure (ABSCE). ~~Since the radiation monitors include an air sampling system,~~
~~various components such as sample line valves, sample line heaters,~~ 4
~~sample pumps, and filter motors are required to support monitor~~
~~OPERABILITY.~~

APPLICABLE SAFETY ANALYSES

The ~~FBACS~~ ABGTS ensures that radioactive materials in the ~~fuel building~~ ABSCE 1 4
atmosphere following a fuel handling accident ~~[~~involving handling 2
recently irradiated fuel~~]~~ or a LOCA are filtered and adsorbed prior to being
exhausted to the environment. This action reduces the radioactive
content in the ~~fuel~~ auxiliary building exhaust following a LOCA or fuel handling 4
accident so that offsite doses remain within the limits specified in
10 CFR 100 (Ref. 1) for LOCA or 10 CFR 50.67 (Ref. 2) for fuel handling accident. 4

The ~~FBACS~~ ABGTS actuation instrumentation satisfies Criterion 3 of 1
10 CFR 50.36(c)(2)(ii).

LCO

The LCO requirements ensure that instrumentation necessary to initiate
the ~~FBACS~~ ABGTS is OPERABLE. 1

BASES

LCO (continued)

1. Manual Initiation

The LCO requires two channels OPERABLE. The operator can initiate the ~~FBACS~~ ABGTS at any time by using ~~either of two switches in the control room~~ INSERT 2. This action will cause actuation of all components in the same manner as any of the automatic actuation signals. 1 4

The LCO for Manual Initiation ensures the proper amount of redundancy is maintained in the manual actuation circuitry to ensure the operator has manual initiation capability.

Each channel consists of one ~~push button~~ hand switch and the interconnecting wiring to the actuation logic cabinet. 4

~~2. Automatic Actuation Logic and Actuation Relays~~

~~The LCO requires two trains of Actuation Logic and Relays OPERABLE to ensure that no single random failure can prevent automatic actuation.~~

~~Automatic Actuation Logic and Actuation Relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b., SI, in LCO 3.3.2. The applicable MODES and specified conditions for the FBACS portion of these functions are different and less restrictive than those specified for their SI roles. If one or more of the SI functions becomes inoperable in such a manner that only the FBACS function is affected, the Conditions applicable to their SI function need not be entered. The less restrictive Actions specified for inoperability of the FBACS functions specify sufficient compensatory measures for this case.~~ 5

~~3~~ 2. Spent Fuel ~~Building~~ Pool Area Radiation 5 4

The LCO specifies ~~two~~ ~~one~~ two ~~required Gaseous~~ Spent Fuel Pool Area Radiation Monitor channels ~~and two required Particulate Radiation Monitor channels~~ to ensure that the radiation monitoring instrumentation necessary to initiate the ~~FBACS~~ ABGTS remains OPERABLE. INSERT 3 4 1 4

For sampling systems, channel OPERABILITY involves more than OPERABILITY of channel electronics. OPERABILITY may also require correct valve lineups, sample pump operation, filter motor operation, detector OPERABILITY, if these supporting features are necessary for actuation to occur under the conditions assumed by the safety analyses. INSERT 4 5

4 **INSERT 2**

one of two sets of manual initiation hand switches in the control room. Each Auxiliary Building Isolation (ABI) manual hand switch will initiate its respective train of ABGTS.

4 **INSERT 3**

One radiation monitor is dedicated to each train of ABGTS.

$\boxed{4}$ ~~5~~ **INSERT 4**

The measurement range for the Spent Fuel Pool Area Monitors is 10^{-1} to 10^{4} mR/hr.

~~The Required Channels value is modified by a footnote stating that the Required Channel shall be associated with the ABGTS train required OPERABLE per LCO 3.7.12. This ensures a valid actuation signal will start a train of ABGTS.~~

3. Containment Isolation - Phase A

Refer to LCO 3.3.2, Function 3.a., for all initiating Functions and requirements.

BASES

ACTIONS (continued)

A second Note has been added to the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed in Table 3.3.8-1 in the accompanying LCO. The Completion Time(s) of the inoperable channel(s)/train(s) of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function.

A.1

Condition A applies to the ~~actuation logic train function of the Solid State Protection System (SSPS), the~~ ~~radiation monitor functions, and the~~ keep manual function. Condition A applies to the failure of a single ~~actuation logic train,~~ keep ~~radiation monitor channel, or~~ manual channel. If one channel ~~or train~~ is inoperable, a period of 7 days is allowed to restore it to OPERABLE status. If the ~~train~~ channel cannot be restored to OPERABLE status, one ~~FBACS~~ ABGTS train must be placed in operation. This accomplishes the actuation instrumentation function and places the unit in a conservative mode of operation. The 7 day Completion Time is the same as is allowed if one train of the mechanical portion of the system is inoperable. The basis for this time is the same as that provided in LCO 3.7.~~13~~ 12. 5 1 3

B.~~1.~~1~~;~~ and B.~~1.~~2~~, B.2~~ 5

Condition B applies to the failure of ~~two FBACS actuation logic trains, two~~ ~~one reqired~~ two radiation monitor~~s,~~ s or two manual channels. The Required Action is to place one ~~FBACS~~ ABGTS train in operation immediately. This accomplishes the actuation instrumentation function that may have been lost and places the unit in a conservative mode of operation. The applicable Conditions and Required Actions of LCO 3.7.~~13~~ 12 must also be entered for the ~~FBACS~~ ABGTS train made inoperable by the inoperable actuation instrumentation. This ensures appropriate limits are placed on train inoperability as discussed in the Bases for LCO 3.7.~~13~~ 12. 5 1 3 1 3

~~Alternatively, both trains may be placed in the emergency [radiation protection] mode. This ensures the FBACS Function is performed even in the presence of a single failure.~~ 5

B 3.3 INSTRUMENTATION

B 3.3.8A ~~Fuel Building Air Cleanup~~ Auxiliary Building Gas Treatment System (~~FBACS~~ ABGTS) Actuation Instrumentation ~~(Without Setpoint Control Program)~~ 1

BASES

BACKGROUND

The ~~FBACS~~ ABGTS ensures that radioactive materials in the ~~fuel~~ auxiliary building atmosphere following a fuel handling accident ~~[~~involving handling recently irradiated fuel~~]~~ or a loss of coolant accident (LOCA) are filtered and adsorbed prior to exhausting to the environment. The system is described in the Bases for LCO 3.7.~~13~~ 12, "~~Fuel Building Air Cleanup~~ Auxiliary Building Gas Treatment System (ABGTS)." The system initiates filtered ventilation of ~~the fuel building~~ INSERT 1 automatically following receipt of a spent fuel pool area high radiation signal ~~(gaseous or particulate)~~ or a ~~safety injection (SI)~~ Containment Phase A Isolation signal. Initiation may also be performed manually as needed from the main control room. 1 2 3 4

High ~~gaseous and particulate~~ area radiation, ~~each~~ monitored by either of two monitors, provides ~~FBACS~~ ABGTS initiation. Each ~~FBACS~~ ABGTS train is initiated by high radiation detected by a channel dedicated to that train. ~~There are a total of two channels, one for each train.~~ Keep ~~Each channel contains a gaseous and particulate monitor.~~ a High radiation detected by ~~any~~ ~~the~~ required monitor or ~~an SI~~ Containment Phase A Isolation signal from the Engineered Safety Features Actuation System (ESFAS) initiates ~~fuel~~ auxiliary building isolation and starts the ~~FBACS~~ ABGTS. These actions function to prevent exfiltration of contaminated air by initiating filtered ventilation, which imposes a negative pressure on the ~~fuel building~~ Auxiliary Building Secondary Containment Enclosure (ABSCE). ~~Since the radiation monitors include an air sampling system, various components such as sample line valves, sample line heaters, sample pumps, and filter motors are required to support monitor OPERABILITY.~~ 4 1 4 1 4

APPLICABLE SAFETY ANALYSES

The ~~FBACS~~ ABGTS ensures that radioactive materials in the ~~fuel building~~ ABSCE atmosphere following a fuel handling accident ~~[~~involving handling recently irradiated fuel~~]~~ or a LOCA are filtered and adsorbed prior to being exhausted to the environment. This action reduces the radioactive content in the ~~fuel~~ auxiliary building exhaust following a LOCA or fuel handling accident so that offsite doses remain within the limits specified in 10 CFR 100 (Ref. 1) for LOCA or 10 CFR 50.67 (Ref. 2) for fuel handling accident. 1 4 2 4 4

The ~~FBACS~~ ABGTS actuation instrumentation satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). 1

LCO

The LCO requirements ensure that instrumentation necessary to initiate the ~~FBACS~~ ABGTS is OPERABLE. 1

~~FBACS~~ ABGTS Actuation Instrumentation ~~(Without Setpoint Control Program)~~ 1
B 3.3.8~~A~~

BASES

LCO (continued)

1. Manual Initiation

The LCO requires two channels OPERABLE. The operator can initiate the ~~FBACS~~ ABGTS at any time by using ~~either of two switches in the control room~~ INSERT 2. This action will cause actuation of all components in the same manner as any of the automatic actuation signals. 1 4

The LCO for Manual Initiation ensures the proper amount of redundancy is maintained in the manual actuation circuitry to ensure the operator has manual initiation capability.

Each channel consists of one ~~push button~~ hand switch and the interconnecting wiring to the actuation logic cabinet. 4

~~2. Automatic Actuation Logic and Actuation Relays~~

~~The LCO requires two trains of Actuation Logic and Relays OPERABLE to ensure that no single random failure can prevent automatic actuation.~~

~~Automatic Actuation Logic and Actuation Relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b., SI, in LCO 3.3.2. The applicable MODES and specified conditions for the FBACS portion of these functions are different and less restrictive than those specified for their SI roles. If one or more of the SI functions becomes inoperable in such a manner that only the FBACS function is affected, the Conditions applicable to their SI function need not be entered. The less restrictive Actions specified for inoperability of the FBACS functions specify sufficient compensatory measures for this case.~~ 5

~~3~~ 2. Spent Fuel ~~Building~~ Pool Area Radiation 5 4

The LCO specifies ~~two required~~ two Spent Fuel Pool Area ~~Gaseous~~ Radiation Monitor channels ~~and two required Particulate Radiation Monitor channels~~ to ensure that the radiation monitoring instrumentation necessary to initiate the ~~FBACS~~ ABGTS remains OPERABLE. INSERT 3 4 1 4

For sampling systems, channel OPERABILITY involves more than OPERABILITY of channel electronics. OPERABILITY may also require correct valve lineups, sample pump operation, filter motor operation, detector OPERABILITY, if these supporting features are necessary for actuation to occur under the conditions assumed by the safety analyses. INSERT 4 5

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4 **INSERT 2**

one of two sets of manual initiation hand switches in the control room. Each Auxiliary Building Isolation (ABI) manual hand switch will initiate its respective train of ABGTS.

4 **INSERT 3**

One radiation monitor is dedicated to each train of ABGTS.

4 ~~5~~ **INSERT 4**

The measurement range for the Spent Fuel Pool Area Monitors is 10^{-1} to 10^{4} mR/hr.

~~The Required Channels value is modified by a footnote stating that the Required Channel shall be associated with the ABGTS train required OPERABLE per LCO 3.7.12. This ensures a valid actuation signal will start a train of ABGTS.~~

3. Containment Isolation - Phase A

Refer to LCO 3.3.2, Function 3.a., for all initiating Functions and requirements.

BASES

ACTIONS (continued)

A second Note has been added to the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed in Table 3.3.8-1 in the accompanying LCO. The Completion Time(s) of the inoperable channel(s)/train(s) of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function.

A.1

Condition A applies to the ~~actuation logic train function of the Solid State Protection System (SSPS), the radiation monitor functions, and the~~ keep manual function. Condition A applies to the failure of a single ~~actuation logic train,~~ keep ~~radiation monitor channel, or~~ manual channel. If one channel ~~or train~~ is inoperable, a period of 7 days is allowed to restore it to OPERABLE status. If the ~~train~~ channel cannot be restored to OPERABLE status, one ~~FBACS~~ ABGTS train must be placed in operation. This accomplishes the actuation instrumentation function and places the unit in a conservative mode of operation. The 7 day Completion Time is the same as is allowed if one train of the mechanical portion of the system is inoperable. The basis for this time is the same as that provided in LCO 3.7.~~13~~12. 5 1 3

B.~~1.~~1~~,~~ and B.~~1.~~2~~, B.2~~ 5

Condition B applies to the failure of ~~two FBACS actuation logic trains, two~~ ~~one reqired~~ two radiation monitor~~s,~~ s or two manual channels. The Required Action is to place one ~~FBACS~~ ABGTS train in operation immediately. This accomplishes the actuation instrumentation function that may have been lost and places the unit in a conservative mode of operation. The applicable Conditions and Required Actions of LCO 3.7.~~13~~12 must also be entered for the ~~FBACS~~ ABGTS train made inoperable by the inoperable actuation instrumentation. This ensures appropriate limits are placed on train inoperability as discussed in the Bases for LCO 3.7.~~13~~12. 5 1 3 1 3

~~Alternatively, both trains may be placed in the emergency [radiation protection] mode. This ensures the FBACS Function is performed even in the presence of a single failure.~~ 5

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REFUELING OPERATIONS

3/4.9.12 AUXILIARY BUILDING GAS TREATMENT SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.7.12 ~~Note 2~~ — 3.9.12 ~~One~~ Two auxiliary building gas treatment filter train shall be OPERABLE. L06

Applicability — APPLICABILITY: ~~Whenever irradiated fuel is in the storage pool.~~ During movement of recently irradiated fuel assemblies in the auxiliary building. L06

ACTION: Add proposed ACTION A L06

ACTION ~~D~~ E — a. With no auxiliary building gas treatment filter train OPERABLE, Add proposed Required Action ~~D~~ E.1 L06 ~~suspend all operations involving movement of fuel within the spent fuel pit or crane operation with loads over the spent fuel pit until at least one auxiliary building gas treatment filter train is restored to OPERABLE status~~.

ACTIONS Note — b. The provisions of Specification 3.0.3 are not applicable.

Add proposed ACTION D L06

SURVEILLANCE REQUIREMENTS ~~L06~~

SR 3.7.12.1, SR 3.7.12.3 — 4.9.12 The above required auxiliary buildings gas treatment filter train shall be demonstrated OPERABLE:

SR 3.7.12.1 — a. ~~At least once per 31 days on a STAGGERED TEST BASIS~~ In accordance with the Surveillance Frequency Control Program LA02 by initiating, ~~from the control room,~~ L03 ~~flow through the HEPA filters and charcoal adsorbers~~ LA03 and verifying that the system operates for at least ~~10 hours~~ 15 continuous minutes L04 with the heaters on.

Add proposed SR 3.7.12.2 A02

See ITS 5.5.9:

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978 (except for the provisions of ANSI N510 Sections 8 and 9), and the system flow rate is 9000 cfm ± 10%.

2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, shows the methyl iodide penetration less than 2.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86°F) and a relative humidity of 70%.

3. Verifying a system flow rate of 9000 cfm ± 10% during system operations when tested in accordance with ANSI N510-1975.

ITS A01 ITS 3.7.12

REFUELING OPERATIONS

3/4.9.12 AUXILIARY BUILDING GAS TREATMENT SYSTEM

LIMITING CONDITION FOR OPERATION

Two L06

LCO 3.7.12 ~~Note 2~~ 3.9.12 ~~One~~ auxiliary building gas treatment filter train shall be OPERABLE.

Applicability APPLICABILITY: ~~Whenever irradiated fuel is in the storage pool.~~

During movement of recently irradiated fuel assemblies in the auxiliary building. L06

ACTION:

Add proposed ACTION A L06

Add proposed Required Action ~~D~~.1 L06

E

ACTION ~~D~~ a. With no auxiliary building gas treatment filter train OPERABLE, ~~suspend all operations involving movement of fuel within the spent fuel pit or crane operation with loads over the spent fuel pit until at least one auxiliary building gas treatment filter train is restored to OPERABLE status~~.

E

ACTIONS Note b. The provisions of Specification 3.0.3 are not applicable.

Add proposed ACTION D L06

SURVEILLANCE REQUIREMENTS

SR 3.7.12.1, SR 3.7.12.3 4.9.12 The above required auxiliary building gas treatment filter train shall be demonstrated OPERABLE:

In accordance with the Surveillance Frequency Control Program LA02

L03

SR 3.7.12.1 a. ~~At least once per 31 days on a STAGGERED TEST BASIS~~ by initiating, ~~from the control room, flow through the HEPA filters and charcoal adsorbers~~ and verifying that the system operates for at least ~~10 hours~~ with the heaters on. LA03

15 continuous minutes L04

Add proposed SR 3.7.12.2 A02

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978 (except for the provisions of ANSI N510 Sections 8 and 9), and the system flow rate is 9000 cfm ± 10%.

2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, shows the methyl iodide penetration less than 2.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86° F) and a relative humidity of 70%.

3. Verifying a system flow rate of 9000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

See ITS 5.5.9

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REFUELING OPERATIONS

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

LIMITING CONDITION FOR OPERATION

3.9.4 The containment building penetrations shall be in the following status:

a. The equipment door closed and held in place by a minimum of four bolts,

b. A minimum of one door in each airlock is closed, and both doors of both containment personnel airlocks may be open if:

1. One personnel airlock door in each airlock is capable of closure, and

~~2. One train of the Auxiliary Building Gas Treatment System is OPERABLE in accordance with Technical Specification 3.9.12, and~~

(See ITS 3.9.4)

L08

c. Each penetration* providing direct access from the containment atmosphere to the outside atmosphere shall be either:

1. Closed by an isolation valve, blind flange, manual valve, or equivalent, or

2. Be capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve.

APPLICABILTY:

3.9.4.a. Containment Building Equipment Door - During movement of recently irradiated fuel within the containment.

3.9.4.b. and c. Containment Building Airlock Doors and Penetrations - During movement of irradiated fuel within the containment.

ACTION:

1. With the requirements of the above specification not satisfied for the containment building equipment door, immediately suspend all operations involving movement of recently irradiated fuel in the containment building. The provisions of Specification 3.0.3 are not applicable.

2. With the requirements of the above specification not satisfied for containment airlock doors or penetrations, immediately suspend all operations involving movement of irradiated fuel in the containment building. The provisions of Specification 3.0.3 are not applicable.

(See ITS 3.9.4)

SURVEILLANCE REQUIREMENTS

4.9.4 Each of the above required containment building penetrations shall be determined to be either in its required condition or capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve once per 7 days during movement of irradiated fuel in the containment building by:

a. Verifying the penetrations are in their required condition, or

b. Verifying the Containment Ventilation isolation valves not locked, sealed, or otherwise secured in position, actuate to the isolation position on an actual or simulated actuation signal.

* Penetration flow path(s) providing direct access from the containment atmosphere that transverse and terminate in the Auxiliary Building Secondary Containment Enclosure may be unisolated under administrative controls.

ITS

A01

ITS 3.7.12

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

LIMITING CONDITION FOR OPERATION

3.9.4 The containment building penetrations shall be in the following status:

a. The equipment door closed and held in place by a minimum of four bolts,

b. A minimum of one door in each airlock is closed, or both doors of both containment personnel airlocks may be open if:

1. One personnel airlock door in each airlock is capable of closure, and

(See ITS 3.9.4)

~~2. One train of the Auxiliary Building Gas Treatment System is OPERABLE in accordance with Technical Specification 3.9.12, and~~

L08

c. Each penetration* providing direct access from the containment atmosphere to the outside atmosphere shall be either:

1. Closed by an isolation valve, blind flange, manual valve, or equivalent, or

2. Be capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve.

APPLICABILITY:

3.9.4.a. Containment Building Equipment Door - During movement of recently irradiated fuel within the containment.

3.9.4.b. and c. Containment Building Airlock Doors and Penetrations - During movement of irradiated fuel within the containment.

ACTION:

1. With the requirements of the above specification not satisfied for the containment building equipment door, immediately suspend all operations involving movement of recently irradiated fuel in the containment building. The provisions of Specification 3.0.3 are not applicable.

2. With the requirements of the above specification not satisfied for containment airlock doors or penetrations, immediately suspend all operations involving movement of irradiated fuel in the containment building. The provisions of Specification 3.0.3 are not applicable.

(See ITS 3.9.4)

SURVEILLANCE REQUIREMENTS

4.9.4 Each of the above required containment building penetrations shall be determined to be either in its required condition or capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve once per 7 days during movement of irradiated fuel in the containment building by:

a. Verifying the penetrations are in their required condition, or

b. Verifying the Containment Ventilation isolation valves not locked, sealed, or otherwise secured in position, actuate to the isolation position on an actual or simulated actuation signal.

* Penetration flow path(s) providing direct access from the containment atmosphere that transverse and terminate in the Auxiliary Building Secondary Containment Enclosure may be unisolated under administrative controls.

DISCUSSION OF CHANGES
ITS 3.7.12, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS)

DOC L07 for a discussion of specifying that the actuation signal may be either actual or simulated. See DOC L06 for a discussion on limiting the Applicability of the ABGTS to the conditions during which it is required to mitigate a fuel handling accident ~~is postulated to occur~~.)

The purpose of CTS 3.7.8 is to ensure the ABGTS trains are OPERABLE during the plant conditions that a loss of coolant accident is postulated to occur (MODES 1, 2, 3 and 4). The purpose of CTS 3.9.12 is to ensure that radioactive material that is released from an irradiated fuel assembly during a fuel handling accident is processed through filtration prior to release to the atmosphere (during the movement of recently irradiated fuel assemblies in the auxiliary building). ITS 3.7.12 combines CTS 3.7.8 and 3.9.12 into one Specification with an Applicability of MODES 1, 2, 3 and 4 and during the movement of recently irradiated fuel assemblies in the auxiliary building. This results in the need to specify the plant conditions in which each actuation signal is required to actuate ABGTS to mitigate the associated accident. The plant conditions under which each ABGTS actuation signal is required to be OPERABLE remains unchanged between CTS and ITS. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 4.7.8.d.3 requires verification that each ABGTS system can maintain the spent fuel storage area and the ESF pump rooms at a pressure equal to or less than - 0.25 inches water gauge relative to the outside atmosphere while maintaining a total system flow of 9,000 cfm plus or minus 10% every 18 months in MODES 1, 2, 3 and 4. ITS SR 3.7.12.4 requires the same verification every 18 months on a STAGGERED TEST BASIS in MODES 1, 2, 3 and 4 and during movement of recently irradiated fuel assemblies in the auxiliary building. This changes the CTS by adding a Surveillance Requirement to verify the ABGTS can maintain a negative pressure at the required flow rate during movement of recently irradiated fuel assemblies in the auxiliary building. (See DOC L05 for the discussion regarding the change of the testing Frequency to "on a STAGGERED TEST BASIS." See DOC LA02 for the discussion regarding movement of the Surveillance Frequency to the Surveillance Frequency Control Program.)

This change is acceptable because the ABGTS is required to be OPERABLE during movement of recently irradiated fuel assemblies in the auxiliary building. The Surveillance Requirement is required to verify that the ABGTS can perform its required safety function during this Applicability. This change is designated as more restrictive because an additional Surveillance Requirement is being required that was not in the CTS.

RELOCATED SPECIFICATIONS

None

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DISCUSSION OF CHANGES
ITS 3.7.12, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS)

adequate protection of public health and safety. ITS 3.7.12 retains the requirement to verify that each ABGTS train will automatically start as designed ~~that two ABGTS trains are required to be OPERABLE~~. Also, this change is acceptable because these types of details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA05 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.7.8.d.3 requires verification that the ABGTS system maintains the spent fuel storage area and the ESF pump rooms at a pressure equal to or more negative than minus 1/4 inch water gage relative to the outside atmosphere while maintaining a total system flow of 9000 cfm plus or minus 10%. ITS 3.7.12.4 requires verification that the ABGTS train can maintain a pressure less ~~greater~~ than or equal to -0.25 inches water gauge with respect to atmospheric pressure at a flow rate greater than or equal to 8,100 and less than or equal to 9,900 cfm. This changes the CTS by moving the statement that the system maintains the spent fuel storage area and the ESF pump rooms at the specified pressure to the Bases.

The removal of these details for performing a Surveillance Requirement from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirements to verify the ABGTS train can maintain a pressure less ~~greater~~ than or equal to -0.25 inches water gauge with respect to atmospheric pressure at a flow rate of greater than or equal to 8,100 and less than or equal to 9,900 cfm. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specifications are being removed from the Technical Specifications.

<u>LESS RESTRICTIVE CHANGES</u>

L01 *(Category 1 – Relaxation of LCO Requirements)* CTS 3.7.8 requires two ABGTS trains to be OPERABLE. ITS LCO 3.7.12 includes the same ABGTS OPERABILITY requirements but is modified by a Note ~~1~~, which states "The Auxiliary Building Secondary Containment Enclosure (ABSCE) boundary may be opened intermittently under administrative control." This changes the CTS by allowing the ABSCE boundary to be opened under administrative controls when the ABGTS is required to be OPERABLE.

The purpose of CTS 3.7.8 is to maintain the air pressure in the auxiliary building below atmospheric, reduce the concentration of nuclides in air releases from the Auxiliary Building Secondary Containment Enclosure (ABSCE), and to minimize the spread of airborne radioactivity within the Auxiliary Building following an

DISCUSSION OF CHANGES
ITS 3.7.12, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS)

accidental release in the fuel handling areas. ITS LCO 3.7.12 Note ~~1~~ will allow the ABSCE boundary to be opened under administrative controls when the ABGTS is required to be OPERABLE. This change is acceptable because the administrative controls are described in the Bases. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for auxiliary building isolation is indicated. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

L02 *(Category 4 – Relaxation of Required Action)* CTS 3.7.8 ACTION contains compensatory actions to take when one auxiliary building gas treatment filter train is inoperable in MODES 1, 2, 3 and 4. CTS 3.7.8 does not contain compensatory actions to take when both auxiliary building gas treatment filter trains are inoperable. Therefore, CTS 3.0.3 would be entered for two auxiliary building gas treatment filter trains inoperable. CTS 3.0.3 requires action to be initiated within one hour to be in HOT STANDBY (equivalent to ITS MODE 3) in the following 6 hours, to be in HOT SHUTDOWN (equivalent to ITS MODE 4) in the following 6 hours, and to be in COLD SHUTDOWN (equivalent to ITS MODE 5) in the subsequent 36 hours. ITS 3.7.12 ACTIONS contain a Note stating LCO 3.0.3 is not applicable. ITS 3.7.12 ACTION B states with two ABGTS trains inoperable due to an inoperable Auxiliary Building Secondary Containment Enclosure (ABSCE) boundary in MODE 1, 2, 3, or 4 to restore the auxiliary building boundary to OPERABLE status within 24 hours. Additionally, ITS 3.7.12 ACTION C states, in part, when two ABGTS trains are inoperable for reasons other than Condition B (i.e., an inoperable ABSCE boundary) or if the Required Action and associated Completion Time of Condition B is not met in MODE 1, 2, 3, or 4 to be in MODE 3 within 6 hours and to be in MODE 5 within 36 hours. This changes the CTS by not requiring entry into LCO 3.0.3 when two ABGTS trains are inoperable in MODE 1, 2, 3, or 4, and adds compensatory actions to take when two ABGTS trains are inoperable in MODE 1, 2, 3, or 4.

in the auxiliary building

ITS 3.7.12 is applicable during movement of recently irradiated fuel assemblies in addition to MODE 1, 2, 3, or 4. Since the movement of recently irradiated fuel assemblies can occur in MODES 1, 2, 3, and 4, it is necessary to add an ACTIONS Note stating that LCO 3.0.3 is not applicable because the movement of fuel is independent of reactor operations. This change is acceptable because ITS 3.7.12 ACTIONS B and C will provide compensatory measures to take when two trains of ABGTS are inoperable in MODE 1, 2, 3, or 4. ITS 3.7.12 ACTION B applies when two ABGTS trains are inoperable because of an inoperable ABSCE boundary in MODE 1, 2, 3, or 4 and provides 24 hours to restore the inoperable auxiliary building boundary to OPERABLE status. During these 24 hours, compensatory measures will be taken to protect plant personnel from potential hazards, and preplanned compensatory measures will be in place to address both the intentional and unintentional inoperability of the ABSCE boundary. Furthermore, the 24 hour Completion Time is based on the low probability of a DBA occurring during this time period and the compensatory measures that will be taken. ITS 3.7.12 ACTION C applies when the Required Action and associated Completion Time of Condition B is not met or when two ABGTS trains

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are in operable for reasons other than Condition B in MODE 1, 2, 3, or 4. ITS 3.7.12 ACTION C provides 6 hours to be in MODE 3 and 36 hours to be in MODE 5. This change is acceptable because ITS continues to require the unit to be placed outside of the MODE of Applicability when two ABGTS trains are inoperable in MODE 1, 2, 3, or 4, for reasons other than an inoperable ABSCE boundary, or if one ABGTS train is not restored to an OPERABLE status within 24 hours. This change is designated as less restrictive because the less stringent requirements are being applied in the ITS than were applied in the CTS.

L03 *(Category 7 – Relaxation of Surveillance Frequency)* CTS 4.7.8.a and 4.9.12.a require the operation of each ABGTS train every 31 days on a STAGGERED TEST BASIS. ITS SR 3.7.12.1 requires the operation of each ABGTS train every 31 days. This changes the CTS by deleting the requirement to perform the verification on a STAGGERED TEST BASIS. (See DOC LA02 for the discussion on moving the 31 day Frequency to the Surveillance Frequency Control Program.)

The purpose of CTS 4.7.8.b and 4.9.12.a is to ensure that ABGTS is OPERABLE. The CTS 1.35 STAGGERED TEST BASIS definition, defines a testing schedule for n systems, subsystems, or trains by dividing the specified test interval into n equal subintervals, with the testing of one system, subsystem, or train occurring at the beginning of each subinterval. In other words, a Surveillance Requirement to verify the OPERABILITY of each train in a two train system at a Frequency of 31 days on a STAGGERED TEST BASIS would result in each train being verified OPERABLE every 31 days, with one train being verified in alternating 15.5 day subintervals. Removal of the STAGGERED TEST BASIS scheduling requirement does not change the requirement to verify the OPERABILITY of each train every 31 days, but rather removes the requirement to schedule testing every 15.5 days. The new Surveillance Frequency will not change the testing Frequency of each train. The intent of the CTS staggered testing requirement is to evenly distribute testing of each ABGTS train across the system. However, as each ABGTS train is independent, no increase in reliability or safety is achieved by evenly staggering the testing subintervals. This change is acceptable, because removal of the staggered testing requirement will increase operational and scheduling flexibility without decreasing safety or system reliability. This change is designated as less restrictive, because the intervals between performances of the Surveillances for the ABGTS trains can be larger or smaller under the ITS than under the CTS.

L04 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.7.8.a and CTS 4.9.12.a require~~s~~ the periodic operation of each ABGTS train for at least 10 hours with the heaters on. ITS SR 3.7.12.1 requires the periodic operation of each ABGTS train for at least 15 continuous minutes with the heaters on. This changes the CTS by reducing the amount of time each ABGTS train is required to be operated.

The purpose of CTS 4.7.8.b and CTS 4.9.12.a is to periodically verify that each train of ABGTS can operate properly. The requirement to operate each train for at least 10 hours per month with the heaters on in order to reduce the buildup of moisture on the adsorbers and HEPA filters was derived from the guidance provided in Regulatory Guide (RG) 1.52, "Design, Testing, and Maintenance Criteria for Post

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DISCUSSION OF CHANGES
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Replace with "New" L06.

L06 ~~*(Category 2 – Relaxation of Applicability)* CTS 3.9.12 states that the requirements of the ABGTS are applicable "Whenever irradiated fuel is in the storage pool." CTS 3.9.12 ACTION a requires when no ABGTS is OPERABLE, suspend all operations involving movement of fuel within the spent fuel pit or crane operation with loads over the spent fuel pit until at least one ABGTS train is restored to an OPERABLE stratus. ITS 3.7.12 states, in part, that the requirements of the ABGTS are applicable "During movement of recently irradiated fuel assemblies in the auxiliary building." ITS 3.7.12 ACTION D requires when two ABGTS trains are inoperable during movement of recently irradiated fuel assemblies in the auxiliary building immediately to suspend movement of recently irradiated fuel assemblies in the auxiliary building. This changes the CTS by restricting the ABGTS Specification to only when there is a potential for a fuel handling accident (i.e., during movement of recently irradiated fuel assemblies in the auxiliary building).~~

~~The purpose of CTS 3.9.12 is to ensure the ABGTS is OPERABLE to mitigate the consequences of a fuel handling accident in the auxiliary building. This change is acceptable because the requirements continue to ensure that the structures, system and components are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. The Sequoyah Nuclear Plant (SQN) fuel handling analysis for the auxiliary building has been analyzed using the methodology from Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors." The SQN fuel handling analysis assumes, in part, that the accident occurs within 100 hours after a plant shutdown, radioactive decay during the interval between shutdown and placement of the first spent fuel assembly into the spent fuel pool is taken into account, and a single fuel assembly is damaged. Additionally, a fuel handling accident is only assumed to occur when a recently irradiated fuel assembly is being moved. Therefore, the ITS imposes the controls on the ABGTS during movement of recently irradiated fuel assemblies in the auxiliary building. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.~~

L07 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.7.8.d.2 requires verification that the filter trains start on a Containment Phase A Isolation test signal. CTS 4.9.12.d.2 requires verification that the filter train starts on a high radiation signal from the fuel pool radiation monitoring system. ITS SR 3.7.12.3 requires verification that each ABGTS train actuates on an actual or simulated actuation signal. This changes the CTS by specifying that the actuation signal may be either actual or simulated. (See DOC LA04 for a discussion of moving the details of the test signal to the Bases.)

The purpose of CTS 4.7.8.d.2 and 4.9.12.d.2 is to verify that each ABGTS train operates correctly upon a receipt of an actuation signal. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its safety function. Equipment cannot discriminate between an "actual" or "simulated" signal; therefore, the results of testing are unaffected by the type of signal used to initiate the test.

"New" DOC L06

(Category 2 – Relaxation of Applicability) CTS 3.9.12 states that the requirements of the ABGTS are applicable "Whenever irradiated fuel is in the storage pool." CTS 3.9.12 ACTION a requires when no ABGTS train is OPERABLE, suspend all operations involving movement of fuel within the spent fuel pit or crane operation with loads over the spent fuel pit until at least one ABGTS train is restored to an OPERABLE status. ITS 3.7.12 states, in part, that two ABGTS trains are required to be OPERABLE "During movement of recently irradiated fuel assemblies in the auxiliary building." ITS 3.7.12 ACTION A requires one inoperable ABGTS train to be restored to an OPERABLE status in 7 days. ITS 3.7.12 ACTION D provides actions to either place a train of ABGTS in operation or suspend movement of recently irradiated fuel assemblies in the auxiliary building if the Required Actions and associated Completion Time of Condition A are not met. ITS 3.7.12 ACTION E requires when two ABGTS trains are inoperable during movement of recently irradiated fuel assemblies in the auxiliary building immediately to suspend movement of recently irradiated fuel assemblies in the auxiliary building. This changes the CTS by restricting the ABGTS Specification to only when ABGTS is required to mitigate a fuel handling accident (i.e., during movement of recently irradiated fuel assemblies in the auxiliary building).

The purpose of CTS 3.9.12 is to ensure the ABGTS is OPERABLE to mitigate the consequences of a fuel handling accident in the auxiliary building. This change is acceptable because the requirements continue to ensure that the structures, system and components are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. The Sequoyah Nuclear Plant (SQN) fuel handling analysis for the auxiliary building has been analyzed using the methodology from Regulatory Guide (RG) 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors." The SQN fuel handling analysis inside the auxiliary building assumes, in part, that the accident occurs 100 hours after a plant shutdown, radioactive decay during the interval between shutdown and placement of the first spent fuel assembly into the spent fuel pool is taken into account, and a single fuel assembly is damaged. The damaged fuel assembly is assumed to be the highest powered assembly in the core region to be discharged with a radial peaking factor of 1.70. All of the gap activity in the damaged rods is released to the spent fuel pool and consists of 5% of the total noble gases other than Kr-85, 10% of the Kr-85, 5% of the toal radioactive iodine other than I-131, and 8% of the I-131 in the rods at the time of the accident. Noble gases released to the spent fuel pool do not experience retention in the water pool. The iodine gap inventory is composed of 99.85% inorganic species, and 0.15% organic species. The spent fuel pool decontamination factor is 200. No credit is taken for natural decay due to holdup in the auxiliary building or after the activity has been released to the atmosphere. The activity released from the spent fuel pool is all assumed to be released to the environment over a 2-hour period. Doses were determined at the EAB and LPZ for the 2-hour interval over which the releases are assumed to take place, and in the control room for an extended period of time after termination of releases in order to address the continual presence of activity in the control room atmosphere. The accident doses were calculated using the dose model consistent with the use of the alternate source term methodology (RG 1.183). The doses are within the dose acceptance limits of 6.3 rem TEDE for offsite doses and 5.0 rem TEDE for control room doses. Because ABGTS is not credited in the mitigation of a fuel handling accident in the auxiliary building involving fuel that has at least 100 hours of decay time, it is not required to be OPERABLE during that evolution. However, fuel movement could still proceed prior to a decay time of 100 hours. Therefore, to mitigate the consequences of a fuel handling accident involving the movement of recently irradiated fuel, ITS imposes the controls on the ABGTS during movement of recently irradiated fuel assemblies in the auxiliary building. Consistent with NUMARC 93-01, "Safety Assessment for Removal of Equipment from Service During Shutdown Conditions," TVA will

implement procedural requirements for a single normal or contingency method to promptly close primary or secondary containment penetrations. Additionally, TVA will implement procedural requirements for one train of ABGTS to be OPERABLE during movement of irradiated fuel assemblies (whether in the auxiliary building or within the containment). This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

DISCUSSION OF CHANGES
ITS 3.7.12, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS)

This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L08 *(Category 1 - Relaxation of LCO Requirements)* CTS 3.9.4 states that one train of ABGTS is required to be OPERABLE with both doors of one or both containment personnel airlock(s) open "During movement of irradiated fuel within the containment." ITS 3.7.12 states, in part, that two trains of ABGTS are required to be OPERABLE "During movement of recently irradiated fuel assemblies in the auxiliary building." This changes the CTS by restricting the ABGTS requirement to only when ABGTS is required to mitigate a design basis fuel handling accident (FHA) (i.e., during movement of recently irradiated fuel assemblies in the auxiliary building).

The purpose of CTS 3.9.4 is to ensure the ABGTS is OPERABLE to mitigate a FHA in the auxiliary building. Although ABGTS is not credited in the mitigation of a FHA within the containment, the requirement for one train of ABGTS to be OPERABLE was added to the CTS with Amendments 209 and 199 for Units 1 and 2, respectively (ADAMS Accession number ML013320204). The amendments allowed both doors in one or both containment personnel airlock(s) to be open during core alterations and during the movement of irradiated fuel within the containment, provided one door in each airlock is capable of closure and one train of ABGTS remains OPERABLE. The change to restrict the ABGTS requirement to only when the system is required to mitigate a design basis FHA is acceptable because the requirements continue to ensure that the structures, system and components are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. The Sequoyah Nuclear Plant (SQN) fuel handling accident has been analyzed using the methodology from Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors." For the FHA within the containment, the time after shutdown is assumed to be 100 hours. The containment equipment hatch and personnel air locks may be open during fuel handling operations, and although the purge line would be quickly isolated, activity release is assumed to continue through these open penetrations. The accident postulates that a spent fuel assembly is dropped after refueling. All of the fuel rods in the assembly are assumed to rupture, releasing the radionuclides within the reactor cavity water. Fission products released from the damaged fuel are decontaminated by passage through the reactor cavity water. The fission products released are exhausted by the building purge system. On detection of increased radiation levels in the containment, the purge system automatically isolates (assumed 300 seconds following accident). After purge is isolated, the remaining fission products in the containment are assumed to leak to the environment through containment penetrations within 2 hours with no credit for holdup, dilution, or filtration of the release. The accident doses are within the acceptable dose limits of 6.3 rem TEDE for offsite doses (RG 1.183) and 5.0 rem TEDE for control room dose (GDC 19). Therefore, the removal of the requirement for one train of ABGTS to be OPERABLE with both doors of one or both personnel airlocks open during movement of irradiated fuel assemblies in the containment is justified. Consistent with NUMARC 93-01, "Safety Assessment for Removal of Equipment from Service During Shutdown Conditions," TVA will implement procedural requirements for a single normal or contingency method to promptly close primary or secondary containment penetrations. Additionally, TVA will implement procedural requirements for one train of ABGTS to be OPERABLE during movement of irradiated fuel assemblies (whether in the auxiliary building or within the containment). This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

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CTS

ABGTS ~~FBACS~~ 1
3.7.~~13~~ 12

3.7 PLANT SYSTEMS

3.7.~~13~~ 12 ~~Fuel Building Air Cleanup~~ Auxiliary Building Gas Treatment System ~~(FBACS)~~ ABGTS 1

3.7.8
3.9.12

LCO 3.7.~~13~~ 12 Two ~~FBACS~~ ABGTS trains shall be OPERABLE. 1

DOC L01
~~3.9.12~~

----------NOTE~~S~~----------
~~1.~~ The ~~fuel building~~ Auxiliary Building Secondary Containment Enclosure (ABSCE) boundary may be opened intermittently under administrative control. 3 ~~2~~

~~INSERT 1~~

3.7.8 Applicability, 3.9.12 Applicability

APPLICABILITY: ~~[~~MODES 1, 2, 3, and 4, ~~]~~
During movement of ~~[~~recently~~]~~ irradiated fuel assemblies in the ~~fuel~~ auxiliary building. 4 3

ACTIONS

DOC L02, 3.9.12 ACTION b

----------NOTE----------
LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ~~FBACS~~ ABGTS train inoperable~~,~~ ~~In MODE 1, 2, 3, or 4~~	A.1 Restore ~~FBACS~~ ABGTS train to OPERABLE status.	7 days
B. Two ~~FBACS~~ ABGTS trains inoperable due to inoperable ~~fuel building~~ ABSCE boundary~~ in MODE 1, 2, 3, or 4~~.	B.1 Restore ~~fuel building~~ ABSCE boundary to OPERABLE status.	24 hours

3.7.8 ACTION
DOC L06 — 1 ~~2~~ (Condition A)

DOC L02 — 1 3 (Condition B)

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~~CTS~~ ~~3.7.12~~

~~2~~

~~INSERT 1~~

~~3.9.12~~ ~~2. Only one ABGTS train is required to be OPERABLE during movement of recently irradiated fuel assemblies in the auxiliary building.~~

CTS

ABGTS
~~FBACS~~
3.7.~~13~~ 12

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
3.7.8 ACTION C. ~~[~~Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4. OR DOC L02 Two ~~FBACS~~ ABGTS trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours ~~]~~
DOC L06 ~~D. Required Action and associated Completion Time [of Condition A] not met during movement of [recently] irradiated fuel~~ auxiliary ~~assemblies in the fuel building.~~	~~D.1 Place OPERABLE FBACS~~ ABGTS ~~train in operation.~~ ~~OR~~ ~~D.2 Suspend movement of [recently] irradiated fuel~~ auxiliary ~~assemblies in the fuel building.~~	~~Immediately~~ ~~Immediately~~
3.9.12 ACTION a ~~E.~~ E D. ~~Two~~ two ~~One required~~ ~~FBACS~~ ABGTS trains inoperable during movement of ~~[recently]~~ irradiated fuel assemblies in the ~~fuel~~ auxiliary building.	~~E~~ E D.1 Suspend movement of ~~[recently]~~ irradiated fuel assemblies in the ~~fuel~~ auxiliary building.	Immediately

Keep, with changes indicated in black.

CTS

ABGTS ~~FBACS~~ 1
3.7.~~13~~ 12

3.7 PLANT SYSTEMS

3.7.~~13~~ 12 Auxiliary Building Gas Treatment ~~Fuel Building Air Cleanup~~ System ABGTS ~~(FBACS)~~ 1

3.7.8
3.9.12

LCO 3.7.~~13~~ 12 Two ABGTS ~~FBACS~~ trains shall be OPERABLE. 1

DOC L01
~~3.9.12~~

---------------------------------NOTE ~~S~~ -------------------------------
~~1~~ The Auxiliary Building Secondary Containment Enclosure (ABSCE) ~~fuel building~~ boundary may be opened intermittently under administrative control. 3 ~~2~~
~~INSERT 1~~

3.7.8 Applicability, 3.9.12 Applicability

APPLICABILITY: ~~[~~MODES 1, 2, 3, and 4, ~~]~~
During movement of ~~[~~recently~~]~~ irradiated fuel assemblies in the auxiliary ~~fuel~~ building. 4 3

ACTIONS

DOC L02, 3.9.12 ACTION b

-----------------------------------NOTE-----------------------------------
LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ABGTS ~~FBACS~~ train inoperable~~.~~ ~~In MODE 1, 2, 3, or 4~~	A.1 Restore ABGTS ~~FBACS~~ train to OPERABLE status.	7 days
B. Two ABGTS ~~FBACS~~ trains inoperable due to inoperable ABSCE ~~fuel building~~ boundary in MODE 1, 2, 3, or 4.	B.1 Restore ABSCE ~~fuel building~~ boundary to OPERABLE status.	24 hours

3.7.8 ACTION
DOC L06
1 ~~2~~

DOC L02
1 3

~~CTS~~ ~~3.7.12~~

~~2~~

~~INSERT 1~~

~~3.9.12~~ ~~2. Only one ABGTS train is required to be OPERABLE during movement of recently irradiated fuel assemblies in the auxiliary building.~~

CTS

ABGTS ~~FBACS~~ 1
3.7.~~13~~ 12

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
3.7.8 ACTION C. [Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4. OR DOC L02 Two ABGTS ~~FBACS~~ trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 4 36 hours] 4 1
DOC L06 ~~D. Required Action and associated Completion Time [of Condition A] not met during movement of [recently] irradiated fuel assemblies in the fuel building.~~ auxiliary	~~D.1 Place OPERABLE FBACS train in operation.~~ ABGTS ~~OR~~ ~~D.2 Suspend movement of [recently] irradiated fuel assemblies in the fuel building.~~ auxiliary	~~Immediately~~ ~~Immediately~~ 1 4 2 4 3 4 3
3.9.12 ACTION a two E ~~E.~~ D. ~~One required~~ ~~Two FBACS~~ ABGTS trains inoperable during movement of [recently] irradiated fuel assemblies in the ~~fuel~~ auxiliary building.	~~E.~~ D.1 E Suspend movement of [recently] irradiated fuel assemblies in the ~~fuel~~ auxiliary building.	Immediately 2 1 4 4 3 3

Keep, with changes indicated in black.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.7.12, AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS)

1. Sequoyah Nuclear Plant (SQN) design does not include the ISTS 3.7.12, "Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)." Therefore, ISTS 3.7.13, "Fuel Building Air Cleanup System (FBACS)" has been renumbered as ITS 3.7.12. Additionally, SQN refers to the Fuel Building Air Cleanup System (FBACS) as the Auxiliary Building Gas Treatment System (ABGTS).

Not used.

2. ~~ISTS 3.7.13 ACTION A has been revised to only apply in MODES 1, 2, 3, or 4 and ACTION D has been deleted, as the SQN current licensing basis only credits one train of ABGTS to mitigate a fuel handling accident involving the movement of recently irradiated fuel assemblies in the auxiliary building. Therefore, the only applicable ACTION for the required ABGTS train being inoperable during the movement of recently irradiated fuel assemblies in the auxiliary building is ISTS 3.7.13 ACTION E (ITS 3.7.12 ACTION D).~~

3. Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

4. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

5. ISTS SR 3.7.13.1, SR 3.7.13.3 and SR 3.7.13.4 (ITS SR 3.7.12.1, SR 3.7.12.3 and SR 3.7.12.4, respectively) provides two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program.

6. Changes made for consistency with the Applicability of the ABGTS actuation functions provided in ITS 3.3.8.

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BASES

APPLICABLE SAFETY ANALYSES (continued)

~~material provided by the one remaining train of this filtration system.~~ The amount of fission products available for release from the auxiliary ~~fuel handling~~ building is determined for a fuel handling accident and for a LOCA. ~~[~~Due to radioactive decay, ABGTS ~~FBACS~~ is only required to isolate during fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 100 hours ~~[X] days~~).~~]~~ These assumptions and the analysis follow the guidance provided in Regulatory Guide 1.183 ~~1.25~~ (Ref. 3 ~~4~~). 2 1 3 1 3 2

The ABGTS ~~FBACS~~ satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). 1

LCO

Two independent and redundant trains of the ABGTS ~~FBACS~~ are required to be OPERABLE to ensure that at least one train is available, assuming a single failure that disables the other train, coincident with a loss of offsite power. Total system failure could result in the atmospheric release from the auxiliary ~~fuel handling~~ building exceeding the 10 CFR 100 (Ref. 4 ~~5~~) limits in the event of a LOCA ~~fuel handling accident [involving handling recently irradiated fuel]~~. INSERT 2 1 1 2 2

The ABGTS ~~FBACS~~ is considered OPERABLE when the individual components necessary to control exposure in the auxiliary ~~fuel handling~~ building are OPERABLE in both trains. An ABGTS ~~FBACS~~ train is considered OPERABLE when its associated: 1

a. Fan is OPERABLE,

b. HEPA filter and charcoal adsorber are not excessively restricting flow, and are capable of performing their filtration function, and

c. Heater, ~~demister,~~ ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained. 1

a Note allowing ~~two Notes. Note 1 allows~~

The LCO is modified by ~~a Note allowing~~ the Auxiliary Building Secondary Containment Enclosure (ABSCE) ~~fuel building~~ boundary to be opened intermittently under administrative controls. For entry and exit through doors the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for auxiliary ~~fuel~~ building isolation is indicated. 1 1

~~INSERT 3~~ ~~4~~

2

INSERT 2

One train of the ABGTS is required to be OPERABLE to mitigate the consequences of a fuel handling accident involving handling recently irradiated fuel to limit releases to the environment to within the 10 CFR 50.67 limits.

~~4~~

~~**INSERT 3**~~

~~Note 2 specifies that only one ABGTS train is required to be OPERABLE during the movement of recently irradiated fuel assemblies in the auxiliary building.~~

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BASES

APPLICABILITY

In MODE 1, 2, 3, or 4, the ~~FBACS~~ ABGTS is required to be OPERABLE to provide fission product removal associated with ECCS leaks due to a LOCA and leakage from containment and annulus. 1

In MODE 5 or 6, the ~~FBACS~~ ABGTS is not required to be OPERABLE since the ECCS is not required to be OPERABLE. 1

During movement of ~~[~~recently~~]~~ irradiated fuel in the ~~fuel handling area~~ auxiliary building, the ~~FBACS~~ ABGTS is required to be OPERABLE to alleviate the consequences of a fuel handling accident. 3 2 1

ACTIONS

LCO 3.0.3 is not applicable while in MODE 5 or 6. However, since irradiated fuel assembly movement can occur in MODE 1, 2, 3, or 4, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operations. Entering LCO 3.0.3, while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

A.1

With one ~~FBACS~~ ABGTS train inoperable, ~~in MODE 1, 2, 3, or 4~~ action must be taken to restore OPERABLE status within 7 days. During this period, the remaining OPERABLE train is adequate to perform the ~~FBACS~~ ABGTS function. The 7 day Completion Time is based on the risk from an event occurring requiring the inoperable ~~FBACS~~ ABGTS train, and the remaining ~~FBACS~~ ABGTS train providing the required protection. ~~4~~ 1

B.1

~~-----------------------------------REVIEWER'S NOTE------------------------~~
~~Adoption of Condition B is dependent on a commitment from the licensee to have guidance available describing compensatory measures to be taken in the event of an intentional and unintentional entry into Condition B.~~
~~---~~ 5

If the ~~fuel building~~ ABSCE boundary is inoperable in MODE 1, 2, 3, or 4, the ~~FBACS~~ ABGTS trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE ~~fuel building~~ ABSCE boundary within 24 hours. During the period that the ~~fuel building~~ boundary is inoperable, appropriate compensatory measures ~~[~~consistent with the intent, as 1 3

BASES

ACTIONS (continued)

applicable, of GDC 19, 60, 61, 63, 64 and 10 CFR Part 100~~]~~ should be utilized to protect plant personnel from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the ~~fuel building~~ ABSCE boundary. 3 1

~~[~~ C.1 and C.2 3

In MODE 1, 2, 3, or 4, when Required Action A.1 or B.1 cannot be completed within the associated Completion Time, or when both ~~FBACS~~ ABGTS trains are inoperable for reasons other than an inoperable ~~fuel building~~ ABSCE boundary (i.e., Condition B), the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in MODE 3 within 6 hours, and in MODE 5 within 36 hours. The Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. ~~]~~ 1 3

Keep with changes marked in black.

~~D.1 and D.2~~

~~When Required Action A.1 cannot be completed within the required Completion Time, during movement of [recently] irradiated fuel assemblies in the fuel building, the OPERABLE FBACS train must be started immediately or [recently] irradiated fuel movement suspended. This action ensures that the remaining train is OPERABLE, that no undetected failures preventing system operation will occur, and that any active failure will be readily detected.~~ auxiliary ABGTS 3 1 3 ~~4~~

~~If the system is not placed in operation, this action requires suspension of [recently] irradiated fuel movement, which precludes a fuel handling accident [involving handling recently irradiated fuel]. This does not preclude the movement of fuel assemblies to a safe position.~~ 3 3

BASES

ACTIONS (continued)

E D ~~E~~.1

When two ~~two~~ trains of ~~the FBACS are~~ the required ABGTS ~~is~~ are inoperable during movement of ~~[recently]~~ irradiated fuel assemblies in the ~~fuel~~ auxiliary building, action must be taken to place the unit in a condition in which the LCO does not apply. Action must be taken immediately to suspend movement of ~~[recently]~~ irradiated fuel assemblies in the ~~fuel~~ auxiliary building. This does not preclude the movement of fuel to a safe position. ~~4~~ ~~4~~ 2 3 1 3 1

SURVEILLANCE REQUIREMENTS

SR 3.7.~~13~~ 12.1 1

Standby systems should be checked periodically to ensure that they function properly. As the environmental and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on this system.

3 INSERT 4 ~~Monthly heater operation dries out any moisture accumulated in the charcoal from humidity in the ambient air. [Systems with heaters must be operated for ≥10 continuous hours with the heaters energized. Systems without heaters need only be operated for ≥15 minutes to demonstrate the function of the system.] [The 31 day Frequency is based on the known reliability of the equipment and the two train redundancy available.~~ TSTF-522 6

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 5

~~[~~ SR 3.7.~~13~~ 12.2 3

This SR verifies that the required ~~FBACS~~ ABGTS testing is performed in accordance with the ~~[~~Ventilation Filter Testing Program (VFTP)~~]~~. The ~~[~~VFTP~~]~~ includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the ~~[~~VFTP~~]~~. ~~]~~ 2 3 3

TSTF-522 **INSERT ~~4~~** 3

Operation ~~[~~with heaters on~~]~~ for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that ~~[~~heater failure,~~]~~ blockage, fan or motor failure, or excessive vibration can be detected for corrective action. 3 3

Operation will be demonstrated by initiating, from the control room, flow through the HEPA filter and charcoal adsorber train. 2

BASES

SURVEILLANCE REQUIREMENTS (continued)

[SR 3.7.~~13~~ 12.3

This SR verifies that each ~~FBACS~~ ABGTS train starts and operates on an actual or simulated actuation signal. INSERT 4 ~~[The [18] month Frequency is consistent with Reference 6.]~~

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~

SR 3.7.~~13~~ 12.4

This SR verifies the integrity of the ~~fuel~~ auxiliary building enclosure (i.e., spent fuel storage area and the ESF pump rooms). The ability of the ~~fuel~~ auxiliary building to maintain negative pressure with respect to potentially uncontaminated adjacent areas is periodically tested to verify proper function of the ~~FBACS~~ ABGTS. During the ~~[~~post accident~~]~~ mode of operation, the ~~FBACS~~ ABGTS is designed to maintain a slight negative pressure in the ~~fuel~~ auxiliary building, to prevent unfiltered LEAKAGE. The ~~FBACS~~ ABGTS is designed to maintain a ≤ ~~[-0.125]~~ - 0.25 inches water gauge with respect to atmospheric pressure at a flow rate ~~of [20,000]~~ ≥ 8,100 and ≤ 9,900 cfm to the ~~fuel~~ auxiliary building. ~~[The Frequency of [18] months is consistent with the guidance provided in NUREG-0800, Section 6.5.1 (Ref. 7).~~

~~An [18] month Frequency (on a STAGGERED TEST BASIS) is consistent with Reference 6.~~

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

6

INSERT ~~5~~ 4

The SR is modified by two Notes that specify when verification of ABGTS actuation for each actuation signal is required to be met. ABGTS actuation on a Containment Phase A isolation signal is required to be met in MODES 1, 2, 3 and 4. ABGTS actuation on fuel storage pool area high radiation signal is required to be met during movement of recently irradiated fuel assemblies in the auxiliary building.

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ABGTS ~~FBACS~~ 1
B 3.7.~~13~~ 12

BASES

APPLICABLE SAFETY ANALYSES (continued)

~~material provided by the one remaining train of this filtration system.~~ The amount of fission products available for release from the ~~fuel handling~~ auxiliary building is determined for a fuel handling accident and for a LOCA. ~~[~~Due to radioactive decay, ~~FBACS~~ ABGTS is only required to isolate during fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous ~~[X] days~~ 100 hours).~~]~~ These assumptions and the analysis follow the guidance provided in Regulatory Guide ~~1.25~~ 1.183 (Ref. ~~4~~ 3). 2 1 3 1 3 2

The ~~FBACS~~ ABGTS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). 1

LCO

Two independent and redundant trains of the ~~FBACS~~ ABGTS are required to be OPERABLE to ensure that at least one train is available, assuming a single failure that disables the other train, coincident with a loss of offsite power. Total system failure could result in the atmospheric release from the ~~fuel handling~~ auxiliary building exceeding the 10 CFR 100 (Ref. ~~5~~ 4) limits in the event of a ~~fuel handling accident [involving handling recently irradiated fuel]~~ LOCA. INSERT 2 1 1 2 2

The ~~FBACS~~ ABGTS is considered OPERABLE when the individual components necessary to control exposure in the ~~fuel handling~~ auxiliary building are OPERABLE in both trains. An ~~FBACS~~ ABGTS train is considered OPERABLE when its associated: 1

a. Fan is OPERABLE,

b. HEPA filter and charcoal adsorber are not excessively restricting flow, and are capable of performing their filtration function, and

c. Heater, ~~demister,~~ ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained. 1

a Note allowing → ~~two Notes. Note 1 allows~~

The LCO is modified by ~~a Note allowing~~ the ~~fuel building~~ Auxiliary Building Secondary Containment Enclosure (ABSCE) boundary to be opened intermittently under administrative controls. For entry and exit through doors the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for ~~fuel~~ auxiliary building isolation is indicated. 1 1

~~INSERT 3~~ ~~4~~

2

INSERT 2

One train of the ABGTS is required to be OPERABLE to mitigate the consequences of a fuel handling accident involving handling recently irradiated fuel to limit releases to the environment to within the 10 CFR 50.67 limits.

~~4~~

~~**INSERT 3**~~

~~Note 2 specifies that only one ABGTS train is required to be OPERABLE during the movement of recently irradiated fuel assemblies in the auxiliary building.~~

BASES

APPLICABILITY

In MODE 1, 2, 3, or 4, the ABGTS ~~FBACS~~ is required to be OPERABLE to provide fission product removal associated with ECCS leaks due to a LOCA and leakage from containment and annulus. 1

In MODE 5 or 6, the ABGTS ~~FBACS~~ is not required to be OPERABLE since the ECCS is not required to be OPERABLE. 1

During movement of ~~[~~recently~~]~~ irradiated fuel in the auxiliary building ~~fuel handling area~~, the ABGTS ~~FBACS~~ is required to be OPERABLE to alleviate the consequences of a fuel handling accident. 3 2 1

ACTIONS

LCO 3.0.3 is not applicable while in MODE 5 or 6. However, since irradiated fuel assembly movement can occur in MODE 1, 2, 3, or 4, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operations. Entering LCO 3.0.3, while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

A.1

With one ABGTS ~~FBACS~~ train inoperable ~~in MODE 1, 2, 3, or 4~~, action must be taken to restore OPERABLE status within 7 days. During this period, the remaining OPERABLE train is adequate to perform the ABGTS ~~FBACS~~ function. The 7 day Completion Time is based on the risk from an event occurring requiring the inoperable ABGTS ~~FBACS~~ train, and the remaining ABGTS ~~FBACS~~ train providing the required protection. ~~4~~ 1

B.1

~~-----REVIEWER'S NOTE-----~~
~~Adoption of Condition B is dependent on a commitment from the licensee to have guidance available describing compensatory measures to be taken in the event of an intentional and unintentional entry into Condition B.~~ 5

If the ABSCE ~~fuel building~~ boundary is inoperable in MODE 1, 2, 3, or 4, the ABGTS ~~FBACS~~ trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE ABSCE ~~fuel building~~ boundary within 24 hours. During the period that the ABSCE ~~fuel building~~ boundary is inoperable, appropriate compensatory measures ~~[~~consistent with the intent, as 1 3

BASES

ACTIONS (continued)

applicable, of GDC 19, 60, 61, 63, 64 and 10 CFR Part 100~~]~~ should be utilized to protect plant personnel from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the ~~fuel building~~ ABSCE boundary. 3 1

~~[~~ C.1 and C.2 3

In MODE 1, 2, 3, or 4, when Required Action A.1 or B.1 cannot be completed within the associated Completion Time, or when both ~~FBACS~~ ABGTS trains are inoperable for reasons other than an inoperable ~~fuel building~~ ABSCE boundary (i.e., Condition B), the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in MODE 3 within 6 hours, and in MODE 5 within 36 hours. The Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. ~~]~~ 1 3

Keep with changes marked in black.

~~D.1 and D.2~~

~~When Required Action A.1 cannot be completed within the required Completion Time, during movement of [recently] irradiated fuel assemblies in the fuel~~ auxiliary ~~building, the OPERABLE FBACS~~ ABGTS ~~train must be started immediately or [recently] irradiated fuel movement suspended. This action ensures that the remaining train is OPERABLE, that no undetected failures preventing system operation will occur, and that any active failure will be readily detected.~~ 3 1 3 ~~4~~

~~If the system is not placed in operation, this action requires suspension of [recently] irradiated fuel movement, which precludes a fuel handling accident [involving handling recently irradiated fuel]. This does not preclude the movement of fuel assemblies to a safe position.~~ 3 3

BASES

ACTIONS (continued)

E ~~D~~ ~~E~~.1

When ~~two~~ two trains ~~of the FBACS are~~ ABGTS is are inoperable during movement of ~~[recently]~~ irradiated fuel assemblies in the ~~fuel~~ auxiliary building, action must be taken to place the unit in a condition in which the LCO does not apply. Action must be taken immediately to suspend movement of ~~[recently]~~ irradiated fuel assemblies in the ~~fuel~~ auxiliary building. This does not preclude the movement of fuel to a safe position.

SURVEILLANCE REQUIREMENTS

SR 3.7.~~13~~ 12.1

Standby systems should be checked periodically to ensure that they function properly. As the environmental and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on this system.

3 INSERT 4

~~Monthly heater operation dries out any moisture accumulated in the charcoal from humidity in the ambient air. [Systems with heaters must be operated for ≥10 continuous hours with the heaters energized. Systems without heaters need only be operated for ≥15 minutes to demonstrate the function of the system.] [The 31 day Frequency is based on the known reliability of the equipment and the two train redundancy available.~~

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~

TSTF-522

~~[~~ SR 3.7.~~13~~ 12.2

This SR verifies that the required ~~FBACS~~ ABGTS testing is performed in accordance with the ~~[~~Ventilation Filter Testing Program (VFTP)~~]~~. The ~~[~~VFTP~~]~~ includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the ~~[~~VFTP~~]~~. ~~]~~

TSTF-522

3

INSERT ~~4~~

Operation ~~[~~with heaters on~~]~~ for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that ~~[~~heater failure,~~]~~ blockage, fan or motor failure, or excessive vibration can be detected for corrective action. 3 3

Operation will be demonstrated by initiating, from the control room, flow through the HEPA filter and charcoal adsorber train. 2

BASES

SURVEILLANCE REQUIREMENTS (continued)

[SR 3.7.~~13~~ 12 .3 3 1

This SR verifies that each ~~FBACS~~ ABGTS train starts and operates on an actual or simulated actuation signal. ~~[The [18] month Frequency is consistent with Reference 6.]~~ INSERT ~~6~~ 4 1 4 6

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----~~] 5

SR 3.7.~~13~~ 12 .4 1

This SR verifies the integrity of the ~~fuel~~ auxiliary building enclosure (i.e., spent fuel storage area and the ESF pump rooms). The ability of the ~~fuel~~ auxiliary building to maintain negative pressure with respect to potentially uncontaminated adjacent areas is periodically tested to verify proper function of the ~~FBACS~~ ABGTS. During the ~~[~~post accident~~]~~ mode of operation, the ~~FBACS~~ ABGTS is designed to maintain a slight negative pressure in the ~~fuel~~ auxiliary building, to prevent unfiltered LEAKAGE. The ~~FBACS~~ ABGTS is designed to maintain a ≤ - 0.25 ~~[-0.125]~~ inches water gauge with respect to atmospheric pressure at a flow rate ~~of [20,000]~~ ≥ 8,100 and ≤ 9,900 cfm to the ~~fuel~~ auxiliary building. ~~[The Frequency of [18] months is consistent with the guidance provided in NUREG-0800, Section 6.5.1 (Ref. 7).~~ 2 1 3 3 1 6

~~An [18] month Frequency (on a STAGGERED TEST BASIS) is consistent with Reference 6.~~

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

6

INSERT ~~5~~ 4

The SR is modified by two Notes that specify when verification of ABGTS actuation for each actuation signal is required to be met. ABGTS actuation on a Containment Phase A isolation signal is required to be met in MODES 1, 2, 3 and 4. ABGTS actuation on fuel storage pool area high radiation signal is required to be met during movement of recently irradiated fuel assemblies in the auxiliary building.

Enclosure 2, Volume 12, Rev. 0, Page 480 of 704

Licensee Response/NRC Response/NRC Question Closure

Id	**399**
NRC Question Number	**RPG-001**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation. The change to recently irradiated fuel will be addressed under the AST review, and further questions on this will be included in the AST RAIs**
Question Closure Date	**12/16/2014**
Notification	**Mark Blumberg Scott Bowman Kristy Bucholtz Michelle Conner Robert Elliott Ravinder Grover Khadijah Hemphill Andrew Hon Lynn Mynatt Ray Schiele Roger Scott**
Added By	**Ravinder Grover**
Date Added	**12/16/2014 12:56 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**62**
NRC Question Number	**RPG-002**
Category	**Technical**
ITS Section	**3.9**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**SQN's Current Technical Specifications specify requirements for LCOs 3/4.9.11 "Spent Fuel Pit Water Level,' and 3/4.9.12 'Auxiliary Building Gas Treatment System.' The Staff's review of Enclosure 2, Volume 14 (Revision 0), ITS Section 3.9, 'Refueling Operations,' in SQN's conversion application found no discussion of these LCOs. Please explain.**
Attach File 1	
Attach File 2	
Issue Date	**5/13/2014**
Added By	**Ravinder Grover**
Date Modified	
Modified By	
Date Added	**5/13/2014 3:18 PM**
Notification	**Scott Bowman Michelle Conner Robert Elliott Ravinder Grover Khadijah Hemphill Andrew Hon Ray Schiele**

Licensee Response/NRC Response/NRC Question Closure

Id	**92**
NRC Question Number	**RPG-002**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**In response to RPG-002, with respect to the disposition of CTS 3/4.9.11, "Spent Fuel Pit Water Level," the requirements of CTS 3/4.9.11 (with an Applicability of "Whenever irradiated fuel assemblies are in the spent fuel pit") have been included in ITS 3.7.13, "Spent Fuel Pool Water Level," (with an Applicability of "During movement of irradiated fuel assemblies in the spent fuel pool"). The change in Applicability from "Whenever irradiated fuel assemblies are in the spent fuel pit," to "During movement of irradiated fuel assemblies in the spent fuel pool," is discussed in ITS 3.7.13 discussion of change (DOC) L01.** **With respect to the disposition of CTS 3/4.9.12, "Auxiliary Building Gas Treatment System," the requirements of CTS 3/4.9.12 (with an Applicability of "Whenever irradiated fuel is in the storage pool") have been included with the requirements of CTS 3/4.7.8, "Auxiliary Building Gas Treatment System," (with an Applicability of "MODES 1, 2, 3, and 4") to form ITS 3.7.12, "Auxiliary Building Gas Treatment System," (with an Applicability of "MODES 1, 2, 3, and 4, and During movement of recently irradiated fuel assemblies in the auxiliary building"). The change in Applicability from "Whenever irradiated fuel is in the storage pool," to "During movement of recently irradiated fuel assemblies in the auxiliary building," is discussed in ITS 3.7.12 DOC L06.**
Response Date/Time	**6/4/2014 10:40 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**6/4/2014 9:37 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**271**
NRC Question Number	**RPG-002**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/20/2014**
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Ravinder Grover**
Date Added	**8/20/2014 1:03 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**63**
NRC Question Number	**RPG-003**
Category	**Technical**
ITS Section	**3.9**
ITS Number	**3.9.1**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

SQN Units 1 and 2 Current Technical Specifications (CTS) LCOs 3/4.9.1,"Boron Concentration," 3/4.9.2, "Instrumentation," and 3/4.9.8, "Residual Heat Removal And Coolant Circulation," address limiting conditions for refueling operations. When a requirement of any of these LCOs is not satisfied, one of the REQUIRED ACTIONS is to immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

SQN's proposed changes to these LCOs delete REQUIRED ACTION for CORE ALTERATIONS operations in accordance with Standard Technical Specifications (STS, NUREG-1431, Revision 4). STS incorporated the Staff approved Technical Specification Task Force (TSTF) traveler TSTF-471 Revision 1, "Eliminate Use Of Term Core Alterations In Actions And Notes," which deleted reference to the term Core Alteration from the Specifications.

During a review of certain plant-specific license amendments requesting adoption of TSTF-471 and other related TSTFs, (such as, TSTFs-51 and 286), the Staff identified certain concerns with these TSTF's changes. The NRC staff's concerns relate to core monitoring instrumentation and dose consequences. Specifically, during core alterations (i.e., movement of fuel), there is the potential for operable neutron detectors to become effectively decoupled from the fuel assemblies being monitored. The NRC staff is concerned that the removal of the words CORE ALTERATIONS from

the TS LCO for source range monitors may create a situation where a boron dilution accident, misloaded fuel assembly, or an increase in neutron flux might go undetected. Secondly, the Staff is concerned that a dropped source, fuel assembly, or component (or any other item allowed to be moved by CORE ALTERATIONS) could damage a fuel assembly or break creating a radioactive source term. Additionally, a dropped source, component, or fuel assembly could add reactivity if it is dropped over or in the vicinity of other fuel.

The Staff is currently pursuing with the industry for a resolution to these concerns (for details, please refer to the Staff's letter, dated October 7, 2013, (Agencywide Documents Access and Management System (ADAMS) Accession No ML13246A358). The letter suggested to the industry that licensees should not submit amendments to adopt these three Travelers until a final resolution is achieved.

Therefore, the Staff requests the SQN licensee to withdraw the requested changes associated with TSTFs-51and 471, 'core alterations,' related changes from its conversion since at this time, there is no definite timeframe by which the concerns will be resolved.

Attach File 1	
Attach File 2	
Issue Date	**5/13/2014**
Added By	**Ravinder Grover**
Date Modified	
Modified By	
Date Added	**5/13/2014 3:30 PM**
Notification	**Scott Bowman** **Kristy Bucholtz** **Robert Elliott** **Ravinder Grover** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele** **Carl Schulten**

Licensee Response/NRC Response/NRC Question Closure

Id	**102**
NRC Question Number	**RPG-003**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	

In response to RPG-003, the following information is provided to address the staff's concerns related to removal of the Required Action to suspend CORE ALTERATIONS with an inoperable source range neutron flux monitor:

TSTF-51 removed the Technical Specifications (TS) requirements for certain systems to be OPERABLE from the Improved Standard Technical Specifications (ISTS) after sufficient radioactive decay has occurred to ensure the projected offsite dose from a fuel handling accident will be less than a small fraction of the 10 CFR 100 limit. To support this change in requirements during the handling of irradiated fuel, the OPERABILITY requirements during CORE ALTERATIONS were deleted. TSTF-51 eliminated all uses of the defined term CORE ALTERATIONS from Applicability statements and most uses of CORE ALTERATIONS in Required Actions in the ISTS. However, TSTF-51 did not make changes to NUREG-1431, LCO 3.9.3, "Nuclear Instrumentation."

TSTF-286 replaced the TS Required Action to suspend positive reactivity additions with one inoperable source range neutron flux monitor inoperable with a Required Action to suspend operations that would cause an introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1. This change was necessary to address the fact that during conditions in which these Required Actions may be required, various unit operations such as maintaining RCS inventory and controlling RCS temperature must be continued. These activities necessarily involve additions to the RCS of cooler water (a positive reactivity effect in most cases) and may involve inventory makeup from sources that are at boron concentrations less than RCS concentration. These activities should not be precluded if the worst-case overall effect on the core would still assure SHUTDOWN MARGIN (SDM) (or the required refueling boron concentration) is maintained. Therefore, the proposed changes provide the flexibility necessary to provide for continued safe reactor operations, while also limiting any potential for excess positive reactivity addition. However, TSTF-286 did not remove the NUREG-1431, LCO 3.9.3 Required Action to suspend CORE ALTERATIONS with one inoperable source range neutron flux monitor inoperable.

TSTF-471 replaced the TS 3.9.3 Required Action to suspend CORE ALTERATIONS with one inoperable source range neutron flux monitor inoperable with a Required Action to suspend positive reactivity additions. Since CORE ALTERATIONS only occur when the reactor vessel head is removed, it only applies in MODE 6. For SQN, the only credible accident during MODE 6 is a fuel handling accident (FHA). A FHA is initiated by the dropping of an irradiated fuel assembly, either in the

containment or in the auxiliary building. The suspension of CORE ALTERATIONS, except for the suspension of movement of irradiated fuel, will not prevent or impair the mitigation of a fuel handling accident.

Per UFSAR Section 15.2.4.2, an uncontrolled boron dilution accident is not credible during refueling. ITS 3.9.2, "Unborated Water Source Isolation Valves," requires that while in MODE 6, all isolation valves in a specified combination for reactor makeup water sources containing unborated water that are connected to the RCS must be closed to prevent unplanned boron dilution of the reactor coolant. These valves will block the significant dilution flow paths which could allow unborated makeup to reach the RCS. Therefore, the possibility of an inadvertent boron dilution event occurring in MODE 6 refueling operations is precluded by adherence to LCO 3.9.2 and the availability of source range neutron flux monitors to alert operators to a possible boron dilution event is irrelevant.

With regard to misloaded fuel assemblies, fuel assembly loading errors are prevented by administrative procedures implemented during core loading. To reduce the probability of core loading errors, each fuel assembly is marked with an identification number and loaded in accordance with a core loading diagram. During core loading the identification number will be checked before each assembly is moved into the core. Serial numbers read during fuel movement are subsequently recorded on the loading diagram as a further check on proper placing after the loading is completed. The power distortion due to any combination of misplaced fuel assemblies would significantly raise peaking factors and would be readily observable with in-core flux monitors. In addition to the flux monitors, thermocouples are located at the outlet of about one third of the fuel assemblies in the core. There is a high probability that these thermocouples would also indicate any abnormally high coolant enthalpy rise. In-core flux measurements are taken during the startup subsequent to every refueling operation. To address the possibility of a misloaded fuel assembly, ITS 3.9.3, Required Action A.1 suspends positive reactivity additions if one source range neutron flux monitor is inoperable. This precludes movement of fuel assemblies which could add reactivity to the core.

Lastly, as stated in 10 CFR 50.36(b), "The technical specifications will be derived from the analyses and evaluation included in the safety analysis report, and amendments thereto, submitted pursuant to § 50.34." As discussed above, the suspension of CORE ALTERATIONS with an inoperable source range neutron flux monitor is not based on the analyses in the safety analysis report. Therefore, removal of this Required Action is justified.

Response Date/Time	**6/6/2014 6:40 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**

Date Added	**6/6/2014 5:36 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**272**
NRC Question Number	**RPG-003**
Select Application	**NRC Response**
Attachment 1	
Attachment 2	
Response Statement	**Regarding TVA's proposed changes related to the adoption of TSTFs-51, -286 and -471, in a 8/12/14 meeting between the NRC and TVA at the NRC HQ followed by 8/19/14 phone call between the NRC and TVA, the NRC was informed of the TVA's decision for rescinding all changes associated with the subject TSTFs as currently specified in its TS conversion amendment.** **Please submit the revised pages for the NRC's review.**
Response Date/Time	**8/20/2014 6:00 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Kristy Bucholtz** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott** **Pete Snyder** **Caroline Tilton**
Added By	**Ravinder Grover**
Date Added	**8/20/2014 2:10 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**325**
NRC Question Number	**RPG-003**
Select Application	**NRC Response**
Attachment 1	
Attachment 2	
Response Statement	**Staff's follow-up response to RPG-003:**

On 8/20/2014, the Staff provided the following in response to the licensee's explanation provided in its 6/6/14 response to RAI RPG-003 regarding its proposed deletion of core alteration requirements from its Current Licensing Basis.

> **"Regarding TVA's proposed changes related to the adoption of TSTFs-51, -286 and -471, in a 8/12/14 meeting between the NRC and TVA at the NRC HQ followed by 8/19/14 phone call between the NRC and TVA, the NRC was informed of the TVA's decision for rescinding all changes associated with the subject TSTFs as currently specified in its TS conversion amendment.**
>
> **Please submit the revised pages for the NRC's review."**

As stated in the Staff's RAI-003, the Staff is currently pursuing with the industry for a resolution to these concerns (for details, please refer to the Staff's letter, dated November 7, 2013, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13246A358)). The letter suggested to the industry that licensees should not submit amendments to adopt these three Travelers until a final resolution is achieved.

On 8/25/2014, during a follow-up phone call between the Staff and the licensee, the licensee requested the Staff for additional information on its 6/6/2014 response to RPG-003. Specifically, the licensee asked for feedback as to why their previous response to RPG-003 was not acceptable and therefore, the Staff was requesting that the licensee to remove proposed changes related to TSTFs-51, 286 and 471.

Below please find, the Staff's feedback:

The licensee's assertion that a fuel assembly misloading during refueling is not credible lacks sufficient justification. Fuel assembly misloadings have occurred in the past and absent evidence to the contrary would be expected to occur in the future. The licensee's citing of Startup Physics Testing as a means to detect a core fuel assembly misloading in Mode 6 does not address the Staff's concerns, since that testing isn't done until

Mode 2. Additionally, the licensee's citing of Core Exit Thermal couples as a means to detect a core fuel assembly misloading in Mode 6 doesn't address the Staff's concerns, since they are not operable in Mode 6 and could not be relied upon to detect a misloading in that Mode.

The use of one source range monitor being inoperable and removal of CORE ALTERATIONS by the licensee is of concern in regards to positive reactivity insertions. When one source range monitor is inoperable, and certain, strategically located fuel assemblies are removed; then the other, operable neutron source monitor may no longer be capable of monitoring some fuel assemblies that are located in the far half of the core and detect a positive reactivity insertion. Fuel movement occurs in MODE 6 and can lead to misloading of fuel assemblies. As noted above, the in-core detectors will not be able to detect misloading of fuel assemblies in the reactor core when in MODE 6. The in-core detectors will not detect core misloading until MODE 2 for Startup Physics Testing.

In addition to the misloaded fuel assembly concerns discussed above, the Staff's November 7, 2013, letter (ADAMS Accession No. ML13246A358, referenced in RPG-003) stated that the Staff is concerned that a dropped source, fuel assembly, or component (or any other item allowed to be moved by CORE ALTERATIONS) could damage or break a fuel assembly creating a radioactive source term. If so, the NRC Staff may require an analysis to show that the dose consequences of these scenarios are less limiting than the current fuel handling accident. The licensee's response to RPG-003 does not address such concern.

These generic issues with the TSTFs coupled with the licensee RAI responses regarding one inoperable source range monitor and removal of CORE ALTERATIONS do not address NRC Staff concerns. The licensee has not provided a plant specific basis with analysis to justify the adoption of these TSTFs that would address the generic NRC Staff issues. Therefore, the NRC Staff is concerned that the removal of the words CORE ALTERATIONS from the TS LCO for source range monitors may create a situation where a misloaded fuel assembly or an increase in neutron flux might go undetected. The NRC Staff's preliminary review of this issue indicates that the removal of the words CORE ALTERATIONS may create a situation not consistent with the SRP guidance related to 'redundant alarms,' described in SRP Section 15.4.6.

Therefore, the Staff requests that the amendment should be revised to reflect your current licensing basis for those TS sections affected by your proposed adoption of TSTFs in question. Please submit revised pages for the Staff's review.

Response Date/Time **9/5/2014 6:00 PM**

Closure Statement

Question Closure Date	
Notification	**Mark Blumberg** **Scott Bowman** **Kristy Bucholtz** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Ravinder Grover**
Date Added	**9/5/2014 1:20 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**372**
NRC Question Number	**RPG-003**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**Per discussion, on October 7, 2014, between SQN and NRC staff, SQN proposes that changes incorporated in NUREG-1431, Revision 4, associated with TSTFs-51, -286, and -471 be reviewed as submitted in the SQN ITS conversion submittal. SQN understands, that during staff review, there may be additional requests for information related to the changes made to NUREG-1431, Revision 4.**
Response Date/Time	**10/16/2014 2:10 AM**
Closure Statement	
Question Closure Date	
Notification	**Mark Blumberg Scott Bowman Kristy Bucholtz Michelle Conner Ravinder Grover Khadijah Hemphill Andrew Hon Lynn Mynatt Ray Schiele**
Added By	**Scott Bowman**
Date Added	**10/16/2014 1:11 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**374**
NRC Question Number	**RPG-003**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**10/16/2014**
Notification	**Scott Bowman** **Michelle Conner** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**10/16/2014 1:24 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**106**
NRC Question Number	**RPG-004**
Category	**Technical**
ITS Section	**3.4**
ITS Number	**3.4.5**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	**CTS page 3/4 4-1a; pdf page 137**
NRC Reviewer Supervisor	**Select**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**CTS (page 3/4 4-1a; pdf page 137) LCO 3.4.1.2, "Hot Standby,' states, "At least two of the reactor coolant loops listed below shall be OPERABLE with at least two reactor coolant loops in operation when the Reactor Trip System breakers are closed and at least one reactor coolant loop in operation when the Reactor Trip System breakers are open."** **ITS LCO 3.4.5 states, "[Two] RCS loops shall be OPERABLE and either:** **a. [Two] RCS loops shall be in operation when the Rod Control System is capable of rod withdrawal or** **b. One RCS loop shall be in operation when the Rod Control System is not capable of rod withdrawal.** **Please explain differentiation between the 'and,' 'or,' (as shown in bold) Action statements.**
Attach File 1	
Attach File 2	
Issue Date	**5/29/2014**
Added By	**Ravinder Grover**
Date Modified	
Modified By	

Date Added	**5/29/2014 11:56 AM**
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**141**
NRC Question Number	**RPG-004**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**The choice of the use of "either… or" versus "and" in ITS LCO 3.4.5, as it relates to Rod Control System capability (e.g., Reactor Trip System (RTS) breaker position), does not technically alter the SQN CTS requirements since the plant condition of RTS breakers closed is mutually exclusive from the plant condition of RTS breakers open. Likewise, the plant condition when the Rod Control System is capable of rod withdrawal is mutually exclusive from the plant condition when the Rod Control System is not capable of rod withdrawal. As such, both the CTS and ITS require at least two reactor coolant loops in operation with the RTS breakers closed and both the CTS and the ITS require at least one reactor coolant loop in operation with the RTS breakers open. As indicated in Discussion of Change A01 (page 139 of Enclosure 2, Volume 9), in the conversion of the SQN CTS to the plant specific ITS, certain changes, including wording preferences, editorial changes, and formatting, are made to obtain consistency with NUREG–1431.** **Specifically, CTS LCO 3.4.12 requires two reactor coolant loops to be OPERABLE and includes the preposition "with" followed by a prepositional phrase requiring: a) at least two reactor coolant loops in operation when the RTS breakers are closed; <u>and</u> b) at least one reactor coolant loop in operation when the RTS breakers are open. The conjunction "and" in the CTS case correctly connects the subjects in the prepositional phrase. ITS LCO 3.4.5 also requires two Reactor Coolant System (RCS) loops to be OPERABLE and uses the correlative "either-or" to correctly connect the two parallel sentences. Thus, <u>either</u>: a) Two RCS loops shall be in operation when the Rod Control System is capable of rod withdrawal; <u>or</u> b) One RCS loop shall be in operation when the Rod Control System is not capable of rod withdrawal.**
Response Date/Time	**6/20/2014 2:40 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman**

	Michelle Conner **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**6/20/2014 1:37 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**274**
NRC Question Number	**RPG-004**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/20/2014**
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Ravinder Grover**
Date Added	**8/20/2014 2:27 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**108**
NRC Question Number	**RPG-005**
Category	**Technical**
ITS Section	**3.4**
ITS Number	**3.4.9**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	**page 3/4 4-9, pdf page 272**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

CTS SR 4.4.4.3 (page 3/4 4-9, pdf page 272) requires that the emergency power supply for the pressurizer heaters shall be demonstrated OPERABLE at least once per 18 months by transferring power from the normal to the emergency power supply and energizing the heaters. SQN proposes to delete the SR and explains the deletion as follows:

> **"L01: (Category 5 – Deletion of Surveillance Requirement) CTS 4.4.4.3 requires verification that the emergency power supply for the pressurizer heaters be demonstrated OPERABLE at least once per 18 months by transferring power from the normal to the emergency power supply and energizing the heaters. ISTS SR 3.4.9.3 requires a similar test but does not require the surveillance if pressurizer heater are supplied from a Class 1E power supply. Electrical power to the SQN pressurizer heaters can only be supplied from Class 1E power. This changes the CTS by deleting the Surveillance Requirement to demonstrate OPERABILITY of the pressurizer heater emergency power supply.**
>
> **The purpose of CTS 4.4.4.3 is to verify OPERABILITY of the pressurizer heater emergency power supply. This change is acceptable because the deleted Surveillance Requirement is not necessary to verify the pressurizer heaters used to meet the LCO can perform its required functions. The pressurizer heaters continue to be tested in a manner and at a frequency necessary to give confidence that the pressurizer can perform its assumed safety**

function. Electrical power to the pressurizer heaters is only provided by Class 1E power sources. Therefore, there is no requirement to verify the transfer from a non- Class 1E power supply to a Class 1E power supply. This change is designated as less restrictive because a Surveillance required in CTS will not be required in ITS."

The staff is requesting the licensee to provide the following information:

1. **A single line diagram and description showing the Class 1E power circuits feeding the pressurizer heaters, switchgear numbers, breakers, and emergency diesel generators.**

2. **Are pressurizer heaters credited in Chapter 6 or Chapter 15 events or conditions? Are pressurizer heaters automatically sequenced or manually connected? If it is manually connected, briefly describe how the power supplies are connected to the heater banks. Is there any need for power supply transfer?**

Attach File 1	
Attach File 2	
Issue Date	**5/30/2014**
Added By	**Ravinder Grover**
Date Modified	
Modified By	
Date Added	**5/30/2014 7:25 AM**
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**145**
NRC Question Number	**RPG-005**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 schematics for PZR HTRS.pdf** (2MB)
Attachment 2	
Response Statement	

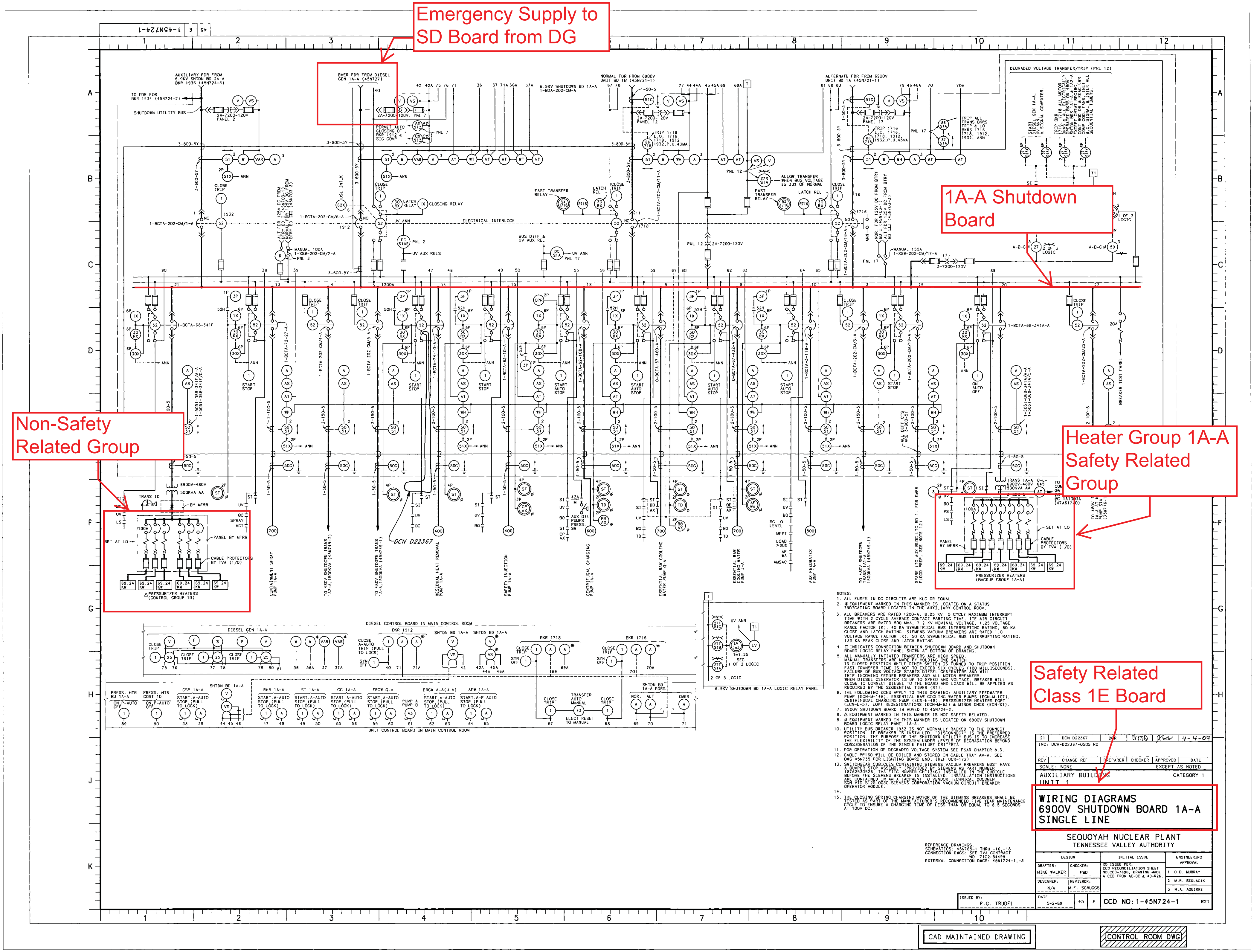
For each unit, there are four groups of pressurizer heaters. All four groups (A, B, C and D) are powered from the Class 1E Safety Related Shutdown Boards. For SQN, Unit 1, groups A and D are supplied by the 1A-A 6.9 kV Shutdown Board and groups B and C are supplied by the 1B-B 6.9 kV Shutdown Board (Unit 2 is similar, groups A and D on 2A-A and groups B and C on 2B-B). Pressurizer heater groups A and B are the only two groups that are considered safety related. During a loss of offsite power event (blackout), the A and B group pressurizer heaters are prevented from being energized by a load sequencing timer until after the emergency diesel generator (DG) has reestablished power to the shutdown board. Pressurizer heater groups C and D will be automatically load shed on the blackout and locked out, preventing them from being reenergized as long as the DG is supplying power to the shutdown board. If a safety injection signal has been initiated, all four groups of pressurizer heaters are automatically de-energized and prevented from being reenergized until the safety injection signal has been manually reset by the operator from the main control room.

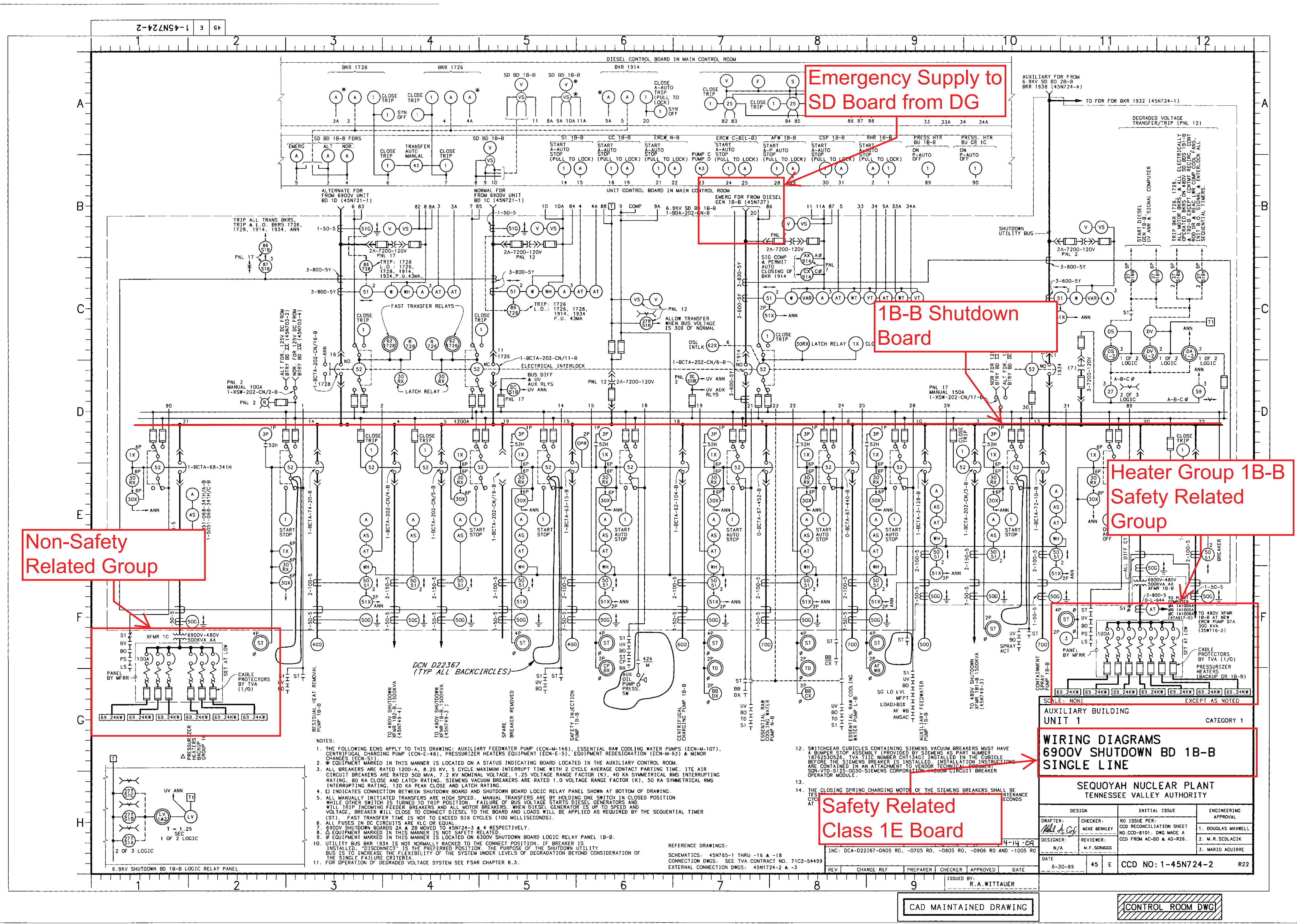
There is no credit taken in the transient or accident analysis for the pressurizer heaters unless it would make the transient or accident more severe. The transients discussed in UFSAR Section 15.2.7, Loss of External Electrical Load and/or Turbine Trip, assume that the pressurizer heaters function because heater operation on a high pressurizer water level would potentially increase the maximum surge rate through the pressurizer safety valves. In all other transient or accident scenarios, it is assumed that the pressurizer heaters do not function.

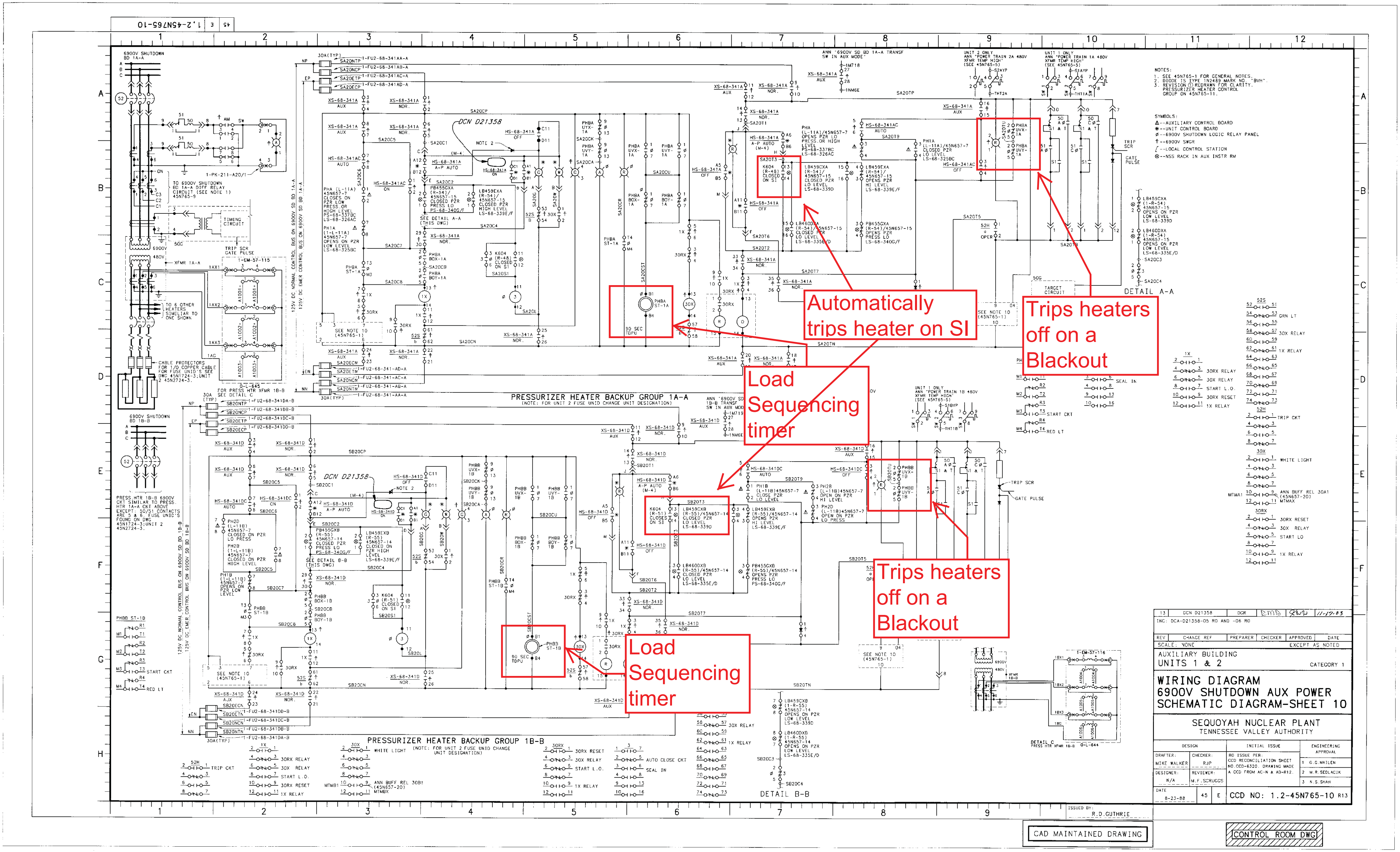
CTS 4.4.4.3 requires the emergency power supply for the pressurizer heaters to be demonstrated OPERABLE by transferring power from the normal to the emergency power supply and energizing the heaters. Therefore, because the heaters are only supplied power by the Class 1E power supply, there is no need to perform and retain CTS 4.4.4.3 (ISTS SR 3.4.9.3).

Attachment 1 contains the single line and schematic drawings showing the power feed and operation of the pressurizer heaters.

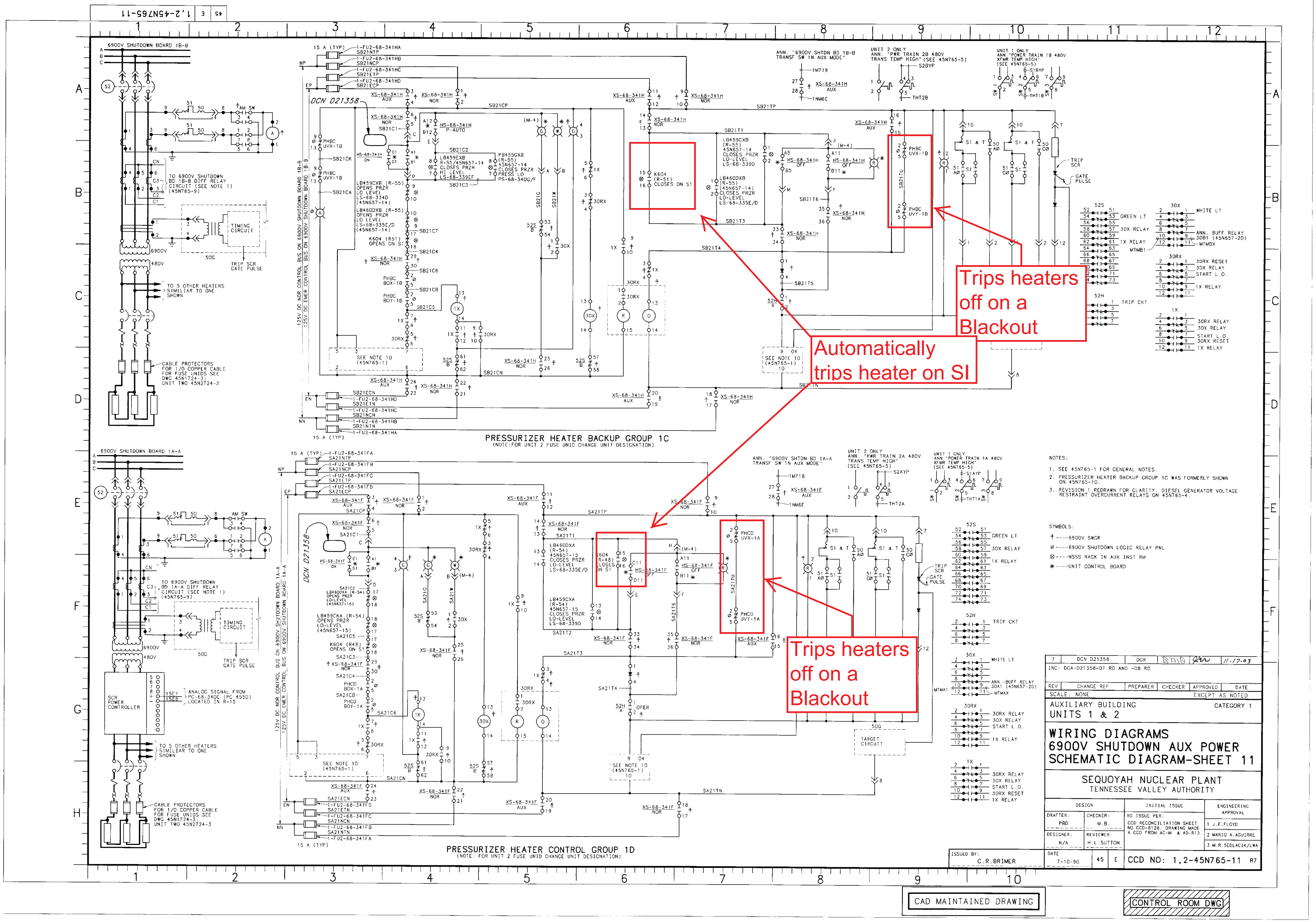
Response Date/Time	**6/23/2014 1:25 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**6/23/2014 12:25 PM**
Date Modified	
Modified By	


Emergency Supply to SD Board from DG
1A-A Shutdown Board
Non-Safety Related Group
Heater Group 1A-A Safety Related Group
Safety Related Class 1E Board
EMER FDR FROM DIESEL GEN 1A-A (45N727)
DIESEL CONTROL BOARD IN MAIN CONTROL ROOM
UNIT CONTROL BOARD IN MAIN CONTROL ROOM
6.9KV SHUTDOWN BD 1A-A LOGIC RELAY PANEL
PRESSURIZER HEATERS (CONTROL GROUP 1D)
PRESSURIZER HEATERS (BACKUP GROUP 1A-A)
WIRING DIAGRAMS
6900V SHUTDOWN BOARD 1A-A
SINGLE LINE
SEQUOYAH NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY
AUXILIARY BUILDING
UNIT 1
CATEGORY 1
CCD NO: 1-45N724-1
R21
ISSUED BY: P.G. TRUDEL
DCN D22367
REFERENCE DRAWINGS: SCHEMATICS: 45N765-1 THRU -16,-18 CONNECTION DWGS: SEE TVA CONTRACT NO. 71C2-54499 EXTERNAL CONNECTION DWGS: 45N1724-1,-3
CAD MAINTAINED DRAWING
CONTROL ROOM DWG


Emergency Supply to SD Board from DG
1B-B Shutdown Board
Heater Group 1B-B Safety Related Group
Non-Safety Related Group
Safety Related Class 1E Board
DIESEL CONTROL BOARD IN MAIN CONTROL ROOM
UNIT CONTROL BOARD IN MAIN CONTROL ROOM
EMERG FDR FROM DIESEL GEN 1B-B (45N727)
ALTERNATE FDR FROM 6900V UNIT BD 1D (45N721-1)
NORMAL FDR FROM 6900V UNIT BD 1C (45N721-1)
AUXILIARY FDR FROM 6.9KV SD BD 2B-B BKR 1938 (45N724-4)
DEGRADED VOLTAGE TRANSFER/TRIP (PNL 12)
FAST TRANSFER RELAYS
LATCH RELAY
DCN D22367 (TYP ALL BACKCIRCLES)
6.9KV SHUTDOWN BD 1B-B LOGIC RELAY PANEL
NOTES:
SCALE: NONE
EXCEPT AS NOTED
AUXILIARY BUILDING
UNIT 1
CATEGORY 1
WIRING DIAGRAMS
6900V SHUTDOWN BD 1B-B
SINGLE LINE
SEQUOYAH NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY
CCD NO: 1-45N724-2
R22
CAD MAINTAINED DRAWING
CONTROL ROOM DWG
1-45N724-2



Trips heaters off on a Blackout
Automatically trips heater on SI
Load Sequencing timer
Trips heaters off on a Blackout
Load Sequencing timer
PRESSURIZER HEATER BACKUP GROUP 1A-A
(NOTE: FOR UNIT 2 FUSE UNID CHANGE UNIT DESIGNATION)
PRESSURIZER HEATER BACKUP GROUP 1B-B
(NOTE: FOR UNIT 2 FUSE UNID CHANGE UNIT DESIGNATION)
DETAIL A-A
DETAIL B-B
DCN D21358
NOTES:
1. SEE 45N765-1 FOR GENERAL NOTES.
2. DIODE IS TYPE 1N2489 MARK NO. "BVH".
3. REVISION ① REDRAWN FOR CLARITY. PRESSURIZER HEATER CONTROL GROUP ON 45N765-11.
SYMBOLS:
△--AUXILIARY CONTROL BOARD
✱--UNIT CONTROL BOARD
⌀--6900V SHUTDOWN LOGIC RELAY PANEL
†--6900V SWGR
⌈--LOCAL CONTROL STATION
⊗--NSS RACK IN AUX INSTR RM
6900V SHUTDOWN BD 1A-A
6900V SHUTDOWN BD 1B-B
125V DC NORMAL CONTROL BUS ON 6900V SD BD 1A-A
125V DC EMER CONTROL BUS ON 6900V SD BD 1A-A
125V DC NORMAL CONTROL BUS ON 6900V SD BD 1B-B
125V DC EMER CONTROL BUS ON 6900V SD BD 1B-B
AUXILIARY BUILDING UNITS 1 & 2
CATEGORY 1
WIRING DIAGRAM
6900V SHUTDOWN AUX POWER
SCHEMATIC DIAGRAM-SHEET 10
SEQUOYAH NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY
SCALE: NONE
EXCEPT AS NOTED
DRAFTER: MIKE WALKER
CHECKER: RJP
DESIGNER: N/A
REVIEWER: M.F.SCRUGGS
DATE 8-23-88
INITIAL ISSUE
ENGINEERING APPROVAL
1 G.G.MAILEN
2 M.R.SEDLACIK
3 N.S.SHAH
CCD NO: 1.2-45N765-10 R13
1.2-45N765-10
ISSUED BY: R.D.GUTHRIE
CAD MAINTAINED DRAWING
CONTROL ROOM DWG



Trips heaters off on a Blackout
Automatically trips heater on SI
Trips heaters off on a Blackout
PRESSURIZER HEATER BACKUP GROUP 1C
(NOTE: FOR UNIT 2 FUSE UNID CHANGE UNIT DESIGNATION)
PRESSURIZER HEATER CONTROL GROUP 1D
(NOTE: FOR UNIT 2 FUSE UNID CHANGE UNIT DESIGNATION)
6900V SHUTDOWN BOARD 1B-B
6900V SHUTDOWN BOARD 1A-A
NOTES:
1. SEE 45N765-1 FOR GENERAL NOTES.
2. PRESSURIZER HEATER BACKUP GROUP 1C WAS FORMERLY SHOWN ON 45N765-10.
3. REVISION 1 REDRAWN FOR CLARITY. DIESEL GENERATOR VOLTAGE RESTRAINT OVERCURRENT RELAYS ON 45N765-4.
SYMBOLS:
----6900V SWGR
----6900V SHUTDOWN LOGIC RELAY PNL
----NSSS RACK IN AUX INST RM
----UNIT CONTROL BOARD
DCN D21358
INC: DCA-D21358-07 RO AND -08 RO
SCALE: NONE
EXCEPT AS NOTED
AUXILIARY BUILDING
UNITS 1 & 2
CATEGORY 1
WIRING DIAGRAMS
6900V SHUTDOWN AUX POWER
SCHEMATIC DIAGRAM-SHEET 11
SEQUOYAH NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY
ISSUED BY: C.R.BRIMER
DATE 7-10-90
CCD NO: 1,2-45N765-11 R7
CAD MAINTAINED DRAWING
CONTROL ROOM DWG

Licensee Response/NRC Response/NRC Question Closure

Id	**347**
NRC Question Number	**RPG-005**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/25/2014**
Notification	**Scott Bowman Michelle Conner Robert Elliott Ravinder Grover Khadijah Hemphill Andrew Hon Lynn Mynatt Ray Schiele Roger Scott**
Added By	**Ravinder Grover**
Date Added	**9/25/2014 7:14 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**111**
NRC Question Number	**RPG-006**
Category	**Technical**
ITS Section	**3.4**
ITS Number	**3.4.12**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	**page 3/4 4-30; pdf page 375**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**ITS SR 3.4.12.1 states, "Verify a maximum of one HPSI pump is capable of injecting into the RCS. CTS SR 4.4.12.2 states, "Verify no safety injection pumps are capable of injecting into the RCS within 4 hours after entering MODE 4 from MODE 3 and prior to the temperature of one or more RCS cold legs decreasing below 325°F." CTS marked-up SR 4.4.12.2 (page 3/4 4-30; pdf page 375) shows both surveillances as 'similar/equivalent'. Similarly, on the same page, CTS marked-up changes for CTS SRs 4.4.12.1.a and 4.4.12.1.c refer to ITS SRs 3.4.12.6 and 3.4.12.5, respectively. These surveillances are not identical. Please explain the basis for concluding that the CTS SRs are similar or identical to the ITS SRs.**
Attach File 1	
Attach File 2	
Issue Date	**5/30/2014**
Added By	**Ravinder Grover**
Date Modified	
Modified By	
Date Added	**5/30/2014 10:18 AM**
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**143**
NRC Question Number	**RPG-006**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	

Response Statement

SQN ITS SR 3.4.12.1 and SR 3.4.12.5 are equivalent to CTS 4.4.12.2 and 4.4.12.1.c, respectively. ITS SR 3.4.12.6 is similar to CTS 4.4.12.1.a, as modified by discussion of change (DOC) M01.

ISTS SR 3.4.12.1 states, "Verify a maximum of [one] [HPI] pump is capable of injecting into the RCS." ISTS SR 3.4.12.1 was modified to ITS SR 3.4.12.1 to state, "Verify no safety injection pumps are capable of injecting into the RCS." (ISTS justification for deviation 4 provides the discussion for the change to ISTS SR 3.4.12.1.) The first Frequency for ITS SR 3.4.12.1 is, "within 4 hours after entering MODE 4 from MODE 3 prior to the temperature of one or more RCS cold legs decreasing below 325°F." This is equivalent to CTS 4.4.12.2, which states in part, "Verify no safety injection pumps are capable of injecting into the RCS within 4 hours after entering MODE 4 from MODE 3 prior to the temperature of one or more RCS cold legs decreasing below 325°F…" Following the initial performance of the SR, both surveillances are required to be performed at a 12 hour Frequency.

ITS SR 3.4.12.5 states, "Verify PORV block valve is open for each required PORV." This is equivalent to CTS 4.4.12.1.c, which states in part, "Verifying the PORV block valve is open for each required PORV…" The Surveillance Frequency for CTS 4.4.12.1.c and ITS SR 3.4.12.5 is 72 hours.

ITS SR 3.4.12.6 states, "Perform a COT on each required PORV, excluding actuation." This is similar to CTS 4.4.12.1.a as modified by DOC M01. CTS 4.4.12.1.a states, in part, "Performance of a CHANNEL FUNCTIONAL TEST*, but excluding valve operation..." DOC M01 discusses the change from a CHANNEL FUNCTIONAL TEST to a CHANNEL OPERATIONAL TEST (COT). Also, the * Note associated with CTS 4.4.12.1.a is equivalent to the Note in ITS SR 3.4.12.6, which states, "Not required to be performed until 12 hours after decreasing RCS cold leg temperatures to ≤ the LTOP arming temperature in the PTLR."

Response Date/Time	**6/20/2014 2:50 PM**
Closure Statement	

Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**6/20/2014 1:47 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**342**
NRC Question Number	**RPG-006**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/22/2014**
Notification	**Scott Bowman Michelle Conner Robert Elliott Ravinder Grover Khadijah Hemphill Andrew Hon Lynn Mynatt Ray Schiele Roger Scott**
Added By	**Ravinder Grover**
Date Added	**9/22/2014 1:43 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**134**
NRC Question Number	**RPG-007**
Category	**Technical**
ITS Section	**3.4**
ITS Number	**3.4.1**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	**pdf page 23**
NRC Reviewer Supervisor	**Select**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

ITS SECTION 3.4, "REACTOR COOLANT SYSTEM (RCS)," RAIs (Ref. ENCLOSURE 2, VOLUME 9

ITS Surveillance Requirement (SR) 3.4.1.4 states, "Verify by precision heat balance that RCS total flow rate is ≥ [284,000] gpm and greater than or equal to the limit specified in the COLR. ITS explains the precision heat balance measurement as follows,

> **"Measurement of RCS total flow rate by performance of a precision calorimetric heat balance allows the installed RCS flow instrumentation to be calibrated and verifies the actual RCS flow rate is greater than or equal to the minimum required RCS flow rate."**

SQN's proposed change on Page 23 in above reference states, "Verify by measurement that RCS total flow rate is ≥ [284,000] gpm and greater than or equal to the limit specified in the COLR. SQN's Justification For Deviation # 6 on page 24 states,

> **"ISTS SR 3.4.1.4 has been changed to reflect current licensing basis. SQN used heat balance RCS flow measurements until the RTD Bypass manifolds were removed, after which problems were experienced due to hot leg streaming. SQN changed licensing basis to allow the measurement of RCS total flow using elbow tap flow differential pressure method."**

The Staff's review of TS amendments 138 and 130 referenced in SQN units 1 and 2 TSs for LCO 3/4.2.5 respectively, did not find the Staff's approval for SQN's licensing basis to allow the measurement of RCS total flow using elbow tap flow differential pressure method.

Please provide additional information regarding the Staff's approval of SQN's licensing basis (e.g., date of issuance and amendment number) for the use of the elbow tap flow differential pressure method.

Attach File 1	
Attach File 2	
Issue Date	**6/3/2014**
Added By	**Ravinder Grover**
Date Modified	
Modified By	
Date Added	**6/3/2014 3:44 PM**
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**196**
NRC Question Number	**RPG-007**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 TS 92-07 from TVA 8-21-92 AccNo. 9208310198.pdf** (2MB)
Attachment 2	**Attachment 2 NRC issued Amendments 221 and 212.pdf** (523KB)
Response Statement	**In response to RAI RPG-007, the following information is being provided regarding the Staff's approval of SQN's licensing basis to allow the use of the elbow tap flow differential pressure method for measuring the reactor coolant system (RCS) total flow.** **By letter dated August 21, 1992 (Accession Number 9208310198), SQN requested a license amendment to increase the allowable value for the RCS loss of coolant reactor trip setpoint. The change was necessary to update the SQN TSs to the latest revision of the Westinghouse Electric Corporation setpoint methodology for SQN (WCAP 11239, Revision 6). The WCAP revised the allowable value based on evaluation of SQN's use of RCS elbow tap differential pressures to determine RCS flow because temperature streaming invalidated the use of primary to secondary calorimetrics. Supplemental letters were sent on September 3, 1993 (Accession Number 9309080173), and March 28, 1996 (Accession Number 9604080368). By letter dated April 26, 1996 (Accession Number 9605010304), the Commission issued Amendments 221 and 212 for SQN, Units 1 and 2, respectively. The Safety Evaluation related to Amendments 221 and 212 acknowledged that, "Flow is measured in each loop by three differential pressure measurements at an elbow tap in each of the four coolant loops."** **Attachment 1 is the initial SQN license amendment request dated August 21, 1992.** **Attachment 2 is the Commission's issuance of Amendments 221 and 212 for SQN, Units 1 and 2.**
Response Date/Time	**7/21/2014 12:05 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Ravinder Grover** **Khadijah Hemphill**

	Andrew Hon **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/21/2014 11:03 AM**
Date Modified	
Modified By	

TVA

August 21, 1992

TVA-SQN-TS-92-07 10 CFR 50.90

U S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

In the Matter of) Docket Nos. 50-327
Tennessee Valley Authority) 50-328

SEQUOYAH NUCLEAR PLANT (SQN) - TECHNICAL SPECIFICATION (TS) CHANGE 92-07, "REACTOR COOLANT SYSTEM (RCS) LOSS OF FLOW REACTOR TRIP SETPOINT ALLOWABLE VALUE INCREASE"

In accordance with 10 CFR 50.90, we are enclosing a requested amendment to Licenses DPR-77 and DPR-79 to change the TSs of SQN Units 1 and 2. The proposed change increases the allowable value for the RCS loss of flow reactor trip setpoint in Table 2.2-1.

The proposed TS change is identified in Enclosure 1. The justification for the proposed TS change is provided in Enclosure 2. A proposed determination of no significant hazards consideration performed pursuant to 10 CFR 50.92 is provided in Enclosure 3.

TVA requests a 30-day implementation period for this TS change following issuance.

Adol 1/1

9208310198 920821
PDR ADOCK 05000327
P PDR

Please direct questions concerning this issue to K. C. Weller at (615) 843-7527

Sincerely,

J. L. Wilson

Sworn to and subscribed before me
this 21st day of August, 1992

Notary Public
My Commission Expires 5-6-96

Enclosures
cc (Enclosures):

Mr. D. E. LaBarge, Project Manager
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Mr. Michael H. Mobley, Director (w/o Enclosures)
Division of Radiological Health
T.E.R.R.A. Building
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Nashville, Tennessee 37203

NRC Resident Inspector
Sequoyah Nuclear Plant
2600 Igou Ferry Road
Soddy Daisy, Tennessee 37379

Mr. B. A Wilson Project Chief
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

ENCLOSURE 1

PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE

SEQUOYAH NUCLEAR PLANT UNITS 1 AND 2

DOCKET NOS. 50-327 AND 50-328

(TVA-SQN-TS-92-07)

LIST OF AFFECTED PAGES

Unit 1

2-5

Unit 2

2-5

9208310199 920821
PDR ADOCK 05000327
P PDR

TABLE 2.2-1

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

TIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
Manual Reactor Trip	Not Applicable	Not Applicable
Power Range, Neutron Flux	Low Setpoint - $\leq$ 25% of RATED THERMAL POWER High Setpoint - $\leq$ 109% of RATED THERMAL POWER	Low Setpoint - $\leq$ 27.4% of RATED THERMAL POWER High Setpoint - $\leq$ 111.4% of RAT THERMAL POWER
Power Range, Neutron Flux, High Positive Rate	$\leq$ 5% of RATED THERMAL POWER with a time constant $\geq$ 2 second	$\leq$ 6.3% of RATED THERMAL POWER with a time constant $\geq$ 2 second
Power Range, Neutron Flux, High Negative Rate	$\leq$ 5% of RATED THERMAL POWER with a time constant $\geq$ 2 second	$\leq$ 6.3% of RATED THERMAL POWER with a time constant $\geq$ 2 second
Intermediate Range, Neutron Flux	$\leq$ 25% of RATED THERMAL POWER	$\leq$ 30% of RATED THERMAL POWER
Source Range, Neutron Flux	$\leq 10^5$ counts per second	$\leq 1.3 \times 10^5$ counts per second
Overtemperature ΔT	See Note 1	See Note 3
Overpower ΔT	See Note 2	See Note 4
Pressurizer Pressure--Low	$\geq$ 1970 psig	$\geq$ 1964.8 psig
Pressurizer Pressure--High	$\leq$ 2385 psig	$\leq$ 2390.2 psig
Pressurizer Water Level--High	$\leq$ 92% of instrument span	$\leq$ 92.7% of instrument span
Loss of Flow	$\geq$ 90% of design flow per loop*	$\geq$ ~~89.4%~~ 89.6% of design flow per loop*

*ign flow is 91,400 gpm per loop.

TABLE 2.2-1

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
1. Manual Reactor Trip	Not Applicable	Not Applicable
2. Power Range, Neutron Flux	Low Setpoint - $\leq$ 25% of RATED THERMAL POWER High Setpoint - $\leq$ 109% of RATED THERMAL POWER	Low Setpoint - $\leq$ 27.4% of RATED THERMAL POWER High Setpoint - $\leq$ 111.4% of RATED THERMAL POWER
3. Power Range, Neutron Flux, High Positive Rate	$\leq$ 5% of RATED THERMAL POWER with a time constant $\geq$ 2 seconds	$\leq$ 6.3% of RATED THERMAL POWER with a time constant $\geq$ 2 seconds
4. Power Range, Neutron Flux, High Negative Rate	$\leq$ 5% of RATED THERMAL POWER with a time constant $\geq$ 2 seconds	$\leq$ 6.3% of RATED THERMAL POWER with a time constant $\geq$ 2 seconds
5. Intermediate Range, Neutron Flux	$\leq$ 25% of RATED THERMAL POWER	$\leq$ 30% of RATED THERMAL POWER
6. Source Range, Neutron Flux	$\leq 10^5$ counts per second	$\leq 1.3 \times 10^5$ counts per second
7. Overtemperature ΔT	See Note 1	See Note 3
8. Overpower ΔT	See Note 2	See Note 4
9. Pressurizer Pressure--Low	$\geq$ 1970 psig	$\geq$ 1964.8 psig
10. Pressurizer Pressure--High	< 2385 psig	$\leq$ 2390.2 psig
11. Pressurizer Water Level--High	$\leq$ 92% of instrument span	$\leq$ 92.7% of instrument span
12. Loss of Flow	$\geq$ 90% of design flow per loop*	$\geq$ ~~89.4%~~ of design flow per loop 89.6%

*Design flow is 91,400 gpm per loop

ENCLOSURE 2

PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE

SEQUOYAH NUCLEAR PLANT UNITS 1 AND 2

DOCKET NOS. 50-327 AND 50-328

(TVA-SQN-TS-92-07)

DESCRIPTION AND JUSTIFICATION FOR
REACTOR COOLANT SYSTEM (RCS)
LOSS OF FLOW REACTOR TRIP SETPOINT ALLOWABLE VALUE INCREASE

Description of Change

TVA proposes to modify the Sequoyah Nuclear Plant (SQN) Units 1 and 2 technical specifications (TSs) to revise the allowable value for the reactor coolant system (RCS) loss of flow reactor trip setpoint from greater than or equal to 89.4 percent to greater than or equal to 89.6 percent. This change affects Functional Unit 12 in TS Table 2.2-1.

Reason for Change

This change is necessary to update the SQN TSs to the latest revision of the Westinghouse Electric Corporation setpoint methodology for SQN (Westinghouse Commercial Atomic Power (WCAP) 11239, Revision 6). This WCAP revised the allowable value based on an evaluation of SQN's use of RCS elbow tap differential pressures to determine RCS flow because temperature streaming has invalidated the use of primary to secondary calorimetrics. This evaluation is documented in Westinghouse Letter TVA-91-349, dated November 6, 1991. The reason for this increase from greater than or equal to 89.4 percent to greater than or equal to 89.6 percent is because of the effect of additional uncertainties in the use of elbow taps on the allowances provided for the loss of flow reactor trip setpoint. No other functions were affected such that the analysis would not support their existing TS values.

Justification for Change

The RCS loss of flow reactor trip protects the core from departure from nucleate boiling. The flow is sensed by three elbow taps in each RCS loop that indicate the status o RCS flow. The basic function of the elbow taps is to provide information as to whether or not a reduction in RCS flow has occurred. Detection of low flow by two of the three comparators for a loop would indicate a low flow in that loop. This reactor trip is blocked below Permissive P-7 (10 percent reactor power) to allow for unit start-up. One loop detecting a low flow condition is required to trip the reactor above Permissive P-8 (35 percent reactor power) and two loops are required between Permissives P-7 and P-8.

The previous evaluations of the allowances for the loss of flow reactor trip normalized the uncertainties associated with RCS elbow tap calibration, pressure effects and temperature effects to a value of 0.0 percent flow span based on the use of primary to secondary calorimetrics. The impact of RCS hot and cold leg temperature streaming has resulted in inability to use the calorimetrics to accurately calculate the RCS flow. Therefore, the normalization of the elbow tap uncertainties can no longer be applied and Westinghouse has included a $\pm$0.3 percent flow span allowance for each of the items discussed above. This increase in the allowances has resulted in an increase in the channel statistical allowance from 2.3 percent span to 2.5 percent span. This correlates to the increase in the loss of flow reactor trip setpoint allowable value from greater than or equal to 89.4 percent to greater than or equal to 89.6 percent when applied to the Westinghouse setpoint methodology. The setpoint value was not impacted by this increase in the allowances.

This change in the allowable value is in the conservative direction and provides the requirements to maintain instrumentation in the proper configuration to support the assumptions used in SQN's accident analysis. No other changes are required for the loss of flow reactor trip setpoint or any other safety-related functions as a result of the elbow tap measurement of RCS flow. This change does not adversely affect nuclear safety, but does provide a conservative increase in the RCS loss of flow reactor trip setpoint allowable value to be consistent with the SQN accident analysis.

SQN's present method for calibrating the loss of flow reactor trip setpoint utilizes actual RCS flow measurements during initial unit start-up to determine the greater than or equal to 90 percent trip setpoint and the greater than or equal to 89.4 percent allowable value. This RCS flow value is at least 3.5 percent greater than design flow as required by SQN TS 3.2.5. Since the TS trip and allowable value setpoints are based on design flow SQN's calibration method has a built-in 3.5 percent conservative margin plus any additional flow above the TS limit measured during the initial unit start-up. Therefore, the actual trip setpoint is presently set at greater than or equal to 93.5 percent and the allowable value at greater than or equal to 92.9 percent of design flow plus any flow that was measured above the TS 3.2.5 requirement. This extra conservatism ensures that this 0.2 percent increase in the allowable value to greater than or equal to 89.6 percent has not created an operability or nuclear safety concern based on SQN's present calibration of this function and therefore this change to the SQN TSs can be pursued on a normal processing basis.

Environmental Impact Evaluation

The proposed change request does not involve an unreviewed environmental question because operation of SQN Units 1 and 2 in accordance with this change would not:

1. Result in a significant increase in any adverse environmental impact previously evaluated in the Final Environmental Statement (FES) as modified by the staff's testimony to the Atomic Safety and Licensing Board, supplements to the FES, environmental impact appraisals, or decisions of the Atomic Safety and Licensing Board.

2. Result in a significant change in effluents or power levels.

3. Result in matters not previously reviewed in the licensing basis for SQN that may have a significant environmental impact.

Enclosure 3

PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE

SEQUOYAH NUCLEAR PLANT UNITS 1 AND 2

DOCKET NOS. 50-327 AND 50-328

(TVA-SQN-TS-92-07)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

Significant Hazards Evaluation

TVA has evaluated the proposed technical specification (TS) change and has determined that it does not represent a significant hazards consideration based on criteria established in 10 CFR 50.92(c). Operation of Sequoyah Nuclear Plant (SQN) in accordance with the proposed amendment will not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated.

   This change to increase the reactor coolant system (RCS) loss of flow reactor trip allowable value from greater than or equal to 89.4 percent to greater than or equal to 89.6 percent does not alter the functions of any safety-related equipment. The change implements a more conservative allowable value that is consistent with the latest assumptions for SQN's accident analysis. This new value provides for reactor trip initiation consistent with SQN's previous analysis with the additional consideration of RCS flow measurement uncertainties for elbow taps without the normalization from a primary to secondary calorimetric. Therefore, accident mitigation functions remain consistent with the analysis and there is not an increase in the consequences of an accident. Likewise, the increase in this allowable value will not increase the probability of an accident because this function provides accident mitigation actions and is not considered the source of any accident.

2. Create the possibility of a new or different kind of accident from any previously analyzed.

   As discussed above, the RCS loss of flow reactor trip function provides an accident mitigation function and is not an initiator of any accident. Therefore, the increase in the allowable value for this function will not create a new or different kind of accident previously analyzed, but does implement a more conservative value that is consistent with the accident analysis.

3. Involve a significant reduction in a margin of safety.

   This change implements a conservative increase in the loss of flow allowable value to maintain the margin of safety. This increase is being implemented to offset the potential decrease in margin created by using the elbow taps to determine RCS flow. Therefore, this change does not reduce any margin of safety and provides conservative values that will maintain the margin of safety within the SQN accident analysis assumptions.

Mr. Oliver D. Kingsley, Jr.
President, TVA Nuclear and
Chief Nuclear Officer
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

April 26, 1996

SUBJECT: ISSUANCE OF TECHNICAL SPECIFICATION AMENDMENTS FOR THE SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2 (TAC NOS. M84390 AND M84391) (TS 92-07)

Dear Mr. Kingsley:

The Commission has issued the enclosed Amendment No. 221 to Facility Operating License No. DPR-77 and Amendment No. 212 to Facility Operating License No. DPR-79 for the Sequoyah Nuclear Plant, Units 1 and 2, respectively. These amendments are in response to your application dated August 21, 1992, which was supplemented by letters dated September 3, 1993, and March 28, 1996.

The amendments revise the allowable value for the reactor coolant system loss of flow reactor trip setpoint from greater than or equal to 89.4 percent to greater than or equal to 89.6 percent.

As explained in the safety evaluation, we request that TVA inform the staff if the value of any of the elbow tap flow correlation coefficients is changed.

A copy of the Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

Original signed by
David E. LaBarge, Sr. Project Manager
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-327 and 50-328

Enclosures:
1. Amendment No. 221 to License No. DPR-77
2. Amendment No. 212 to License No. DPR-79
3. Safety Evaluation

cc w/enclosures: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-327

SEQUOYAH NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 221
License No. DPR-77

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Tennessee Valley Authority (the licensee) dated August 21, 1992, which was supplemented September 3, 1993, and March 28, 1996, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

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2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-77 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 221, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance, to be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Frederick J. Hebdon

Frederick J. Hebdon, Director
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: April 26, 1996

cc:
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Mr. William E. Holland
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Mr. Michael H. Mobley, Director
Division of Radiological Health
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Nashville, TN 37243-1532

County Judge
Hamilton County Courthouse
Chattanooga, TN 37402-2801

ATTACHMENT TO LICENSE AMENDMENT NO. 221

FACILITY OPERATING LICENSE NO. DPR-77

DOCKET NO. 50-327

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change.

REMOVE	INSERT
2-5	2-5

TABLE 2.2-1

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES	
1. Manual Reactor Trip	Not Applicable	Not Applicable	
2. Power Range, Neutron Flux	Low Setpoint - ≤ 25% of RATED THERMAL POWER	Low Setpoint - ≤ 27.4% of RATED THERMAL POWER	R145
	High Setpoint - ≤ 109% of RATED THERMAL POWER	High Setpoint - ≤ 111.4% of RATED THERMAL POWER	R145
3. Power Range, Neutron Flux, High Positive Rate	≤ 5% of RATED THERMAL POWER with a time constant ≥ 2 second	≤ 6.3% of RATED THERMAL POWER with a time constant ≥ 2 second	
4. Power Range, Neutron Flux, High Negative Rate	≤ 5% of RATED THERMAL POWER with a time constant ≥ 2 second	≤ 6.3% of RATED THERMAL POWER with a time constant ≥ 2 second	
5. Intermediate Range, Neutron Flux	≤ 25% of RATED THERMAL POWER	≤ 45.20% of RATED THERMAL POWER	R189
6. Source Range, Neutron Flux	≤ 10^5 counts per second	≤ 1.45×10^5 counts per second	R189
7. Overtemperature ΔT	See Note 1	See Note 3	
8. Overpower ΔT	See Note 2	See Note 4	
9. Pressurizer Pressure--Low	≥ 1970 psig	≥ 1964.8 psig	
10. Pressurizer Pressure--High	≤ 2385 psig	≤ 2390.2 psig	R145
11. Pressurizer Water Level--High	≤ 92% of instrument span	≤ 92.7% of instrument span	
12. Loss of Flow	≥ 90% of design flow per loop*	≥ 89.6% of design flow per loop*	

*Design flow is 91,400 gpm per loop.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-328

SEQUOYAH NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 212
License No. DPR-79

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Tennessee Valley Authority (the licensee) dated August 21, 1992, which was supplemented September 3, 1993, and March 28, 1996, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-79 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No.212 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance, to be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Frederick J. Hebdon

Frederick J. Hebdon, Director
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: April 26, 1996

ATTACHMENT TO LICENSE AMENDMENT NO. 212

FACILITY OPERATING LICENSE NO. DPR-79

DOCKET NO. 50-328

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change.

REMOVE	INSERT
2-5	2-5

TABLE 2.2-1

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES	
1. Manual Reactor Trip	Not Applicable	Not Applicable	
2. Power Range, Neutron Flux	Low Setpoint - ≤ 25% of RATED THERMAL POWER	Low Setpoint - ≤ 27.4% of RATED THERMAL POWER	R132
	High Setpoint - ≤ 109% of RATED THERMAL POWER	High Setpoint - ≤ 111.4% of RATED THERMAL POWER	R132
3. Power Range, Neutron Flux, High Positive Rate	≤ 5% of RATED THERMAL POWER with a time constant ≥ 2 seconds	≤ 6.3% of RATED THERMAL POWER with a time constant ≥ 2 seconds	R36
4. Power Range, Neutron Flux, High Negative Rate	≤ 5% of RATED THERMAL POWER with a time constant ≥ 2 seconds	≤ 6.3% of RATED THERMAL POWER with a time constant ≥ 2 seconds	R3
5. Intermediate Range, Neutron Flux	≤ 25% of RATED THERMAL POWER	≤ 45.20% of RATED THERMAL POWER	R177
6. Source Range, Neutron Flux	≤ 10^5 counts per second	≤ 1.45 x 10^5 counts per second	R177
7. Overtemperature ΔT	See Note 1	See Note 3	
8. Overpower ΔT	See Note 2	See Note 4	R132
9. Pressurizer Pressure--Low	≥ 1970 psig	≥ 1964.8 psig	
10. Pressurizer Pressure--High	≤ 2385 psig	≤ 2390.2 psig	
11. Pressurizer Water Level--High	≤ 92% of instrument span	≤ 92.7% of instrument span	R203
12. Loss of Flow	≥ 90% of design flow per loop*	≥ 89.6% of design flow per loop*	

*Design flow is 91,400 gpm per loop.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 221 TO FACILITY OPERATING LICENSE NO. DPR-77

AND AMENDMENT NO. 212 TO FACILITY OPERATING LICENSE NO. DPR-79

TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-327 AND 50-328

1.0 INTRODUCTION

By application dated August 21, 1992, which was supplemented by letters dated September 3, 1993, and March 28, 1996, the Tennessee Valley Authority (the licensee) proposed amendments to the Technical Specifications (TS) for Sequoyah Nuclear Plant (SQN) Units 1 and 2. The requested changes would revise the allowable value for the reactor coolant system (RCS) loss of flow reactor trip setpoint from greater than or equal to 89.4 percent to greater than or equal to 89.6 percent. The proposed change would affect TS Table 2.2-1.

The supplements supplied additional information that did not affect the previous no significant hazards consideration.

2.0 EVALUATION

The function of the RCS loss of flow reactor trip is to protect the core from departure from nucleate boiling should coolant flow be lost and to provide protection against loss of flow conditions that affect only one reactor coolant loop. Flow is measured in each loop by three differential pressure measurements at an elbow tap in each of the four coolant loops. A reactor trip signal would be generated should two of the three flow instruments (two-of-three coincidence circuit) in a loop detect a low flow condition in that loop. This reactor trip signal is blocked below Permissive P-7 (10 percent power) to allow for plant startup. Above this power level, up to Permissive P-8 (35 percent power), two of the four loops detecting low flow would cause a reactor trip. Above P-8, detection of low flow in any loop will cause a reactor trip.

The minimum RCS low flow setpoint presently specified in the TS is 89.4 percent of design flow. Therefore, if two out of the three coolant flow instruments in any loop detect that flow has decreased from full flow to 89.4 percent, a reactor trip will occur unless the trip is blocked.

ENCLOSURE 3

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The TS require that the setpoint be equal to or greater than 89.4 percent of design flow. The licensee has requested that this setpoint be changed to 89.6 percent in order to update the TS to the latest revision of the Westinghouse Electric Corporation setpoint methodology. This methodology incorporates the effects of additional uncertainties from using elbow taps on the allowances used to determine the loss of flow setpoint. This evaluation is described in Westinghouse Letter TVA-91-349 dated November 6, 1991. Previously, the evaluation that determined the allowances for the loss of flow reactor trip setpoint normalized the uncertainties associated with RCS elbow tap sensor calibration accuracy, measurement and test equipment accuracy, sensor pressure effects, and sensor temperature effects, to a value of 0.0 percent of flow instrument span, based on the use of primary to secondary calorimetrics. However, hot and cold leg temperature streaming phenomena has invalidated the use of primary to secondary calorimetrics to accurately calculate RCS flow.

In their letter dated March 28, 1996, the licensee described the methodology currently being used to determine the RCS loss of flow reactor trip setpoint. The licensee indicated that flow correlation coefficients, or K values, are used to calculate the RCS flow rate from the equation $Q=K(\Delta P)^{0.5}$. The licensee determined the K values for each elbow tap in each loop based on the initial baseline Cycle 1 calorimetric flow rate. The K values for the three elbows taps in each of the four loops for Units 1 and 2 are provided in Tables 1 and 2, respectively. These K values are used to determine the full scale span of the flow instrument loop and, hence, the RCS loss of flow setpoint. It is requested that the licensee inform the staff if these elbow tap coefficients are changed.

Since normalization of the elbow tap uncertainties can no longer be applied, a ±0.3 percent flow span allowance is applied to each of the sensor effects indicated above. The change to the individual allowances has resulted in an increase in the channel statistical allowance from 2.3 percent to 2.5 percent, which correlates to an increase in the loss of flow reactor trip setpoint allowable value from 89.4 percent to 89.6 percent.

This change in the allowable value would be in the conservative direction (i.e., the setpoint would be closer to actual RCS flow). Therefore, the proposed change does not adversely affect nuclear safety, but would result in a conservative increase in the RCS loss of flow reactor trip setpoint allowable value that is consistent with the SQN accident analysis. The licensee has determined that no other changes are required for the setpoint change, nor are any other safety-related functions affected as a result of the elbow tap measurement of RCS flow. Based on this analysis, the staff has determined that the proposed change is acceptable.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Tennessee State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (57 FR 45090). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Attachment: Tables 1 & 2

Principal Contributors: J. Ganiere, H. Balukjian, D. LaBarge

Dated: April 26, 1996

TABLE 1
UNIT 1
ELBOW TAP FULL SCALE ΔP SPAN

1-FT-68-	MMI TEST POINT	FLOW COEFFICIENT (K)	DESCRIPTION	FULL SCALE ΔP ("H_2O)
6A	F-414	5679.10	Loop 1 RCS Flow	335.74
6B	F-415	5590.30	Loop 1 RCS Flow	346.50
6D	F-416	5545.83	Loop 1 RCS Flow	352.07
29A	F-424	5626.24	Loop 2 RCS Flow	342.08
29B	F-425	5505.13	Loop 2 RCS Flow	357.30
29D	F-426	5333.06	Loop 2 RCS Flow	380.73
48A	F-434	5493.91	Loop 3 RCS Flow	358.76
48B	F-435	5493.04	Loop 3 RCS Flow	358.87
48D	F-436	5459.96	Loop 3 RCS Flow	363.24
71A	F-444	5117.16	Loop 4 RCS Flow	413.53
71B	F-445	5668.62	Loop 4 RCS Flow	336.99
71D	F-446	5582.65	Loop 4 RCS Flow	347.45

TABLE 2
UNIT 2
ELBOW TAP FULL SCALE ΔP SPAN

2-FT-68-	MMI TEST POINT	FLOW COEFFICIENT (K)	DESCRIPTION	FULL SCALE ΔP ("H_2O)
6A	F-414	5486.40	Loop 1 RCS Flow	359.74
6B	F-415	5357.52	Loop 1 RCS Flow	377.26
6D	F-416	5424.51	Loop 1 RCS Flow	368.00
29A	F-424	5317.59	Loop 2 RCS Flow	382.95
29B	F-425	5201.25	Loop 2 RCS Flow	400.27
29D	F-426	5409.51	Loop 2 RCS Flow	370.04
48A	F-434	5623.24	Loop 3 RCS Flow	342.45
48B	F-435	5422.28	Loop 3 RCS Flow	368.30
48D	F-436	5236.38	Loop 3 RCS Flow	394.92
71A	F-444	5417.06	Loop 4 RCS Flow	369.01
71B	F-445	5421.93	Loop 4 RCS Flow	368.35
71D	F-446	5591.30	Loop 4 RCS Flow	346.37

Attachment

Licensee Response/NRC Response/NRC Question Closure

Id	**275**
NRC Question Number	**RPG-007**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/20/2014**
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Ravinder Grover**
Date Added	**8/20/2014 3:27 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**148**
NRC Question Number	**RPG-008**
Category	**Technical**
ITS Section	**3.9**
ITS Number	**3.9.3**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	**Enclosure 2, Volume 14, Revision 0, (pdf page 99 of 236)**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	

Page B 3.9.3-5 of ITS Bases for LCO 3.9.3, "Nuclear Instrumentation," provides a listing of references which are relevant to the LCO's Conditions and Surveillance requirements. One of the references concerns applicability of the 10 CFR 50, Appendix A, GDC 13, GDC 26, GDC 28, and GDC 29 requirements. SQN's LCO Bases mark-up in Enclosure 2, Volume 14, Revision 0, (pdf page 99 of 236) replaces the reference to these specific GDCs with a reference to UFSAR Chapter 7.1.2, titled as, 'Identification of Safety Criteria.' The licensee's Justification For Deviations #2 on page 100 explains the deletion as follows:

> **"Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description."**

A Staff's review of UFSAR Chapter 7.1.2 reveals that the Chapter contains a general listing of design criteria, which do not relate directly to the LCO's requirements, whereas a specific listing of GDCs referenced in the ITS LCO Bases, address certain requirements which are relevant to an explicit LCO's Conditions and Surveillance requirements. The NRC Staff as well as the Regions use such LCO-specific references as one of the tools to ensure that TS specified Systems, Structures and Components are operable per the stated requirements in the references.

The Staff's review has also found similar mark-ups in other TS Bases

sections. Please review the submittal whether the change(s) is consistent with CTS Bases or negate deletion of specific 10 CFR related references.

Attach File 1	
Attach File 2	
Issue Date	**6/16/2014**
Added By	**Ravinder Grover**
Date Modified	
Modified By	
Date Added	**6/16/2014 2:02 PM**
Notification	**Scott Bowman Michelle Conner Robert Elliott Ravinder Grover Matthew Hamm Khadijah Hemphill Andrew Hon Lynn Mynatt Ray Schiele Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**240**
NRC Question Number	**RPG-008**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 Draft Response to RAI RPG-008.pdf** (2MB)
Attachment 2	
Response Statement	

In response to RAI RPG-008, the References Section of ITS 3.9.3 Bases markup will be revised from including UFSAR Section 7.1.2, to including 10 CFR 50, Appendix A, General Design Criteria (GDC) 13, 26, 28 and 29, as specified in the ISTS (pages 93 and 99 of Enclosure 2, Volume 14).

Additional instances of 10 CFR related references being deleted or replaced with other references in the ISTS Bases markups occur in the following Bases Sections:

- **ISTS 3.4.14 Bases markup, Reference 8 (10 CFR 50.55a(g)) – The only place within the ISTS 3.4.14 Bases markup that this reference is used is in the discussion of the basis for the 18 month Frequency associated with the performance of SR 3.4.14.1. This discussion is being moved to the Surveillance Frequency Control Program as part of the adoption of TSTF-425, as discussed in JFD 6.**

- **ISTS 3.4.16 Bases markup, second Reference 1 of Insert 8 (TSTF-490) – As stated in the Reviewer's Note of TSTF-490, Insert 8, the first listed References 1 and 2 are for plants that are licensed to 10 CFR 100.11. The second listed References 1 and 2 are for plants that are licensed to 10 CFR 50.67. The RCS specific activity limits are established to minimize the dose consequences in the event of a steam line break (SLB) or steam generator tube rupture (SGTR) event. SQN is licensed to 10 CFR 50.67 only for a fuel handling accident. Therefore, SQN has adopted the first listed References 1 and 2 to reflect the license basis use of the 10 CFR 100.11 dose limits for SLB and SGTR. This results in a deletion of the second listed References 1 and 2.**

- **ISTS 3.6.6C (ITS 3.6.6) Bases markup, Reference 1 – Reference 1 lists several GDCs to which the Containment Spray System is designed. ISTS 3.6.6C Bases assume that the Containment Spray System includes a Spray Additive System that injects sodium hydroxide solution into the spray to adjust the pH of the water to scavenge iodine fission products from the containment atmosphere and ensure their retention in the containment sump water. However, as discussed in JFD 3, SQN design does not include a Spray Additive System. Therefore, the GDCs (41, 42, and 43) that are associated with containment atmosphere cleanup have not been retained in Reference 1.**

- **ISTS 3.6.10 (ITS 3.6.8) Bases markup, Reference 2 – Reference 2 (10 CFR 50, Appendix A, GDC 41) appears in ISTS Bases 3.6.10 Background Section as a part of the discussion regarding the regulatory basis for requiring the**

Hydrogen Ignition System (Hydrogen Mitigation System). However, as discussed in SQN UFSAR Section 3.1, regarding compliance with GDC 41, "Containment Atmosphere Cleanup," the systems relied upon for compliance with GDC 41 are the Emergency Gas Treatment System, Auxiliary Building Gas Treatment System, and the Air Return Fan System. Therefore, the discussion of GDC 41 has been removed from the discussion in the Background Section of the Hydrogen Mitigation System Bases, as indicated in the ISTS 3.6.10 Bases markup.

- **ISTS 3.7.15 (ITS 3.7.13) Bases markup, Reference 5 – Reference 5 (10 CFR 100.11) is provided in the ISTS 3.7.15 Bases Applicable Safety Analyses Section to indicate that doses at the exclusion area boundary, as the result of a fuel handling accident, are within the licensed dose limits. Because SQN has been approved for selective use of the alternate source term dose limits of 10 CFR 50.67 for a fuel handling accident, Reference 5 has been changed from 10 CFR 100.11 to 10 CFR 50.67.**

- **ISTS 3.9.7 Bases markup, Reference 4 (ITS 3.9.7 Reference 3) – Reference 4 (10 CFR 100.11) is provided in the ISTS 3.9.7 Bases Applicable Safety Analyses Section to indicate that offsite doses, as the result of a fuel handling accident, are within the licensed dose limits. Because SQN has been approved for selective use of the alternate source term dose limits of 10 CFR 50.67 for a fuel handling accident, Reference 4 has been changed from 10 CFR 100.11 to 10 CFR 50.67.**

See Attachment 1 for the draft ITS 3.9.3 Bases changes discussed above.

Response Date/Time	**8/5/2014 9:20 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**8/5/2014 8:18 AM**
Date Modified	
Modified By	

10 CFR 50, Appendix A, GDC 13, GDC 26, GDC 28, and GDC 29.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----~~ ~~]~~ 1

REFERENCES

1. ~~10 CFR 50, Appendix A, GDC 13, GDC 26, GDC 28, and GDC 29~~. ~~2~~

~~UFSAR, Section 7.1.2~~

U

2. FSAR, Section ~~[~~15.2.4~~]~~. 3 2

3. UFSAR, Section 15.3.3 2

10 CFR 50, Appendix A, GDC 13, GDC 26, GDC 28, and GDC 29.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-------REVIEWER'S NOTE-------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-------]~~ 1

REFERENCES

1. ~~10 CFR 50, Appendix A, GDC 13, GDC 26, GDC 28, and GDC 29.~~ ~~2~~ ~~UFSAR, Section 7.1.2~~ 3 2

U

2. FSAR, Section ~~[~~15.2.4~~]~~.

3. UFSAR, Section 15.3.3 2

Licensee Response/NRC Response/NRC Question Closure

Id	**280**
NRC Question Number	**RPG-008**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/21/2014**
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Ravinder Grover**
Date Added	**8/21/2014 1:22 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**149**
NRC Question Number	**RPG-009**
Category	**Technical**
ITS Section	**3.9**
ITS Number	**3.9.1**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	**Enclosure 2, Volume 14, Revision 0, Page B 3.9.1-2; (pdf page 29 of 236),**
NRC Reviewer Supervisor	**Select**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

ITS Bases for LCO 3.9.1, "Boron Concentration,' states,

> **During refueling operations, the reactivity condition of the core is SAFETY consistent with the initial conditions assumed for the boron dilution ANALYSES accident in the accident analysis and is conservative for MODE 6. The boron concentration limit specified in the COLR is based on the core reactivity at the beginning of each fuel cycle (the end of refueling) and includes an uncertainty allowance.**

SQN's mark-up in Enclosure 2, Volume 14, Revision 0, Page B 3.9.1-2; (pdf page 29 of 236), for LCO 3.9.3 1 Bases replaces the first sentence (shown in bold above) with the following insert:

> **'An uncontrolled boron dilution accident is not credible during refueling. This accident is prevented by administrative controls which isolate the RCS from significant sources of unborated water.'**

The licensee's Justification For Deviations #2 on page 38 explains the proposed change as follows:

> **"Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description."**

The staff's review of UFSAR Chapter 15.2.4.determined that Boron dilution during refueling, startup, and power operation are considered in the licensee's analysis for the Uncontrolled Boron Dilution. The purpose of the Technical Specification Bases is to explain the reasons for the TS requirements. The licensee's proposed change to the Bases appears to conflict with the accident analysis in the CLB, and appears to imply, without any supporting technical basis, that the LCO doesn't apply during refueling. However, the LCO does apply during refueling mode, so please correct the proposed Bases to correctly reflect the CLB and associated TS requirements, or explain the basis for stating that an uncontrolled boron dilution accident is not credible during refueling.

Attach File 1	
Attach File 2	
Issue Date	**6/16/2014**
Added By	**Ravinder Grover**
Date Modified	
Modified By	
Date Added	**6/16/2014 2:06 PM**
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**197**
NRC Question Number	**RPG-009**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**SQN UFSAR Section 15.2.4.2 states, "An uncontrolled boron dilution accident is not credible during refueling. This accident is prevented by administrative controls which isolate the RCS from significant sources of unborated water." The requirements of ITS 3.9.1, "Boron Concentration," are applicable during MODE 6 (Refueling) to ensure adequate boron concentration exists in the reactor coolant system (and the connected refueling canal and refueling cavity) in order to maintain an overall core reactivity of $k_{eff} \leq 0.95$. The ISTS 3.9.1 Bases, as submitted in the ITS Conversion license amendment request, have been marked up to reflect that a boron dilution event is not credible during refueling, as stated in UFSAR Section 15.2.4.2.**
Response Date/Time	**7/21/2014 12:10 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman Michelle Conner Ravinder Grover Khadijah Hemphill Andrew Hon Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/21/2014 11:08 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**281**
NRC Question Number	**RPG-009**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/21/2014**
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Ravinder Grover**
Date Added	**8/21/2014 2:11 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**150**
NRC Question Number	**RPG-010**
Category	**Technical**
ITS Section	**3.9**
ITS Number	**3.9.1**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	**Enclosure 2, Volume 14, Revision 0, Page B 3.9.1-2; (pdf page 29 of 236),**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

Page B 3.9.1-2 of ITS Bases for LCO 3.9.1, "Boron Concentration,' states,

> **'The limiting boron dilution accident analyzed occurs in MODE 5 (Ref. 2). A detailed discussion of this event is provided in Bases B 3.1.1, "SHUTDOWN MARGIN (SDM)."'**

SQN's mark-up in Enclosure 2, Volume 14, Revision 0, Page B 3.9.1-2; (pdf page 29 of 236), for LCO 3.9.3 1 Bases replaces the word, 'MODE 5,' with 'during startup,' in the above sentence.

The licensee's Justification For Deviations (JFD) #2 on pdf page 38 explains the deviation as follows:

> **"Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description."**

The SQN's UFSAR Section 15.2.4 discusses the Boron Dilution Accident analysis for the plant operational modes of refueling, startup, and power operations. LCO 3.9.1 mode of applicability is in Mode 6, 'Refueling.' Please provide basis for stating the limiting boron dilution accident analyzed occurs 'during startup,' as the JFD does not provide specific information for the change.

Attach File 1

Attach File 2	
Issue Date	**6/16/2014**
Added By	**Ravinder Grover**
Date Modified	
Modified By	
Date Added	**6/16/2014 2:08 PM**
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**302**
NRC Question Number	**RPG-010**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 to RGP-010.pdf** (35KB)
Attachment 2	
Response Statement	**In response to RPG-010, the Applicable Safety Analyses section for the Bases of ITS 3.9.1, on pages 29 and 34 of Enclosure 2, Volume 14, will be revised. Specifically, the following sentence, "The limiting boron dilution accident analyzed occurs during startup (Ref. 2)." will be revised to read, "The limiting boron dilution accident analyzed occurs in MODE 5 (Ref. 2)."** **See Attachment 1 for the draft revised ITS 3.9.1 Bases change discussed above.**
Response Date/Time	**8/28/2014 6:15 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**8/28/2014 5:11 AM**
Date Modified	
Modified By	

BASES

INSERT 1

APPLICABLE SAFETY ANALYSES

~~During refueling operations, the reactivity condition of the core is consistent with the initial conditions assumed for the boron dilution accident in the accident analysis and is conservative for MODE 6.~~ The boron concentration limit specified in the COLR is based on the core reactivity at the beginning of each fuel cycle (the end of refueling) and includes an uncertainty allowance. 2

The required boron concentration and the plant refueling procedures that verify the correct fuel loading plan (including full core mapping) ensure that the k_{eff} of the core will remain ≤ 0.95 during the refueling operation. Hence, at least a 5% Δk/k margin of safety is established during refueling.

During refueling, the water volume in the spent fuel pool, the transfer canal, the refueling canal, the refueling cavity, and the reactor vessel form a single mass. As a result, the soluble boron concentration is relatively the same in each of these volumes.

The limiting boron dilution accident analyzed occurs ~~during startup~~ ~~in MODE 5~~ (Ref. 2). A detailed discussion of this event is provided in Bases B 3.1.1, "SHUTDOWN MARGIN (SDM)." ~~2~~

stet

The RCS boron concentration satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

The LCO requires that a minimum boron concentration be maintained in the RCS, the refueling canal, and the refueling cavity while in MODE 6. The boron concentration limit specified in the COLR ensures that a core k_{eff} of ≤ 0.95 is maintained during fuel handling operations. Violation of the LCO could lead to an inadvertent criticality during MODE 6.

APPLICABILITY

This LCO is applicable in MODE 6 to ensure that the fuel in the reactor vessel will remain subcritical. The required boron concentration ensures a k_{eff} ≤ 0.95. Above MODE 6, LCO 3.1.1, "SHUTDOWN MARGIN (SDM)," ensures that an adequate amount of negative reactivity is available to shut down the reactor and maintain it subcritical.

The Applicability is modified by a Note. The Note states that the limits on boron concentration are only applicable to the refueling canal and the refueling cavity when those volumes are connected to the RCS. When the refueling canal and the refueling cavity are isolated from the RCS, no potential path for boron dilution exists.

ACTIONS

A.1

Continuation of positive reactivity additions (including actions to reduce boron concentration) is contingent upon maintaining the unit in compliance with the LCO. If the boron concentration of any coolant

BASES

INSERT 1

APPLICABLE SAFETY ANALYSES

~~During refueling operations, the reactivity condition of the core is consistent with the initial conditions assumed for the boron dilution accident in the accident analysis and is conservative for MODE 6.~~ The boron concentration limit specified in the COLR is based on the core reactivity at the beginning of each fuel cycle (the end of refueling) and includes an uncertainty allowance. 2

The required boron concentration and the plant refueling procedures that verify the correct fuel loading plan (including full core mapping) ensure that the k_{eff} of the core will remain ≤ 0.95 during the refueling operation. Hence, at least a 5% Δk/k margin of safety is established during refueling.

During refueling, the water volume in the spent fuel pool, the transfer canal, the refueling canal, the refueling cavity, and the reactor vessel form a single mass. As a result, the soluble boron concentration is relatively the same in each of these volumes.

The limiting boron dilution accident analyzed occurs ~~in MODE 5~~ ~~during startup~~ (Ref. 2). A detailed discussion of this event is provided in Bases B 3.1.1, "SHUTDOWN MARGIN (SDM)." stet ~~2~~

The RCS boron concentration satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

The LCO requires that a minimum boron concentration be maintained in the RCS, the refueling canal, and the refueling cavity while in MODE 6. The boron concentration limit specified in the COLR ensures that a core k_{eff} of ≤ 0.95 is maintained during fuel handling operations. Violation of the LCO could lead to an inadvertent criticality during MODE 6.

APPLICABILITY

This LCO is applicable in MODE 6 to ensure that the fuel in the reactor vessel will remain subcritical. The required boron concentration ensures a k_{eff} ≤ 0.95. Above MODE 6, LCO 3.1.1, "SHUTDOWN MARGIN (SDM)," ensures that an adequate amount of negative reactivity is available to shut down the reactor and maintain it subcritical.

The Applicability is modified by a Note. The Note states that the limits on boron concentration are only applicable to the refueling canal and the refueling cavity when those volumes are connected to the RCS. When the refueling canal and the refueling cavity are isolated from the RCS, no potential path for boron dilution exists.

ACTIONS

A.1

Continuation of positive reactivity additions (including actions to reduce boron concentration) is contingent upon maintaining the unit in compliance with the LCO. If the boron concentration of any coolant

Licensee Response/NRC Response/NRC Question Closure

Id	**343**
NRC Question Number	**RPG-010**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/22/2014**
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Ravinder Grover**
Date Added	**9/22/2014 1:48 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**151**
NRC Question Number	**RPG-011**
Category	**Technical**
ITS Section	**3.4**
ITS Number	**3.4.10**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

SQN's LCO 3.4.13 Bases mark-up in Enclosure 2, Volume 14, Revision 0, (pdf page 464 of 696) deletes the following paragraph:

> **For RCS primary to secondary LEAKAGE determination, steady state is defined as stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows.**

The licensee's Justification For Deviations #1 on page 474 explains the deletion as follows:

> **"Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description."**

The subject paragraph concerns definition of steady state as applied to the ITS plants. SQN UFSAR Chapter 15 provides a discussion on steady state operations. Please provide plant-specific definition for steady state if it differs from that stated for the ITS plants.

Attach File 1	
Attach File 2	
Issue Date	**6/18/2014**
Added By	**Ravinder Grover**
Date Modified	

Modified By	
Date Added	**6/18/2014 2:12 PM**
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**198**
NRC Question Number	**RPG-011**
Select Application	**Licensee Response**
Attachment 1	**Atachment 1 - RAI RPG-011 Response.PDF** (2MB)
Attachment 2	
Response Statement	**In response to RAI RPG-011, the ITS 3.4.13 Bases markup for the definition of steady state, as it applies to the determination of RCS primary to secondary LEAKAGE, will be included in the discussion of SR 3.4.13.2 (pages 464 and 472 of Enclosure 2, Volume 9), as provided in NUREG-1431, Rev. 4.** **See Attachment 1 for the draft ITS SR 3.4.13.2 Bases changes discussed above.**
Response Date/Time	**7/21/2014 12:55 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/21/2014 11:55 AM**
Date Modified	
Modified By	

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.13.2

This SR verifies that primary to secondary LEAKAGE is less or equal to 150 gallons per day through any one SG. Satisfying the primary to secondary LEAKAGE limit ensures that the operational LEAKAGE performance criterion in the Steam Generator Program is met. If this SR is not met, compliance with LCO 3.4. 17 ~~20~~, "Steam Generator Tube Integrity," should be evaluated. The 150 gallons per day limit is measured at ambient ~~room~~ temperature as described in Reference 5. The operational LEAKAGE rate limit applies to LEAKAGE through any one SG. If it is not practical to assign the LEAKAGE to an individual SG, all the primary to secondary LEAKAGE should be conservatively assumed to be from one SG. 5 1

The Surveillance is modified by a Note which states that the Surveillance is not required to be performed until 12 hours after establishment of steady state operation. ~~For RCS primary to secondary LEAKAGE determination, steady state is defined as stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows.~~ For RCS primary to secondary LEAKAGE determination, steady state is defined as stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows. 1

~~[The Surveillance Frequency of 72 hours is a reasonable interval to trend primary to secondary LEAKAGE and recognizes the importance of early leakage detection in the prevention of accidents.~~

~~OR~~ 3

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ 4

The primary to secondary LEAKAGE is determined using continuous process radiation monitors or radiochemical grab sampling in accordance with the EPRI guidelines (Ref. 5).

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.13.2

This SR verifies that primary to secondary LEAKAGE is less or equal to 150 gallons per day through any one SG. Satisfying the primary to secondary LEAKAGE limit ensures that the operational LEAKAGE performance criterion in the Steam Generator Program is met. If this SR is not met, compliance with LCO 3.4.~~20~~ 17, "Steam Generator Tube Integrity," should be evaluated. The 150 gallons per day limit is measured at ~~room~~ ambient temperature as described in Reference 5. The operational LEAKAGE rate limit applies to LEAKAGE through any one SG. If it is not practical to assign the LEAKAGE to an individual SG, all the primary to secondary LEAKAGE should be conservatively assumed to be from one SG. 5 1

The Surveillance is modified by a Note which states that the Surveillance is not required to be performed until 12 hours after establishment of steady state operation. ~~For RCS primary to secondary LEAKAGE determination, steady state is defined as stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows.~~ For RCS primary to secondary LEAKAGE determination, steady state is defined as stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows. 1

~~[The Surveillance Frequency of 72 hours is a reasonable interval to trend primary to secondary LEAKAGE and recognizes the importance of early leakage detection in the prevention of accidents.~~ 3

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 4

The primary to secondary LEAKAGE is determined using continuous process radiation monitors or radiochemical grab sampling in accordance with the EPRI guidelines (Ref. 5).

Licensee Response/NRC Response/NRC Question Closure

Id	**283**
NRC Question Number	**RPG-011**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/21/2014**
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Ravinder Grover**
Date Added	**8/21/2014 2:21 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**152**
NRC Question Number	**RPG-012**
Category	**Technical**
ITS Section	**3.4**
ITS Number	**3.4.10**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	**pdf page 317 of 696**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

Page B 3.4.10-2 (pdf page 317 of 696 in Enclosure 2, Volume 14, Revision 0) of ITS Bases for LCO 3.4.10, "Pressurizer Safety Valves," lists items 'a' thru 'f' of accidents that could result in overpressurization if not properly terminated. Specifically, item 'b' concerns a Loss of reactor coolant flow accident and item 'f' relates to a Locked rotor occurrence. SQN's mark-up change relocates items 'f'' to item 'b', thus combines the listing of both accidents in item 'b'.

The licensee's Justification For Deviation #3 on page 324 explains the proposed change as follows:

> **"Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description."**

The staff's review of UFSAR Chapter 15 noticed that a 'Complete loss of forced reactor coolant flow,' is considered by the licensee as one of the CONDITION III's Infrequent faults, and a 'Single Coolant reactor pump locked rotor,' is designated as one of the CONDITION IV's Limiting Faults. Since, both of these occurrences are related to a different set of CONDITIONS, these accidents should be listed separately as shown in the ITS Bases. Please explain the basis for combining both accident conditions.

Attach File 1

Attach File 2	
Issue Date	**6/18/2014**
Added By	**Ravinder Grover**
Date Modified	
Modified By	
Date Added	**6/18/2014 2:20 PM**
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**199**
NRC Question Number	**RPG-012**
Select Application	**Licensee Response**
Attachment 1	**Atachment 1 - RAI RPG-012 Response.PDF** (2MB)
Attachment 2	
Response Statement	**In response to RAI RPG-012, the ITS 3.4.10 Bases markup regarding the discussion of accidents that could result in overpressurization if not properly terminated, will be revised to reflect the standard wording for items a. through f. (pages 317 and 321 of Enclosure 2, Volume 9), as provided in NUREG-1431, Rev. 4.** **See Attachment 1 for the draft ITS 3.4.10 Bases changes discussed above.**
Response Date/Time	**7/21/2014 1:00 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/21/2014 11:58 AM**
Date Modified	
Modified By	

BASES

The most limiting U

APPLICABLE SAFETY ANALYSES

~~All~~ accident and safety analyses in the FSAR (Ref. 2) that require safety valve actuation assume operation of three pressurizer safety valves to limit increases in RCS pressure. The overpressure protection analysis (Ref. 3) is also based on operation of [three] safety valves. Accidents that could result in overpressurization if not properly terminated include: 3

a. Uncontrolled rod withdrawal from full power,

b. Loss of reactor coolant flow, ~~(reactor coolant pump locked rotor)~~ 3

c. Loss of external electrical load,

d. Loss of normal feedwater, ~~and~~ 4

e. Loss of all AC power to station auxiliaries, ~~and~~ . , and 4

f. Locked rotor. ~~f. Locked rotor.~~ 3

Detailed analyses of the above transients are contained in Reference 2. Safety valve actuation is required in events c, d, and e (above) to limit the pressure increase. Compliance with this LCO is consistent with the design bases and accident analyses assumptions.

Pressurizer safety valves satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The [three] pressurizer safety valves are set to open at the RCS design pressure (~~2500 psia~~ 2485 psig), and within the ASME specified tolerance, to avoid exceeding the maximum design pressure SL, to maintain accident analyses assumptions, and to comply with ASME requirements. The upper and lower pressure tolerance limits are based on the ± ~~1~~ 3% tolerance requirements (Ref. 1) for lifting pressures above 1000 psig. The limit protected by this Specification is the reactor coolant pressure boundary (RCPB) SL of 110% of design pressure. Inoperability of one or more valves could result in exceeding the SL if a transient were to occur. The consequences of exceeding the ASME pressure limit could include damage to one or more RCS components, increased leakage, or additional stress analysis being required prior to resumption of reactor operation. 1 3

APPLICABILITY

In MODES 1, 2, and 3~~, and portions of MODE 4 above the LTOP arming temperature,~~ OPERABILITY of [three] valves is required because the combined capacity is required to keep reactor coolant pressure below 110% of its design value during certain accidents. MODE 3 ~~and portions of MODE 4 are~~ is conservatively included, although the listed accidents may not require the safety valves for protection. 2 1 2

BASES

The most limiting

U

APPLICABLE SAFETY ANALYSES

~~All~~ accident and safety analyses in the FSAR (Ref. 2) that require safety valve actuation assume operation of three pressurizer safety valves to limit increases in RCS pressure. The overpressure protection analysis (Ref. 3) is also based on operation of ~~[~~three~~]~~ safety valves. Accidents that could result in overpressurization if not properly terminated include: 3

a. Uncontrolled rod withdrawal from full power,

b. Loss of reactor coolant flow, ~~(reactor coolant pump locked rotor)~~ 3

c. Loss of external electrical load,

d. Loss of normal feedwater, ~~and~~ 4

, and

e. Loss of all AC power to station auxiliaries~~, and~~ ~~.~~ 4

f. Locked rotor.

~~f. Locked rotor.~~ 3

Detailed analyses of the above transients are contained in Reference 2. Safety valve actuation is required in events c, d, and e (above) to limit the pressure increase. Compliance with this LCO is consistent with the design bases and accident analyses assumptions.

Pressurizer safety valves satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The ~~[~~three~~]~~ pressurizer safety valves are set to open at the RCS design pressure (~~2500 psia~~ 2485 psig), and within the ASME specified tolerance, to avoid exceeding the maximum design pressure SL, to maintain accident analyses assumptions, and to comply with ASME requirements. The upper and lower pressure tolerance limits are based on the ± ~~1~~ 3% tolerance requirements (Ref. 1) for lifting pressures above 1000 psig. The limit protected by this Specification is the reactor coolant pressure boundary (RCPB) SL of 110% of design pressure. Inoperability of one or more valves could result in exceeding the SL if a transient were to occur. The consequences of exceeding the ASME pressure limit could include damage to one or more RCS components, increased leakage, or additional stress analysis being required prior to resumption of reactor operation. 1 3

APPLICABILITY

In MODES 1, 2, and 3~~, and portions of MODE 4 above the LTOP arming temperature,~~ OPERABILITY of ~~[~~three~~]~~ valves is required because the combined capacity is required to keep reactor coolant pressure below 110% of its design value during certain accidents. MODE 3 ~~and portions of MODE 4 are~~ is conservatively included, although the listed accidents may not require the safety valves for protection. 2 1 2

Licensee Response/NRC Response/NRC Question Closure

Id	**285**
NRC Question Number	**RPG-012**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/21/2014**
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Ravinder Grover**
Date Added	**8/21/2014 2:27 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**168**
NRC Question Number	**RPG-013**
Category	**Technical**
ITS Section	**3.4**
ITS Number	**3.4.16**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	**Enclosure 2, Volume 9, Rev. 0 (several pages)**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Mark Blumberg**
Conf Call Requested	**N**

NRC Question

Question 1

In the subject license amendment request, the licensee proposed technical specification (TS) changes to revise *LIMITING CONDITION FOR OPERATIONS* (*LCO*) 3.4.16 (currently *LCO* 3.4.8), "RCS Specific Activity," *APPLICABILITY* requirements to specify that the *LCO* is applicable in *MODES* 1, 2, 3, and 4. The proposed Bases entitled, "B 3.4.16 RCS Specific Activity," states: "In MODES 1, 2, 3, and 4, operation within the *LCO* limits for *DOSE EQUIVALENT I-131* (*DEI*) and *DOSE EQUIAVALENT XE-133* (*DEX*) is necessary to limit the potential consequences of a SLB [Steam line break] or SGTR [steam generator tube rupture] to within the SRP [Standard Review Plan] acceptance criteria." The licensee also proposed to revise *SURVEILLANCE REQUIREMENT* (*SR*) 3.4.16.1 and *SR* 3.4.16.2 to add the following *NOTE*, "Only required to be performed in MODE 1," thus removing the *APPLICABILITY* of this *SR* to other *MODES*.

The NRC staff has a concern about the proposed addition of the *NOTE* to *SR* 3.4.16.1 and *SR* 3.4.16.2 and the proposed changes to the *MODES* of *APPLICABILITY*. The proposed change revises the conditions for sampling for *SR* 3.4.16.1 and *SR* 3.14.16.2, and may exclude sampling during the plant conditions where *LCO* 3.4.16 may be exceeded. After transient conditions (i.e. reactor trip, plant depressurization, shutdown or startup) that end in *MODES* 2, 3 or 4, the *SR* is not required to be performed. Isotopic spiking and fuel failures are more likely during transient conditions than during steady state plant operations.

Question 1a

Because *LCO* 3.4.16 could potentially be exceeded after plant transient or power changes, please justify why sampling is no longer needed in the plant *MODES* that are proposed to be eliminated and justify how the *LCO* 3.4.16 remains consistent with the design bases analysis from which the *LCO* limits are derived (i.e. SLB, SGTR, etc.).

Question 1b

Please justify why there is an apparent disparity between the *MODES* of *APPLICABILITY* (*MODES* 1, 2, 3, and 4) and the limited mode (*MODE* 1) under which *SR* 3.4.16.1 and *SR* 3.14.16.2 are required.

Question 1c

Enclosure 2, Volume 9, Rev. 0 of the SQN, ITS Conversion, Section 3.4, "Reactor Coolant System (RCS)," (ADAMS Accession No. ML13330A928), page 606 states under the revision to the *APPLICABILITY*:

In MODES 5 and 6, the steam generators are not being used for decay heat removal, the RCS and steam generators are depressurized, and primary to secondary leakage is minimal. Therefore, the monitoring of RCS specific activity is not required.

The current TS 3.4.16 *APPLICABILITY* includes *MODE* 5.

The NRC staff is concerned that limiting the consideration of design basis accidents (DBAs) to only the SGTR and SLB has not been fully justified. Other accidents may be included in the licensing basis that uses the reactor coolant system (RCS) activity such as the small line break outside the containment or some anticipated operating occurrences. By limiting the review to only the SGTR and SLB, other accidents in the licensing basis (or previously not analyzed in the licensing basis because they were not limiting with the current *LCO APPLICABILITY*) do not appear to be considered by the proposed change.

For example, by only considering the SGTR and SLB, some Modes may no longer be considered in the *APPLICABILITY* for *LCO* 3.4.16. This may be equivalent to saying that in Mode 5, that any [emphasis added] *DEI* or *DEX* value would yield acceptable design basis accident doses. A justification for unlimited *DEI* and *DEX* in all possible MODES has not been provided.

Please justify why the *LCO APPLICABILITY* and *SR* should not consider *MODE* 5 accidents.

Question 2

Per the SQN Updated Final Safety Analysis Report (UFSAR), Appendix 15A, "Dose Models Used to Evaluate the Environmental Consequences of Accidents," Section 15A.2, "Assumptions," the dose conversion factors (DCFs) used for the dose models of postulated accidents, such as those provided in Section 15A.1 (SGTR, Main SLB [or SLB]), are provided in Table 15A-1. The DCFs in Table 15A-1, "Physical Data for Isotopes," are taken from the Environmental Protection Agency (EPA), Federal Guidance Report Nos. 11 and 12.

Enclosure 2, Volume 3, Rev. 0 of the SQN, ITS Conversion, Chapter 1.0, Use and Application," (ADAMS Accession No. ML13329A790), page 26 provides

the proposed definition of *DEI*. Unlike the UFSAR analyses, *DEI* is derived using the DCFs from Technical Information Document [TID] -14844, Atomic Energy Commission (AEC), 1962, "Calculation of Distance Factors for Power and Test Reactor Sites." The definition states:

DOSE EQUIVALENT I-131 shall be that concentration of I-131(microcuries per gram) that alone could produce the same thyroid dose when inhaled as the combined activities of iodine isotopes I-131, I-132, I-133, I-134, and I-135 actually present. The determination of DOSE EQUIVALENT I-131 shall be performed using thyroid dose conversion factors from Table III of TID-14844, AEC, 1962, "Calculation of Distance Factors for Power and Test Reactor Sites."

The definition of *DEX* in Enclosure 2 uses the effective DCF for air submersion listed in Table III.1 of EPA, *Federal Guidance Report* No. 12, "External Exposure to Radionuclides in Air, Water, and Soil."

The purpose of the *LCO* for *DEI* and *DEX* is to satisfy Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36, criterion 2, which establishes an operating restriction that is an initial condition of a design basis accident (DBA). When a surveillance of the reactor coolant system radionuclides is performed, each acceptable set of DCFs will yield a different *DEI* and *DEX*. As approved by the NRC staff, the intent of TSTF-490 was to allow the licensee to select, from the acceptable list, one DCF reference for the calculation of *DEI*, and one DCF reference for the calculation of *DEX*.

Question 2a

Please confirm that the site-specific limits for both *DEI* and DEX, and the DCFs used for the determination of *DEI* and DEX surveillances, are consistent with the SQN current design-basis radiological dose consequence analyses (i.e. SGTR, SLB, letdown line break, etc.) or justify why the use of different DCFs in the "dose equivalent" TS definitions from those in the DBA analyses yield conservative RCS radioisotopic concentrations and offsite consequence analyses for compliance with 10 CFR 100.

Question 2b

Please provide the information necessary (DCFs and RCS radioisotopic concentrations) for the NRC staff to verify the proposed value of 1612.6 µCi/gm (micro Curies per gram) in the surveillance requirement for DEX.

Question 3

The proposed change deletes the CONDITION requiring gross specific activity of the coolant less than or equal to 100/Ç µCi/gm and proposes to replace it with DEX not within limits. In the current *LCO* 3.4.16, when the gross specific activity of the coolant is greater than 100/Ç µCi/gm, the

***REQUIRED ACTION* is to take immediate action to begin shutdown of the reactor (be in *HOT STANDBY* with T_{avg} less than 500 °F within 6 hours [emphasis added]). SQN proposes 48 hours [emphasis added] to restore DEX within limits. TSTF-490, Revision 0 provided the following justification for this change:**

The Completion Time for revised TS 3.4.16 Required Action B.1 will require restoration of Dose Equivalent Xe-133 to within limit in 48 hours. This is consistent with the Completion Time for current Required Action A.2 for Dose Equivalent I-131. The Completion Time of 48 hours for revised Required Action B.1 is acceptable since it is expected that, if there were a noble gas spike, the normal coolant noble gas concentration would be restored within this time period. Also, there is a low probability of an accident occurring during this time period.

For the following reasons the staff needs additional justification for the proposed change:

While it is a correct statement that the proposed change makes the *COMPLETION TIME*s of *REQUIRED ACTION* A.2 and B.1 consistent it is not clear to the NRC staff why the *COMPLETION TIME*s should be consistent. The plant *CONDITIONs* for these *REQUIRED ACTION*s are different. *REQUIRED ACTION* A.2 is required when the plant is in a *CONDITION* analyzed in the design basis accident analyses (RCS *DEI* is between 1 and 60 µCi/gm). Action B.1 is required when the plant is in a *CONDITION* not analyzed [emphasis added] in the design basis accident analyses (DEX is greater than 1612.61 µCi/gm). Typically, the *REQUIRED ACTION* for a *CONDITION* not analyzed requires the plant to take immediate actions to begin shutdown of the plant. The proposed change does not take immediate actions to begin shutdown of the plant, but allows 48 hours before the plant is required to begin shutting down.

Therefore, please provide additional justification for the proposed change to increase the *COMPLETION TIME* of *REQUIRED ACTION* B.1 to 48 hours and why it is acceptable to be in an unanalyzed *CONDITION* for 48 hours consistent with *CONDITION* A which is an analyzed *CONDITION* in the DBA analyses

Typo

Enclosure 2, Volume 9, Rev. 0, page 611, Insert 6 appears to have a typo. DOS EQUIVALENT should be DOSE EQUIVALENT.

Attach File 1

Attach File 2

Issue Date **6/23/2014**

Added By	**Ravinder Grover**
Date Modified	
Modified By	
Date Added	**6/23/2014 8:55 AM**
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**328**
NRC Question Number	**RPG-013**
Select Application	**Licensee Response**
Attachment 1	**RAI RPG-013 Attachment 1 Posted Response.pdf** (36KB)
Attachment 2	**RAI RPG-013 Attachment 2 Posted Response.pdf** (2MB)
Response Statement	**Attachment 1 contains the responses to Questions 1a, 1b, 1c, 2a, 2b, and 3 concerning RPG−013. Attachment 2 contains the revised CTS and ISTS markups, revised DOCs M01 and L01, and the addition of JFDs 4 and 6.**

Changes to the ITS submittal associated with the response to RPG-013 are discussed below:

1. **The ITS definition for DOSE EQUIVALENT XE-133 in ITS Section 1.1 will be revised to be consistent with the proposed definition in the CTS markups. Specifically, the phrase, "or the average gamma disintegration energies as provided in ICRP Publication 38, 'Radionuclide Transformations or similar source,' will be deleted. SQN uses the effective dose conversion factors for air submersion listed in Table III.1 of EPA Federal Guidance Report No. 12, 1993, "External Exposure to Radionuclides in Air, Water, and Soil" to determine DOSE EQUIVALENT XE−133. A Justification for deviation (JFD) 2 indicator will be added to the ITS markups associated with this change. (Pages 57 and 87 of Enclosure 2, Volume 3)**

2. **The CTS markups will be revised to indicate the deletion of proposed ITS 3.4.16 Condition B and the re-sequencing of Condition C to Condition B. The ITS cross references will be revised to align with changes made to ITS 3.4.16. (Pages 578 and 582 of Enclosure 2, Volume 9)**

3. **Discussion of changes (DOCs) M01 and L01 will be revised to align with the deletion of proposed ITS 3.4.16 Condition B and the re-sequencing of Condition C to Condition B. Additionally, DOC L01 will be revised to align with the proposed revision of ITS SR 3.4.16.1 Note. See No. 5 below concerning the revision to the Note. (Pages 587, 588 and 589 of Enclosure 2, Volume 9)**

4. **The ISTS markups will be revised to reflect the deletion of ITS 3.4.16 Condition B. ITS 3.4.16 Condition C will be re-sequenced as Condition B and revised to state, "Required Action and associated Completion Time of Condition A not met. OR DOSE EQUIVALENT I−131 > 21 μCi/gm.**

OR DOSE EQUIVALENT XE-133 not within limit." Justification for deviation (JFD) 4 indicators will be added to the ISTS markups associated with these changes. (Pages 591, 592, 596, and 597 of Enclosure 2, Volume 9)

5. The ISTS markups will be revised for ITS SR 3.4.16.1 Note and ITS SR 3.4.16.2 Note. Specifically, ITS SR 3.4.16.1 Note will be revised to state, "Only required to be performed in MODES 1, 2, and 3 with $T_{avg} \geq$ 500ºF." ITS SR 3.4.16.2 Note will be deleted. JFD 4 indicators will be added to the ISTS markups associated with these changes. (Pages 592, 593, 597, and 598)

6. JFD 4 will be added to the ITS 3.4.16 Justification for Deviations Section. JFD 4 will state, "Changes are made to ISTS 3.4.16 as a result of discussions between NRC staff and TVA during a public meeting held on August 12, 2014. ISTS 3.4.16 Condition B is deleted, ISTS 3.4.16 Condition C is re-sequenced to Condition B and revised to include a third Condition of 'OR DOSE EQUIVALENT XE-133 not within limit,' and ISTS SR 3.4.16.2 Note associated with DEI is deleted. Additionally, TSTF-490 proposed adding a Note to ISTS SR 3.4.16.1, 'Only required to be performed in MODE 1.' This Note is revised to state, 'Only required to be performed in MODES 1, 2, and 3 with Tavg ≥ 500ºF.'" (Page 601 of Enclosure 2, Volume 9)

7. ITS 3.4.16 Bases Actions Section Insert 4 will be deleted. Insert 4 is associated with the originally proposed ITS 3.4.16 Condition B that is now being deleted. ITS 3.4.16 Bases Actions C.1 and C.2 will be re-sequenced to Actions B.1 and B.2 and revised to reflect the changes discussed in No. 4, above. JFD 6 indicators will be added to the markups associated with these changes. (Pages 610, 611, 623, and 624 of Enclosure 2, Volume 9)

8. ITS 3.4.16 Bases Surveillance Requirement Section Insert 6 for SR 3.4.16.1 will be revised to state, "A Note modifies the SR to only require the surveillance to be performed in MODES 1, 2, and 3 with Tavg ≥ 500ºF." JFD 6 indicators will be added to the markups associated with this change. Additionally, the typographical error (DOS changed to DOSE) in Insert 6 will be corrected. (Pages 610, 611, 623, and 624 of Enclosure 2, Volume 9)

9. ITS 3.4.16 Bases Surveillance Requirement Section Insert 7 for SR 3.4.16.2 will be deleted. This deletion reflects proposed changes to ITS SR 3.4.16.2 discussed in No. 5, above. (Pages 612, 613, 625, and 626 of Enclosure 2, Volume 9)

10. JFD 6 will be added to the ITS 3.4.16 Bases Justification for Deviations Section. JFD 6 will state, "Changes are made to be consistent with changes made to the Specification." (Page 629)

Response Date/Time **9/9/2014 4:35 PM**

Closure Statement	
Question Closure Date	
Notification	**Mark Blumberg** **Scott Bowman** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Lynn Mynatt**
Date Added	**9/9/2014 3:34 PM**
Date Modified	
Modified By	

Question 1a Response:

The proposed changes to ITS LCO 3.4.16 remain consistent with the design basis analysis from which the LCO limits are derived (i.e., SLB and SGTR). The SQN design basis SGTR and SLB analyses are based on power operating (MODE 1) conditions and assume RCS activity at TS limits (please refer to the response to question 2a). Therefore, these design basis analyses are bounding for the lower modes of operation. In addition, TVA is proposing to revise the Notes modifying ITS SR 3.4.16.1 and ITS SR 3.4.16.2 (please refer to the response to question 1b).

Question 1b Response:

In response to RAI RPG-013, Question 1b, TVA proposes to delete the ITS SR 3.4.16.2 Note associated with DEI. Sampling for DEI does not require a pressurized sample to maintain gases in solution. Therefore, the requirement to verify DEI within limits will be required to be performed in MODES 1, 2, 3, and 4. The proposed SR 3.4.16.1 Note restricting the sampling of DEX to MODES 1, 2, and 3 with RCS average temperature ≥ 500°F is needed since RCS pressure outside these modes may be insufficient to ensure collection of a representative, homogeneous sample for analysis of gaseous isotopes. Restricting the surveillance to MODES 1, 2, and 3 with T_{avg} ≥ 500°F ensures the necessary plant conditions have been established to produce sufficient pressure and sample flow. Therefore, TVA proposes to change the ITS SR 3.4.16.1 Note associated with DEX to state "Only required to be performed in MODES 1, 2, and 3 with Reactor Coolant System (RCS) average temperature (T_{avg}) ≥ 500 ºF." These changes reduce the apparent disparity between the LCO MODES of Applicability and MODES under which the surveillance requirements are required. These changes are a conservative and more restrictive deviation from TSTF-490, Revision 0. The deletion of SR 3.4.16.2 Note for DEI provides continued assessment of RCS activity for all Modes of Applicability. Given that iodine is the dominant contributor in the SQN Steam Generator Tube Rupture (SGTR) and Steam Line Break (SLB) dose analysis and that TVA is proposing to sample DEI in MODE 1 through MODE 4, the small disparity between the MODES of Applicability and the MODES that require sampling under SR 3.4.16.1 for DEX is acceptable.

Question 1c Response:

The revised LCO is applicable in MODES 1 through 4 to limit the potential radiological consequences of an SLB or SGTR that could occur during these Modes. In MODE 5 with the RCS loops filled, the steam generators are specified as a backup means of decay heat removal via natural circulation. In this Mode however, due to the reduced temperature of the RCS, the probability of a DBA involving the release of significant quantities of RCS inventory is greatly reduced. Therefore, monitoring of RCS specific activity is not required. In Mode 5 with the RCS loops not filled and in Mode 6, the steam generators are not used for decay heat removal, the RCS and steam generators are depressurized, and primary-to-secondary leakage is minimal. Therefore, the monitoring of RCS specific activity is not required.

Question 2a Response:

The Steam Generator Tube Rupture, Main Steam Line Break, and Loss of AC Power all utilize the RCS activity as a source term and scale it to the maximum allowed per Technical Specifications. The Dose Conversion Factors (DCFs) used to determine the Xe-133 equivalence were the Effective

Dose Equivalent DCFs found in Table III.1 of EPA Federal Guidance Report 12. This is consistent with the proposed definition of Xe-133 equivalence.

The DCFs used in the DBA analyses to determine the I-131 equivalence were those corresponding to the Thyroid Committed Dose Equivalent per Unit Intake from Table 2.1 of the EPA Federal Guidance Report (FGR) 11. These are not consistent with the DCFs in Table III of TID-14844. However, the use of the EPA FGR 11 values results in a higher concentration of iodine than if the TID-14844 values were used. Thus the concentrations used in the DBA analyses exceed that which would be allowed by Tech Specs. Therefore the use of the EPA FGR 11 values instead of those in TID-14844 is conservative.

<u>Question 2b Response:</u>

The following is the RCS concentration used in the DBA analyses, the DCFs used, and the determination of the Xe-133 equivalent value.

	Concentration µCi/g	DCF Sv/Bq s m^{-3}	Xe-133 eqv µCi/g
Kr85m	6.74E+00	7.48E-15	3.23E+01
Kr85	1.05E+01	1.19E-16	8.01E-01
Kr87	6.35E+00	4.12E-14	1.68E+02
Kr88	1.18E+01	1.02E-13	7.72E+02
Xe131m	2.58E+01	3.89E-16	6.43E+00
Xe133m	2.83E+00	1.37E-15	2.49E+00
Xe133	9.98E+01	1.56E-15	9.98E+01
Xe135m	5.48E+00	2.04E-14	7.17E+01
Xe135	3.56E+01	1.19E-14	2.72E+02
Xe138	5.09E+00	5.77E-14	1.88E+02
Total			**1612.6**

<u>Question 3 Response:</u>

In response to RAI RPG-013, Question 3, ITS 3.4.16 Condition B will be deleted. In addition, ITS 3.4.16 Condition C will be re-sequenced to Condition B and revised to include a third Condition of “OR DOSE EQUIVALENT XE-133 not within limit.”

The above changes will no longer allow continued operation for up to 48 hours with DEX above the limit. As stated above, the revised ITS 3.4.16 Condition C (re-sequenced to Condition B) will require actions to place the unit in MODE 3 in 6 hours and MODE 5 in 36 hours, if DEX is not within limits.

TSTF-490

INSERT 1 (continued)

DOSE EQUIVALENT XE-133	DOSE EQUIVALENT XE-133 shall be that concentration of Xe-133 (microcuries per gram) that alone would produce the same acute dose to the whole body as the combined activities of noble gas nuclides ~~[~~Kr-85m, Kr-85, Kr-87, Kr-88, Xe-131m, Xe-133m, Xe-133, Xe-135m, Xe-135, and Xe-138~~]~~ actually present. If a specific noble gas nuclide is not detected, it should be assumed to be present at the minimum detectable activity. The determination of DOSE EQUIVALENT XE-133 shall be performed using ~~[~~effective dose conversion factors for air submersion listed in Table III.1 of EPA Federal Guidance Report No. 12, 1993, "External Exposure to Radionuclides in Air, Water, and Soil" ~~or the average gamma disintegration energies as provided in ICRP Publication 38, "Radionuclide Transformations" or similar source]~~.

2

TSTF-490

INSERT 1 (continued)

DOSE EQUIVALENT XE-133

DOSE EQUIVALENT XE-133 shall be that concentration of Xe-133 (microcuries per gram) that alone would produce the same acute dose to the whole body as the combined activities of noble gas nuclides ~~[~~Kr-85m, Kr-85, Kr-87, Kr-88, Xe-131m, Xe-133m, Xe-133, Xe-135m, Xe-135, and Xe-138~~]~~ actually present. If a specific noble gas nuclide is not detected, it should be assumed to be present at the minimum detectable activity. The determination of DOSE EQUIVALENT XE-133 shall be performed using ~~[~~effective dose conversion factors for air submersion listed in Table III.1 of EPA Federal Guidance Report No. 12, 1993, "External Exposure to Radionuclides in Air, Water, and Soil" ~~or the average gamma disintegration energies as provided in ICRP Publication 38, "Radionuclide Transformations" or similar source]~~. 2

ITS A01 ITS 3.4.16

REACTOR COOLANT SYSTEM

3/4.4.8 SPECIFIC ACTIVITY

LIMITING CONDITION FOR OPERATION

RCS DOSE EQUIVALENT I-131 and DOSE EQUIVALENT XE-133 specific activity shall be within limits L01

LCO 3.4.16 3.4.8 ~~The specific activity of the primary coolant shall be limited to:~~

SR 3.4.16.2 a. Less than or equal to 0.35 microcuries/gram DOSE EQUIVALENT I-131, and

~~b. Less than or equal to 100/Ē microcuries/gram~~.

Applicability APPLICABILITY: MODES 1, 2, 3, and 4 ~~and 5~~

ACTION: L01

MODES 1, 2 and 3~~*~~

not within limit L01

Action A a. With ~~the specific activity of the primary coolant greater than 0.35 microcuries/gram~~ DOSE EQUIVALENT I-131 not within limit for more than 48 hours during one continuous time interval or ~~exceeding the limit line shown on Figure 3.4-1~~, be in at least HOT

Required Action ~~C~~.1 STANDBY ~~with T_{avg} less than 500°F~~ within 6 hours. LCO 3.0.4.c is applicable. L01

Add proposed Required Action ~~C~~.2. M01

Action A Note

DOSE EQUIVALENT XE-133 not within limits ~~restore within limits in 48 hours.~~ L01

Action B b. With the ~~specific activity of the primary coolant greater than~~ 100/Ē ~~microcuries/gram~~, be in at least HOT STANDBY ~~with T_{avg} less than 500°F~~ within

Required Action ~~C~~.1 6 hours. L01

~~Add proposed Action B Note.~~

Add proposed Required Action ~~C~~.2 M01

B MODES 1, 2, 3, 4 ~~and 5~~ L01

B

Required Action A.1 a. With ~~the specific activity of the primary coolant greater than 0.35 microcuries/gram~~ DOSE EQUIVALENT I-131 not within limit ~~or greater than 100/Ē microcuries/gram~~, perform the sampling and analysis requirements of item 4a of Table 4.4-4 ~~until the specific activity of the primary coolant is restored to within its limits~~. L01 A02

~~*With T_{avg} greater than or equal 500°F~~. L01

ITS A01 ITS 3.4.16

REACTOR COOLANT SYSTEM

3/4.4.8 SPECIFIC ACTIVITY

LIMITING CONDITION FOR OPERATION

LCO 3.4.16 3.4.8 ~~The specific activity of the primary coolant shall be limited to:~~ RCS DOSE EQUIVALENT I-131 and DOSE EQUIVALENT XE-133 specific activity shall be within limits L01

SR 3.4.16.2 a. Less than or equal to 0.35 microcurie per gram DOSE EQUIVALENT I-131, and

~~b. Less than or equal to 100/Ē microcuries per gram.~~

Applicability APPLICABILITY: MODES 1, 2, 3, and 4 ~~and 5~~

ACTION:

MODES 1, 2 and 3~~*~~: L01

Action A a. With ~~the specific activity of the primary coolant greater than 0.35 microcurie per gram~~ DOSE EQUIVALENT I-131 not within limit for more than 48 hours during one continuous time interval ~~or exceeding the limit line shown on Figure 3.4-1~~, be in at least HOT STANDBY ~~with T_{avg} less than 500°F~~ within 6 hours. LCO 3.0.4.c is applicable. Add proposed Required Action ~~C~~ B.2. L01

Required Action ~~C~~ B.1

Action A Note

Action B b. Add proposed Action B With the ~~specific activity of the primary coolant greater than 100/Ē microcurie per gram~~ DOSE EQUIVALENT XE-133 not within limits ~~restore within limits in 48 hours.~~, be in at least HOT STANDBY ~~with T_{avg} less than 500°F~~ within 6 hours. Add proposed Required Action ~~C~~ B.2. L01

Required Action ~~C~~ B.1

MODES 1, 2, 3, 4 ~~and 5~~: M01

Required Action A.1 a. With ~~the specific activity of the primary coolant greater than 0.35 microcurie per gram~~ DOSE EQUIVALENT I-131 not within limit ~~or greater than 100/Ē microcuries per gram,~~ perform the sampling and analysis requirements of item 4a of Table 4.4-4 ~~until the specific activity of the primary coolant is restored to within its limits~~. L01 A02

~~* With T_{avg} greater than or equal to 500°F~~. L01

DISCUSSION OF CHANGES
ITS 3.4.16, RCS SPECIFIC ACTIVITY

MORE RESTRICTIVE CHANGES

M01 CTS 3.4.8 requires the specific activity of the reactor coolant to be within limit whenever the reactor is in MODES 1, 2, 3, 4 and 5. In addition when a unit shutdown is required in MODES 1, 2 and 3* (Footnote * limits MODE 3 Applicability to Tavg ≥ 500°F) by CTS 3.4.8 ACTION a and CTS 3.4.8 ACTION b, the unit is required to be in HOT STANDBY with T_{avg} less than 500°F within 6 hours. ITS 3.4.16 Applicability, with TSTF-490-A incorporated, requires the RCS DOSE EQUIVALENT I-131 and DOSE EQUIVALENT XE-133 specific activity to be within limits during MODES 1, 2, 3 and 4. ITS 3.4.16 Required Action ~~C~~.1 requires the unit to be in MODE 3 within 6 hours and Required Action ~~C~~.2 requires the unit to be in MODE 5 within 36 hours. This changes the CTS by relaxing the requirement to be "less than 500°F within 6 hours," to "be in MODE 3 in 6 hours," and by adding Required Action ~~C~~.2 to enter MODE 5 within 36 hours. The change that deletes the E-bar requirement and replaces it with a DOSE EQUIVALENT XE-133 requirement is discussed in DOC L01. B

This change is acceptable because the requirement to place the unit in MODE 5 places the unit outside the MODE of Applicability. The Completion Time is based on operating experience and the need to reach the required condition from full power in an orderly manner and without challenging unit systems. This change is designated as more restrictive because it adds a new requirement for the unit to be in MODE 5.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS Table 4.4-4 Item 2 requires, in part, verifying isotopic analysis for DOSE EQUIVALENT I-131 concentration once per 14 days. ITS SR 3.4.16.2 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." Additionally ITS SR 3.4.16.1 has been added to verify reactor coolant DOSE EQUIVALENT XE-133 specific activity within limits at a periodic Frequency of, "In accordance with the Surveillance Frequency Control Program." (See DOC L01 for discussion of adding ITS SR 3.4.16.1.) This changes the CTS by moving the specified Frequencies for these SRs and associated Bases to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the

DISCUSSION OF CHANGES
ITS 3.4.16, RCS SPECIFIC ACTIVITY

Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LA02 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS Table 4.4-4 Item 2 requires an isotopic analysis to determine whether DOSE EQUIVALENT I-131 concentration is within limit. CTS Table 4.4-4 Item 4 requires an isotopic analysis for iodine including I-131, I-133, and I-135. ITS SR 3.4.16.2 requires the verification that the reactor coolant DOSE EQUIVALENT I-131 specific activity is within limit. ITS 3.4.16 Required Action A.1 requires the verification that DOSE EQUIVALENT I-131 is ≤ 21.0 μCi/gm. This changes the CTS by moving the detail that an Isotopic Analysis or Isotopic Analysis for Iodine including I-131, I-133, and I-135 must be performed to satisfy the requirements of the Surveillance and Action to the ITS Bases.

The removal of these details for performing Surveillance Requirements from the Technical Specifications is acceptable because the type of information is not necessary to be included in the Technical Specifications to provide adequate protection to public health and safety. ITS SR 3.4.16.2 and ITS 3.4.16 Required Action A.1 still retain the requirements to verify the reactor coolant DOSE EQUIVALENT I-131 is within limit. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 1 – Relaxation of LCO Requirements)* CTS 3.4.8 requires the specific activity of the primary coolant to be less than or equal to 100/Ē μCi/gram. CTS 3.4.8 ACTION b states that if the limit is not met, then the unit must be shut down to HOT STANDBY with T_{avg} less than 500°F within 6 hours – no restoration time prior to the shutdown is provided. Furthermore, if the limit is not met, ACTION a (MODES 1, 2, 3, 4 and 5) requires the sample and analysis requirements of Table TS 4.4-4, item 4.a (an isotopic analysis for iodine), to be performed every 4 hours. Table 4.4-4 Item 3, requires a "Radiochemical for E bar Determination" analysis performed every 6 months with a Footnote limitation (Footnote *) that a minimum of 2 EFPD and 20 days of POWER OPERATION have elapsed since the reactor was last subcritical for 48 hours or longer prior to performance of the analysis. ITS 3.4.16 does not include any requirements related to Ē. ITS LCO 3.4.16 requires the DOSE EQUIVALENT XE-133 limit to be met. SR 3.4.16.1

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DISCUSSION OF CHANGES
ITS 3.4.16, RCS SPECIFIC ACTIVITY

states that the DOSE EQUIVALENT XE-133 must be ≤ 1612.6 μCi/gm and only requires ~~of~~ the Surveillance to be performed in MODE S 1, 2, and 3 with T_{avg} ≥ 500°F. If DOSE EQUIVALENT XE-133 is not within the limit, ITS 3.4.16 ACTION B ~~provides 48 hours to restore the DOSE EQUIVALENT XE-133 to within its limits prior to requiring~~ requires a unit shutdown. ~~It also allows LCO 3.0.4.c to be applicable when in ACTION B~~. Furthermore, when DOSE EQUIVALENT XE-133 is not within its limit, the ITS does not require the isotopic analysis for iodine to be performed every 4 hours. This changes the CTS by deleting the Ē requirements on the primary coolant gross specific activity and replacing it with the DOSE EQUIVALENT XE-133 requirements on primary coolant noble gas activity, consistent with Technical Specification Task Force (TSTF) change traveler TSTF-490-A.

CTS 3.4.8 Applicability for DOSE EQUIVALENT I-131 and E bar is required in MODES 1, 2, 3, 4, and 5. ITS 3.4.16 Applicability for DOSE EQUIVALENT I-131 and DOSE EQUIVALENT XE-133 is required in MODES 1, 2, 3, and 4. This changes the CTS Applicability for DOSE EQUIVALENT I-131 and DOSE EQUIVALENT XE-133 to MODES 1, 2, 3, and 4, consistent with TSTF-490-A.

The proposed changes are consistent with TSTF-490-A, Revision 0. TSTF-490-A, Revision 0, "Deletion of E Bar definition and Revision to RCS Specific Activity Tech Spec" was announced for availability in the Federal Register on March 15, 2007 as part of the consolidated line item improvement process. The changes were approved by the NRC staff Safety Evaluation (SE) dated March 8, 2007 (ADAMS Accession No. ML070250176). TVA has reviewed the NRC staff SE listed above, the Federal Notice for comment published November 20, 2006 (including the SE), and the Federal Notice for availability published on March 15, 2007. TVA has concluded that the justifications presented in TSTF-490-A, Revision 0 and the model SE prepared by the NRC staff are applicable to SQN and justify this change. The change incorporating the newly defined quantity DOSE EQUIVALENT XE-133 is acceptable from a radiological dose perspective, since it will result in an LCO that more closely relates to non-iodine RCS activity limits to the dose consequence analysis which form the bases. The Dose Conversion Factors used in the determination of DOSE EQUIVALENT I-131 and XE-133 are consistent with Dose Conversion factors used in the applicable dose consequence analysis. This change is less restrictive because the LCO is now being based on noble gas activity ~~and a limited amount of time (48 hours) is provided to restore the limit prior to requiring a unit shutdown~~.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.16 RCS Specific Activity

TSTF-490-A

3.4.8

LCO 3.4.16 RCS DOSE EQUIVALENT I-131 and DOSE EQUIVALENT XE-133 specific activity shall be within limits ~~The specific activity of the reactor coolant shall be within limits~~.

Applicability

APPLICABILITY: MODES ~~1 and 2,~~ 1, 2, 3, and 4
~~MODE 3 with RCS average temperature (T_{avg}) ≥ 500°F~~.

TSTF-490-A

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. DOSE EQUIVALENT I-131 ~~> 1.0 μCi/gm~~ not within limit.	--------------------NOTE------------------- LCO 3.0.4.c is applicable. --	
	A.1 Verify DOSE EQUIVALENT I-131 ~~within the acceptable region of Figure 3.4.16-1~~ ≤ ~~[60]~~ 21.0 μCi/gm.	Once per 4 hours
	AND	
	A.2 Restore DOSE EQUIVALENT I-131 to within limit.	48 hours
B. ~~Gross specific activity of the reactor coolant not within limit~~ DOSE EQUIVALENT XE-133 not within limit.	--------------NOTE----------------- LCO 3.0.4.c is applicable. -- B.1 ~~Be in MODE 3 with T_{avg} < 500°F~~ Restore DOSE EQUIVALENT XE-133 to within limit.	~~6~~ 48 hours

ACTION a (MODES 1, 2, and 3* and MODES 1, 2, 3, 4, and 5)

Table 4.4-4 Item 4.a

TSTF-490-A

TSTF-490-A

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~~TSTF-490-A~~

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION a (MODES 1, 2, and 3*) B ~~C~~. Required Action and associated Completion Time of Condition A or ~~B~~ not met. OR DOSE EQUIVALENT I-131 ~~in the unacceptable region of Figure 3.4.16-1~~ > ~~[60]~~ 21.0 μCi/gm. OR DOSE EQUIVALENT XE-133 not within limit.	B ~~C~~.1 Be in MODE 3 ~~with T_{avg} < 500°F~~. AND ~~C~~.2 Be in MODE 5	6 hours 36 hours

4 TSTF-490-A 1 4

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
4.4.8 Table 4.4-4 Item 1 SR 3.4.16.1 ~~Verify reactor coolant gross specific activity ≤ 100/Ē μCi/gm~~. Only required to be performed in MODES 1 and with T_{avg} ≥ 500°F -----NOTE----- ~~Only required to be performed in MODE 1.~~ ------------------ Verify reactor coolant DOSE EQUIVALENT XE-133 specific activity ≤ ~~[280]~~ 1612.6 μCi/gm.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~

2 4 TSTF-490-A 2

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.4.16.2	~~NOTE~~ ~~Only required to be performed in MODE 1.~~	
LCO 3.4.8.a Table 4.4-4 Item 2	Verify reactor coolant DOSE EQUIVALENT I-131 specific activity ≤ [~~1.0~~] 0.35 μCi/gm.	~~[14 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program] AND Between 2 and 6 hours after a THERMAL POWER change of ≥ 15% RTP within a 1 hour period
Table 4.4-4 Item 4.b		

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TSTF-490-A

2

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.16 RCS Specific Activity

RCS DOSE EQUIVALENT I-131 and DOSE EQUIVALENT XE-133 specific activity shall be within limits

TSTF-490-A

3.4.8 LCO 3.4.16 ~~The specific activity of the reactor coolant shall be within limits~~.

Applicability APPLICABILITY: MODES ~~1 and 2,~~ 1, 2, 3, and 4
~~MODE 3 with RCS average temperature (T_{avg}) ≥ 500°F~~. TSTF-490-A

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. DOSE EQUIVALENT I-131 ~~> 1.0 μCi/gm~~ not within limit.	--------------------NOTE------------------- LCO 3.0.4.c is applicable. ---	
	A.1 Verify DOSE EQUIVALENT I-131 ~~within the acceptable region of Figure 3.4.16-1~~ ≤ ~~[60]~~ 21.0 μCi/gm.	Once per 4 hours
	AND	
	A.2 Restore DOSE EQUIVALENT I-131 to within limit.	48 hours
B. ~~Gross specific activity of the reactor coolant not within limit.~~ DOSE EQUIVALENT XE-133 not within limit	--------------NOTE----------------- LCO 3.0.4.c is applicable. -- B.1 ~~Be in MODE 3 with T_{avg} < 500°F.~~ Restore DOSE EQUIVALENT XE-133 to within limit.	~~6~~ 48 hours

ACTION a (MODES 1, 2, and 3* and MODES 1, 2, 3, 4, and 5)

Table 4.4-4 Item 4.a

TSTF-490-A

TSTF-490-A

1

~~TSTF-490-A~~

4

CTS

RCS Specific Activity
3.4.16

ACTIONS (continued)

ACTION a (MODES 1, 2, and 3*)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B ~~C~~. Required Action and associated Completion Time of Condition A ~~or B~~ not met. OR DOSE EQUIVALENT I-131 ~~in the unacceptable region of Figure 3.4.16-1~~ > ~~[60]~~ 21.0 μCi/gm. OR DOSE EQUIVALENT XE-133 not within limit.	B ~~C~~.1 Be in MODE 3 ~~with T_{avg} < 500°F~~. ~~AND~~ ~~C.2 Be in MODE 5~~	6 hours 4 ~~36 hours~~ 4 TSTF-490-A

TSTF-490-A 1 4

SURVEILLANCE REQUIREMENTS

4.4.8 Table 4.4-4 Item 1

SURVEILLANCE		FREQUENCY
SR 3.4.16.1	~~Verify reactor coolant gross specific activity ≤ 100/Ē μCi/gm.~~ □n□□ □e□ui□ed to □e □e□□o□□ed in □□□ES 1□□□□nd □□it□ T□□□ □ □□□º□ -----NOTE----- ~~Only required to be performed in MODE 1.~~ ---------- Verify reactor coolant DOSE EQUIVALENT XE-133 specific activity ≤ ~~[280]~~ 1612.6 μCi/gm.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~

2 4 TSTF-490-A 2

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.16.2	~~------------------NOTE------------------~~ ~~Only required to be performed in MODE 1.~~ ~~---~~	4
LCO 3.4.8.a Table 4.4-4 Item 2	Verify reactor coolant DOSE EQUIVALENT I-131 specific activity ≤ [~~1.0~~ 0.35] μCi/gm.	~~[14 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program] 1 2 TSTF-490-A 2 AND
Table 4.4-4 Item 4.b		Between 2 and 6 hours after a THERMAL POWER change of ≥ 15% RTP within a 1 hour period

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.16, RCS SPECIFIC ACTIVITY

1. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

2. ISTS SR 3.4.16 (ITS SR 3.4.16.1), and ISTS SR 3.4.16.2 (ITS SR 3.4.16.2) provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies for these SRs under the Surveillance Frequency Control Program.

3. Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description.

4. Changes are made to ISTS 3.4.16 as a result of discussions between NRC staff and TVA during a public meeting held on August 12, 2014. ISTS 3.4.16 Condition B is deleted, ISTS 3.4.16 Condition C is re-sequenced to Condition B and revised to include a third Condition of "OR DOSE EQUIVALENT XE-133 not within limit," and ISTS SR 3.4.16.2 Note associated with DEI is deleted. Additionally, TSTF-490 proposed adding a Note to ISTS SR 3.4.16.1, "Only required to be performed in MODE 1." This Note is revised to state, "Only required to be performed in MODES 1, 2, and 3 with $T_{avg} \geq 500°F$."

BASES

ACTIONS (continued)

B.1 and B.2 6

~~INSERT 4~~

~~With the gross specific activity in excess of the allowed limit, the unit must be placed in a MODE in which the requirement does not apply.~~

~~The change within 6 hours to MODE 3 and RCS average temperature < 500°F lowers the saturation pressure of the reactor coolant below the setpoints of the main steam safety valves and prevents venting the SG to the environment in an SGTR event. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 below 500°F from full power conditions in an orderly manner and without challenging plant systems.~~

or if the DOSE EQUIVALENT XE-133 is > 1612.6 μCi/gm,

~~C.1~~ ~~and C.2~~ 6

~~or B~~

If a Required Action and the associated Completion Time of Condition A is not met , or if the DOSE EQUIVALENT I-131 is > ~~[60.0]~~ 21.0 μCi/gm ~~in the unacceptable region of Figure 3.4.16-1~~, the reactor must be brought to MODE 3 ~~with RCS average temperature < 500°F~~ within 6 hours and MODE 5 within 36 hours. The Completion Times ~~of 6 hours is~~ are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems ~~MODE 3 below 500°F from full power conditions in an orderly manner and without challenging plant systems~~. 1 TSTF-490-A

allowed

SURVEILLANCE REQUIREMENTS

SR 3.4.16.1

INSERT 5

~~SR 3.4.16.1 requires performing a gamma isotopic analysis as a measure of the gross specific activity of the reactor coolant. While basically a quantitative measure of radionuclides with half lives longer than 15 minutes, excluding iodines, this measurement is the sum of the degassed gamma activities and the gaseous gamma activities in the sample taken. This Surveillance provides an indication of any increase in gross specific activity.~~

Trending the results of this Surveillance allows proper remedial action to be taken before reaching the LCO limit under normal operating conditions. ~~The Surveillance is applicable in MODES 1 and 2, and in MODE 3 with T_{avg} at least 500°F.~~ ~~[The 7 day Frequency considers the unlikelihood of a gross fuel failure during the time.~~ TSTF-490-A 3

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. TSTF-490-A

INSERT 6

INSERT 4 TSTF-490-A

With the DOSE EQUIVALENT XE-133 greater than the LCO limit, DOSE EQUIVALENT XE-133 must be restored to within limit within 48 hours. The allowed Completion Time of 48 hours is acceptable since it is expected that, if there were a noble gas spike, the normal coolant noble gas concentration would be restored within this time period. Also, there is a low probability of a SLB or SGTR occurring during this time period.

A Note permits the use of the provisions of LCO 3.0.4.c. This allowance permits entry into the applicable MODES(S), relying on Required Action B.1 while the DOSE EQUIVALENT XE-133 LCO limit is not met. This allowance is acceptable due to the significant conservatism incorporated into the specific activity limit, the low probability of an event which is limiting due to exceeding this limit, and the ability to restore transient-specific activity excursions while the plant remains at, or proceeds to, power operation.

6

INSERT 5 TSTF-490-A

SR 3.4.16.1 requires performing a gamma isotopic analysis and calculating the DOSE EQUIVALENT XE-133 using the dose conversion factors in the DOSE EQUIVALENT XE-133 definition ~~once every 7 days~~. This measurement is the sum of the degassed gamma activities and the gaseous gamma activities in the sample taken. This Surveillance provides an indication of any increase in the noble gas specific activity. 3

INSERT 6 TSTF-490-A

Due to the inherent difficulty in detecting Kr-85 in a reactor coolant sample due to masking from radioisotopes with similar decay energies, such as F-18 and I-134, it is acceptable to include the minimum detectable activity for Kr-85 in the SR 3.4.16.1 calculation. If a specific noble gas nuclide listed in the definition of ~~DOS~~ DOSE EQUIVALENT XE-133 is not detected, it should be assumed to be present at the minimum detectable activity.

A Note modifies the SR to ~~allow entry into and operation in MODE 4, MODE 3, and MODE 2 prior to performing the SR. This allows the Surveillance to be performed in those MODES, prior to entering MODE 1.~~ on□□ □e□ui□e t□e □u□□ei□□□nce to □e □e□□o□□ ed in □ □ □ES 1□□□□□nd □ □it□ T□□□ □ □□□°□ 6

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~

4

SR 3.4.16.2

specific activity

This Surveillance is performed ~~in MODE 1 only~~ to ensure iodine remains within limit during normal operation and following fast power changes when ~~fuel failure is more apt to occur~~. ~~[The 14 day Frequency is adequate to trend changes in the iodine activity level, considering gross activity is monitored every 7 days.~~

the LCO

iodine spiking is more apt to occur

TSTF-490-A

3

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~

4

The Frequency, between 2 and 6 hours after a power change ≥ 15% RTP within a 1 hour period, is established because the iodine levels peak during this time following ~~fuel failure~~; samples at other times would provide inaccurate results.

iodine spiking initiation

TSTF-490-A

~~INSERT 7~~

~~SR 3.4.16.3~~

~~A radiochemical analysis for Ē determination is required with the plant operating in MODE 1 equilibrium conditions. The Ē determination directly relates to the LCO and is required to verify plant operation within the specified gross activity LCO limit. The analysis for Ē is a measurement of the average energies per disintegration for isotopes with half lives longer than 15 minutes, excluding iodines. [The Frequency of 184 days recognizes Ē does not change rapidly.~~

TSTF-490-A

INSERT 7

TSTF-490-A

~~The Note modifies the SR to allow entry into and operation in MODE 4, MODE 3, and MODE 2 prior to performing the SR. This allows the Surveillance to be performed in those MODES, prior to entering MODE 1.~~

Enclosure 2, Volume 9, Rev. 0, Page 613 of 696

BASES

ACTIONS (continued)

6

B.1 and B.2

~~INSERT 4~~

~~With the gross specific activity in excess of the allowed limit, the unit must be placed in a MODE in which the requirement does not apply.~~

~~The change within 6 hours to MODE 3 and RCS average temperature < 500°F lowers the saturation pressure of the reactor coolant below the setpoints of the main steam safety valves and prevents venting the SG to the environment in an SGTR event. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 below 500°F from full power conditions in an orderly manner and without challenging plant systems.~~

or if the DOSE EQUIVALENT XE-133 is > 1612.6 μCi/gm,

6

~~C.1~~ ~~and C.2~~

~~or B~~

21.0

, 1 TSTF-490-A

> ~~[60.0]~~ μCi/gm

s

and MODE 5 within 36 hours

are allowed

the required plant conditions from full power conditions in an orderly manner and without challenging plant systems

If a Required Action and the associated Completion Time of Condition A is not met or if the DOSE EQUIVALENT I-131 is ~~in the unacceptable region of Figure 3.4.16-1~~, the reactor must be brought to MODE 3 ~~with RCS average temperature < 500°F~~ within 6 hours. The Completion Time ~~of 6 hours is~~ reasonable, based on operating experience, to reach ~~MODE 3 below 500°F from full power conditions in an orderly manner and without challenging plant systems~~.

SURVEILLANCE REQUIREMENTS

SR 3.4.16.1

INSERT 5

~~SR 3.4.16.1 requires performing a gamma isotopic analysis as a measure of the gross specific activity of the reactor coolant. While basically a quantitative measure of radionuclides with half lives longer than 15 minutes, excluding iodines, this measurement is the sum of the degassed gamma activities and the gaseous gamma activities in the sample taken. This Surveillance provides an indication of any increase in gross specific activity.~~

TSTF-490-A

Trending the results of this Surveillance allows proper remedial action to be taken before reaching the LCO limit under normal operating conditions. ~~The Surveillance is applicable in MODES 1 and 2, and in MODE 3 with T_{avg} at least 500°F.~~ ~~[The 7 day Frequency considers the unlikelihood of a gross fuel failure during the time.~~

3

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

INSERT 6

TSTF-490-A

INSERT 4 TSTF-490-A

With the DOSE EQUIVALENT XE-133 greater than the LCO limit, DOSE EQUIVALENT XE-133 must be restored to within limit within 48 hours. The allowed Completion Time of 48 hours is acceptable since it is expected that, if there were a noble gas spike, the normal coolant noble gas concentration would be restored within this time period. Also, there is a low probability of a SLB or SGTR occurring during this time period. 6

A Note permits the use of the provisions of LCO 3.0.4.c. This allowance permits entry into the applicable MODES(S), relying on Required Action B.1 while the DOSE EQUIVALENT XE-133 LCO limit is not met. This allowance is acceptable due to the significant conservatism incorporated into the specific activity limit, the low probability of an event which is limiting due to exceeding this limit, and the ability to restore transient-specific activity excursions while the plant remains at, or proceeds to, power operation.

INSERT 5 TSTF-490-A

SR 3.4.16.1 requires performing a gamma isotopic analysis and calculating the DOSE EQUIVALENT XE-133 using the dose conversion factors in the DOSE EQUIVALENT XE-133 definition ~~once every 7 days~~. 3
This measurement is the sum of the degassed gamma activities and the gaseous gamma activities in the sample taken. This Surveillance provides an indication of any increase in the noble gas specific activity.

INSERT 6 TSTF-490-A

Due to the inherent difficulty in detecting Kr-85 in a reactor coolant sample due to masking from radioisotopes with similar decay energies, such as F-18 and I-134, it is acceptable to include the minimum detectable activity for Kr-85 in the SR 3.4.16.1 calculation. If a specific noble gas nuclide listed in the definition of ~~DOS~~ DOSE EQUIVALENT XE-133 is not detected, it should be assumed to be present at the minimum detectable activity.

A Note modifies the SR to ~~allow entry into and operation in MODE 4, MODE 3, and MODE 2 prior to performing the SR. This allows the Surveillance to be performed in those MODES, prior to entering MODE 1.~~ 6

on□□ □e□ui□e t□e □u□□ei□□□nce to □e □e□□o□□ ed in □ □ □ES 1 □□□□□nd □ □it□ T□□□ □ □□□°□

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~

4

SR 3.4.16.2

specific activity

This Surveillance is performed ~~in MODE 1 only~~ to ensure iodine remains within limit during normal operation and following fast power changes when ~~fuel failure is more apt to occur~~. ~~[The 14 day Frequency is adequate to trend changes in the iodine activity level, considering gross activity is monitored every 7 days.~~

the LCO

iodine spiking is more apt to occur

TSTF-490-A

3

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~

4

The Frequency, between 2 and 6 hours after a power change ≥ 15% RTP within a 1 hour period, is established because the iodine levels peak during this time following ~~fuel failure~~; samples at other times would provide inaccurate results.

iodine spiking initiation

TSTF-490-A

~~INSERT 7~~

~~SR 3.4.16.3~~

~~A radiochemical analysis for Ē determination is required with the plant operating in MODE 1 equilibrium conditions. The Ē determination directly relates to the LCO and is required to verify plant operation within the specified gross activity LCO limit. The analysis for Ē is a measurement of the average energies per disintegration for isotopes with half lives longer than 15 minutes, excluding iodines. [The Frequency of 184 days recognizes Ē does not change rapidly.~~

TSTF-490-A

INSERT 7

TSTF-490-A

~~The Note modifies the SR to allow entry into and operation in MODE 4, MODE 3, and MODE 2 prior to performing the SR. This allows the Surveillance to be performed in those MODES, prior to entering MODE 1.~~

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JUSTIFICATION FOR DEVIATIONS
ITS 3.4.16 BASES, RCS SPECIFIC ACTIVITY

1. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. ISTS SR 3.4.16.1 and ISTS SR 3.4.16.2 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Therefore, the Frequency for ITS SR 3.4.16.1 and SR 3.4.16.2 is "In accordance with the Surveillance Frequency Control Program."

4. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

5. Editorial/grammatical changes to enhance clarity.

6. Changes are made to be consistent with changes made to the Specification.

Licensee Response/NRC Response/NRC Question Closure

Id	**349**
NRC Question Number	**RPG-013**
Select Application	**NRC Response**
Attachment 1	
Attachment 2	
Response Statement	**The NRC staff has reviewed the licensee's response to RPG-013 question 1c. The response states that monitoring of the reactor coolant system is not required in Mode 5 based upon the probability of an accident occurring in Mode 5. Reasonable assurance of adequate protection cannot be based solely on risk.** **Therefore, the staff requests that the licensee provide a justification why the current APPLICABILITY of MODE 5 should be removed from the technical specifications.**
Response Date/Time	**9/25/2014 6:00 PM**
Closure Statement	
Question Closure Date	
Notification	**Mark Blumberg** **Scott Bowman** **Michelle Conner** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**9/25/2014 3:25 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**381**
NRC Question Number	**RPG-013**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**The following information is provided concerning the Staff's response to RAI RPG-013, Question 1.c.** **CTS LCO 3.4.8 is applicable in MODES 1, 2, 3, 4, and 5. ITS LCO 3.4.16 is applicable in MODES 1, 2, 3, and 4. The LCO limits are established to minimize the radiological dose consequences in the event of a steam line break (SLB) or steam generator tube rupture (SGTR) accident. In MODES 1, 2, 3, and 4, operation within the LCO limits for DOSE EQUIVALENT I–131 and DOSE EQUIVALENT XE-133 is necessary to limit the potential consequences of an SLB or SGTR. In MODE 5, the SLB and SGTR are not credible events for a radiological release. (In MODE 5, there is no steam production because the RCS average temperature is ≤ 200ºF.) Therefore, the Applicability for ITS 3.4.16 is limited to the MODES (MODES 1, 2, 3, and 4) in which a radiological release from an SLB or SGTR is credible.**
Response Date/Time	**11/24/2014 12:20 PM**
Closure Statement	
Question Closure Date	
Notification	**Mark Blumberg** **Scott Bowman** **Michelle Conner** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**11/24/2014 11:18 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**398**
NRC Question Number	**RPG-013**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**12/16/2014**
Notification	**Mark Blumberg Scott Bowman Michelle Conner Robert Elliott Ravinder Grover Khadijah Hemphill Andrew Hon Lynn Mynatt Ray Schiele Roger Scott**
Added By	**Ravinder Grover**
Date Added	**12/16/2014 8:21 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**205**
NRC Question Number	**RPG-014**
Category	**Technical**
ITS Section	**3.9**
ITS Number	**3.9.4**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

Second paragraph in REVIEWER'S NOTE of ITS Bases for LCO 3.9.4, "Containment Penetrations," in Enclosure 2, Volume 14, Revision 0, Page 127 of 236, states the following:

> **"Additionally, licensees adding the term "recently" must make the following commitment which is consistent with NUMARC 93-01, Revision 4, Section 11.3.6.5 "Safety Assessment for Removal of Equipment from Service During Shutdown Conditions," subheading "Containment -Primary (PWR)/Secondary (BWR)."**

The licensee's proposed change deletes the paragraph in its entirety. The licensee's JUSTIFICATION FOR DEVIATIONS #5 for Bases on page 145 explains the deletion as follow;

> **"The Reviewer's Note has been deleted and appropriate information retained. This Reviews Note is associated with the adoption of TSTF-51, "Revise containment requirements during handling irradiated fuel and core alterations," which added the term 'recently'. TVA added information to the CTS bases when the term 'recently' was added to SQN TS**

under License Amendments 288/278 (Unit 1/Unit 2) (ADAMS Accession Nos. ML033030206 and ML033070057). The Bases is changed to include the applicable information contained in TSTF-51 and NUMARC 91-06. This will allow TVA to have a method in place to promptly close the primary containment (i.e., the equipment hatch) or the secondary containment (i.e., auxiliary building secondary containment enclosure (ABSCE)) using the ABGTS to draw the release from a postulated fuel handling accident in the proper direction such that it can be treated and monitored."

The Staff's review finds concerns in two areas:

a) The justification does not address deletion of NUMARC 93-01. It references NUMARC 91-06, and

b) Is SQN committed to specific section 11.3.6.5 of NUMARC 93-01, Revision 4, as identified in the REVIEWERS NOTE? The Staff has noticed that Enclosure 8 provides a listing of SQN's Regulatory Commitments. Item 7 on Page 121 lists commitment to NUMARC 93-01, Section 11 for TSTF-427. However, the NOTE states, "Additionally, licensees adding the term "recently" must make the following commitment which is consistent with NUMARC 93-01, Revision 4, Section 11.3.6.5."

Please explain the above concerns.

Attach File 1	
Attach File 2	
Issue Date	**1/16/2015**
Added By	**Ravinder Grover**
Date Modified	
Modified By	
Date Added	**1/16/2015 1:03 PM**
Notification	**Mark Blumberg Scott Bowman Michelle Conner Robert Elliott Ravinder Grover Khadijah Hemphill Andrew Hon Lynn Mynatt Ray Schiele**

Roger Scott

Licensee Response/NRC Response/NRC Question Closure

Id	**430**
NRC Question Number	**RPG-014**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 for RAI RPG-014.pdf** (1MB)
Attachment 2	
Response Statement	

In response to RPG-014, Justification for Deviation 5 (page 145 of Enclosure 2, Volume 14) will be revised to state, "The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not to be retained in the final version of the plant specific submittal. See Enclosure 8 for SQN's commitment associated with the Reviewer's Note." There will no longer be a reference in JFD 5 to NUMARC 91-06.

Additionally, Enclosure 8, Regulatory Commitments, will be revised to include the commitment required by the Reviewer's Note in ISTS 3.9.4, Applicability Section. The commitment is consistent with NUMARC 93-01, Revision 4, Section 11.3.6.5 "Safety Assessment for Removal of Equipment from Service During Shutdown Conditions," subheading "Containment - Primary (PWR)/Secondary (BWR)." The commitment will state:

"The following guidelines are included in the assessment of systems removed from service during movement [of] irradiated fuel:

- During fuel handling/core alterations, ventilation system and radiation monitor availability (as defined in NUMARC 91-06) should be assessed, with respect to filtration and monitoring of releases from the fuel. Following shutdown, radioactivity in the fuel decays away fairly rapidly. The basis of the Technical

Specification OPERABILITY amendment is the reduction in doses due to such decay. The goal of maintaining ventilation system and radiation monitor availability is to reduce doses even further below that provided by the natural decay.

- A single normal or contingency method to promptly close primary or secondary containment penetrations should be developed. Such prompt methods need not completely block the penetration or be capable of resisting pressure.

The purpose of the "prompt methods" mentioned above are to enable ventilation systems to draw the release from a postulated fuel handling accident in the proper direction such that it can be treated and monitored."

See Attachment 1 for the draft revised ITS 3.9.4 Bases JFD 5 and Enclosure 8.

Response Date/Time	**3/4/2015 6:00 AM**
Closure Statement	
Question Closure Date	
Notification	**Mark Blumberg** **Scott Bowman** **Michelle Conner** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**3/4/2015 5:01 AM**
Date Modified	
Modified By	

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.4 BASES, CONTAINMENT PENETRATIONS

1. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal. Disposition of the issue associated with this Reviewers Note was in SQN License Amendment 209/199 (U1/U2) [ADAMS Accession No ML013320204], which added CTS 3.9.4.b.2.

4. Typographical/grammatical error corrected.

5. ~~The Reviewer's Note has been deleted and appropriate information retained. This Reviews Note is associated with the adoption of TSTF-51, "Revise containment requirements during handling irradiated fuel and core alterations," which added the term 'recently'. TVA added information to the CTS bases when the term 'recently' was added to SQN TS under License Amendments 288/278 (Unit 1/Unit 2) (ADAMS Accession Nos. ML033030206 and ML033070057). The Bases is changed to include the applicable information contained in TSTF-51 and NUMARC 91-06. This will allow TVA to have a method in place to promptly close the primary containment (i.e., the equipment hatch) or the secondary containment (i.e., auxiliary building secondary containment enclosure (ABSCE)) using the ABGTS to draw the release from a postulated fuel handling accident in the proper direction such that it can be treated and monitored.~~

6. ISTS SR 3.9.4.1 Bases contains a statement "This Surveillance demonstrates that each of the containment penetrations required to be in its closed position is in that position. The Surveillance on the open purge and exhaust valves will demonstrate that the valves are not blocked from closing. Also the Surveillance will demonstrate that each valve operator has motive power, which will ensure that each valve is capable of being closed by an OPERABLE automatic containment purge and exhaust isolation signal." ITS SR 3.9.4.1 Bases states "This Surveillance demonstrates that each containment penetration is in its required status. The requirement that penetrations are capable of being closed by an OPERABLE automatic containment ventilation isolation valve, can be verified by ensuring that each required containment ventilation isolation valve operator has motive power." This change is acceptable because it is consistent with the requirements in the Specification.

7. ISTS SR 3.9.4.1 and SR 3.9.4.2 Bases provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Additionally, the Frequency description which is being removed will be included in the Surveillance Frequency Control Program.

The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not to be retained in the final version of the plant specific submittal. See Enclosure 8 for SQN's commitment associated with the Reviewer's Note.

No.	Commitments for TSTF-446	Due Date/Event
9	Sequoyah Unit 1 & Unit 2 will implement the capability to assess the effect on incremental large early release probability when using the extended completion times for containment isolation valves in the program for managing risk in accordance with 10 CFR 50.65(a)(4) and the plant-specific configuration risk management program.	Upon Implementation
No.	**Commitments for TSTF-493**	**Due Date/Event**
10	Sequoyah will revise the UFSAR to include the methodologies used to determine the as-found and as-left tolerances for Limiting Safety Setting System (LSSS) instrument channel setpoints.	Upon Implementation
11	Sequoyah will develop a monitoring program to adequately track the performance of Master Relays, Slave Relays, Logic Cabinets, Universal Logic Cards, Undervoltage Driver Cards, Safeguards Driver Cards, and Reactor Trip Breakers. (Reference Westinghouse Reports Section 3.2 and 3.5)	Upon Implementation

13

The above table identifies ~~11~~ commitments by TVA in Enclosure 8 for the SQN conversion to Improved Technical Specifications license amendment request (LAR). Any other statements in this LAR submittal are provided for informational purposes and are not considered regulatory commitments.

No.	Commitment for ITS 3.7.12 Condition B	Due Date/Event
12	Sequoyah will have guidance available describing compensatory measures to be taken in the event of an intentional or unintentional entry into ITS 3.7.12 Condition B.	Upon Implementation

See following page for Commitment 13

No.	Commitment for ITS 3.9.4 Reviewer's Note	Due Date/Event
13	“The following guidelines are included in the assessment of systems removed from service during movement irradiated fuel: - During fuel handling/core alterations, ventilation system and radiation monitor availability (as defined in NUMARC 91-06) should be assessed, with respect to filtration and monitoring of releases from the fuel. Following shutdown, radioactivity in the fuel decays away fairly rapidly. The basis of the Technical Specification OPERABILITY amendment is the reduction in doses due to such decay. The goal of maintaining ventilation system and radiation monitor availability is to reduce doses even further below that provided by the natural decay. - A single normal or contingency method to promptly close primary or secondary containment penetrations should be developed. Such prompt methods need not completely block the penetration or be capable of resisting pressure. The purpose of the "prompt methods" mentioned above are to enable ventilation systems to draw the release from a postulated fuel handling accident in the proper direction such that it can be treated and monitored."	Upon Implementation

Licensee Response/NRC Response/NRC Question Closure

Id	**435**
NRC Question Number	**RPG-014**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**4/21/2015**
Notification	**Mark Blumberg** **Scott Bowman** **Michelle Conner** **Robert Elliott** **Ravinder Grover** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Ravinder Grover**
Date Added	**4/21/2015 4:06 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**153**
NRC Question Number	**VKG001**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.1**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Vijay Goel**
Conf Call Requested	**N**
NRC Question	**ITS LCO 3.8.1 (a) states, "Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System; and"** **In order to clearly define the AC Electrical Distribution System as part of this LCO, the LCO 3.8.1 (a) should be reworded as follows: "Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System (two trains of the 6.9 kV Shutdown Boards 1A-A, 1B-B; and 2A-A, 2B-B); and" The change is considered necessary because power supply to Shutdown Boards 1A-A, 1B-B, 2A-A, and 2B-B is discussed in various LCO 3.8.1 conditions. Please provided re-wording of LOC 3.8.1 (a) or justify otherwise.**
Attach File 1	
Attach File 2	
Issue Date	**6/18/2014**
Added By	**Matthew Hamm**
Date Modified	
Modified By	
Date Added	**6/18/2014 2:39 PM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**175**
NRC Question Number	**VKG001**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**In response to RAI VKG-001, the following information is provided to justify not including details of the Class 1E electrical distribution system within ITS LCO 3.8.1.** **The Sequoyah Nuclear Plant (SQN) Class 1E electrical distribution system is adequately described in ITS 3.8.1 Bases, Background Section. Within ISTS 3.8.1 Bases markup, on page B 3.8.1-1, Insert 1(pages 99 and 149 of Enclosure 2, Volume 13), the onsite Class 1E electrical distribution system includes a description of the 6.9 kV Shutdown Board arrangement. On page B 3.8.1-3, Insert 8 (pages 104-106 and 154-156), a detailed description of the offsite circuits is provided. The description provides several examples of offsite circuit configurations, including various offsite "power source" combinations available to meet the GDC 17 requirements for an OPERABLE offsite circuit.** **The descriptions of the Class 1E electrical distribution system and offsite circuits provided in the ITS 3.8.1 Bases are details of system design that are not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety.**
Response Date/Time	**7/16/2014 2:30 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/16/2014 1:28 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**227**
NRC Question Number	**VKG001**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/4/2014**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**8/4/2014 5:52 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**154**
NRC Question Number	**VKG002**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.1**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Vijay Goel**
Conf Call Requested	**N**
NRC Question	**ITS LCO 3.8.1, Condition A states, "One offsite circuit inoperable for reasons other than Condition C." The Completion Time corresponding to Required Action A.2 states, "24 hours from discovery of no offsite power to 6.9 kV Shutdown Board 1A-A or 1B-B concurrent with inoperability of redundant required features"** **It is not clear how the Condition A is related to Shutdown Board 1A-A or 1B-B indicated in Action A.2, and how it is related to Condition C. Because of the complexity of various alternate power feeds to the four 6 kV Shutdown Boards 1A-A, 2A-A, 1B-B, and 2B-B, the Condition A should clearly state the offsite circuit to which specific Shutdown Board(s) is considered inoperable as part of Condition A. Condition A should be revised (similar to the Condition A the licensee presented in the pre-submittal meeting dated June 4, 2013), as follows: "One offsite circuit to 6.9 kV Shutdown Board 1A-A inoperable <u>OR</u> One offsite circuit to 6.9 kV Shutdown Board 1B-B inoperable <u>OR</u> One offsite circuit to 6.9 kV Shutdown Boards 1A-A and 2A-A inoperable <u>OR</u> One offsite circuit to 6.9 kV Shutdown Boards 1B-B and 2B-B inoperable" with a NOTE: "Inoperable offsite circuits to Shutdown Board 2A-A or 2B-B are addressed in Condition C." Please provide requisite re-wording of Condition A or justify otherwise.**
Attach File 1	
Attach File 2	
Issue Date	**6/18/2014**
Added By	**Matthew Hamm**

Date Modified	
Modified By	
Date Added	**6/18/2014 2:40 PM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**176**
NRC Question Number	**VKG002**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	

Current Technical Specifications (CTS) 3.8.1.1, Action a, requires the restoration of an inoperable offsite circuit to an operable status in 72 hours. This action applies to an offsite circuit that is inoperable for any reason.

As stated in ITS 3.8.1 Bases markup, Insert 2, there are several offsite power sources that can be combined to form an offsite circuit. In some cases, combinations of different transformers (i.e., unit station service transformers (USSTs) and/or common service station transformers (CSSTs)) are used. Insert 8 provides four common offsite power source alignments using different combinations of transformers to provide two qualified offsite circuits.

For example, Insert 8, offsite power configuration 2 provides the following combination (simplified):

2. Two offsite circuits consisting of a and b (Circuit 2 relies on automatic transfer to CSST A or CSST C on a loss of one or more USSTs):

    a. Normal power source alignments (Circuit 1)

        1) USST 1A to 6.9 kV Shutdown Board 1A-A;

        2) USST 1B to 6.9 kV Shutdown Board 1B-B;

        3) USST 2A to 6.9 kV Shutdown Board 2A-A; and

        4) USST 2B to 6.9 kV Shutdown Board 2B-B.

    b. Alternate power source alignments (b.1 or b.2) (Circuit 2)

        1) From the 161 kV transmission network, through:

            (a) CSST A (winding X) to 6.9 kV Shutdown Board 1B-B; and

            (b) CSST A (winding Y) to 6.9 kV Shutdown Board 2B-B; or

        2) From the 161 kV transmission network, through:

            (a) CSST C (winding X) to 6.9 kV Shutdown Board 2A-A; and

            (b) CSST C (winding Y) to 6.9 kV Shutdown Board 1A-A.

In the above example, as it pertains to Unit 1 operation, if USST 2A becomes inoperable to 6.9 kV Shutdown Board 2A-A, the offsite circuit is inoperable solely due to an inoperable offsite power source to an opposite unit's shutdown board. Therefore, ITS 3.8.1, Condition C, applies and is entered. If the offsite circuit is inoperable for any other reason, then ITS 3.8.1, Condition A, applies and is entered.

The Required Actions associated with ITS 3.8.1, Condition C, focus on the impact to the shared equipment that the associated unit is crediting that is powered from the opposite unit's 6.9 kV Shutdown Board. The intent of ITS 3.8.1 Condition A is to address the instances of an offsite circuit inoperable for any reason other than the cases covered by Condition C. Therefore, ITS 3.8.1, Condition A is worded correctly to address all other reasons that an offsite circuit may be inoperable.

ITS 3.8.1, Required Action A.2, is provided to ensure that during the time that Condition A is entered, if a required feature becomes inoperable that is redundant to a required feature powered from an associated unit's shutdown board (i.e., for Unit 1, 6.9 kV Shutdown Board 1A–A or 1B-B), then the required feature powered from the associated unit's shutdown board is required to be declared inoperable in 24 hours. Required Action A.2 provides assurance that an event coincident with a single failure of the associated DG will not result in a complete loss of safety function of critical redundant required features.

Response Date/Time	**7/16/2014 2:35 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/16/2014 1:33 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**228**
NRC Question Number	**VKG002**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/4/2014**
Notification	**Scott Bowman Michelle Conner Vijay Goel Khadijah Hemphill Andrew Hon Lynn Mynatt Ray Schiele Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**8/4/2014 5:52 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**155**
NRC Question Number	**VKG003**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.1**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Vijay Goel**
Conf Call Requested	**N**
NRC Question	**ITS LCO 3.8.1, Condition C states, "One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B inoperable."** **It is not clear why in the Condition C, the "offsite circuit inoperable" is constrained to "solely due to an offsite power source inoperable" while no such constraint is considered in Condition A.** **Condition C should be revised (similar to the Condition C the licensee presented in the pre-submittal meeting dated June 4, 2013), as follows: "One offsite circuit to 6.9 kV Shutdown Board 2A-A or 2B-B inoperable" with a NOTE: "Only applicable when offsite circuits to 6.9 kV Shutdown Boards 1A-A and 1B-B are OPERABLE." Please provide requisite re-wording of Condition C or justify otherwise. Also, please identify parameters and value/range of parameters which will render an offsite power source/circuit inoperable.**
Attach File 1	
Attach File 2	
Issue Date	**6/18/2014**
Added By	**Matthew Hamm**
Date Modified	
Modified By	
Date Added	**6/18/2014 2:42 PM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**177**
NRC Question Number	**VKG003**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	

Response Statement

ITS 3.8.1 Condition C is applicable to the specific cases of an inoperable offsite circuit due to an inoperable power source to an opposite unit's 6.9 kV Shutdown Board. The Required Actions associated with Condition C focus on the impact to the shared equipment that the associated unit is crediting that is powered from the opposite unit's 6.9 kV Shutdown Board. The Note that modified Condition C, as presented during the June 4, 2013 pre-submittal meeting, was later removed with the rewording of Condition C to refer to an offsite circuit inoperable solely due to an inoperable power source to an opposite unit's 6.9 kV Shutdown Board. The reworded Condition meets the same intent of specifying that Condition C entry depends on the operability of offsite circuits to the associated unit's 6.9 kV Shutdown Boards.

The intent of ITS 3.8.1 Condition A is to address the instances of an offsite circuit inoperable for any reason other than the cases covered by Condition C. ITS 3.8.1 Condition A addresses all instances of an inoperable offsite circuit that are currently addressed by CTS 3.8.1.1 Action a, with the exception of an offsite circuit inoperable due to an inoperable offsite power source to an opposite unit's 6.9 kV Shutdown Board (ITS 3.8.1 Condition C). Therefore, the wording of ITS 3.8.1 Condition C is appropriate.

The operability of Sequoyah Nuclear Plant (SQN) offsite power sources is dependent on several factors which are under the control of and are the responsibility of the Transmission Operator. These include:

1. **Total System Load**

2. **SQN Switchyard configuration (including Intertie Transformer and Capacitor Bank)**

3. **Configuration of 161kV and 500kV Transmission Lines outside SQN**

The required minimum post-accident voltage for a normal SQN load alignment is 153kV at all times. SQN has alternate load alignments with higher minimum post-accident voltage requirements (159kV) which, therefore, require notification to the Transmission Operator:

1. **Supplying more than one shutdown board from a single common station service transformer (CSST) winding (Start Bus).**

2. **Transferring any boards fed from the 6.9kV Common Boards to alternate or**

transferring any 480V Unit Board, Turbine Building Motor Operated Valve or Vent Board to alternate.

3. Any CSST tap changer not in automatic for a CSST winding which is supplying a Start Bus.

The 500kV bus voltage should be maintained at a level of 520kV.

With a unit station service transformer (USST) load tap changer (LTC) in any position other than AUTO, if the transformer is supplying a Shutdown Board, then the offsite power source to the associated Shutdown Boards is inoperable.

Response Date/Time	**7/16/2014 2:40 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/16/2014 1:36 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**263**
NRC Question Number	**VKG003**
Select Application	**NRC Response**
Attachment 1	
Attachment 2	

Response Statement

In response to RAI # VKG003, the licensee stated:

“The required minimum post-accident voltage for a normal SQN load alignment is 153kV at all times. SQN has alternate load alignments with higher minimum post-accident voltage requirements (159kV) which, therefore, require notification to the Transmission Operator:

1. Supplying more than one shutdown board from a single common station service transformer (CSST) winding (Start Bus).

2. Transferring any boards fed from the 6.9kV Common Boards to alternate or transferring any 480V Unit Board, Turbine Building Motor Operated Valve or Vent Board to alternate.

3. Any CSST tap changer not in automatic for a CSST winding which is supplying a Start Bus.

The 500kV bus voltage should be maintained at a level of 520kV.”

Whereas the licensee provided minimum post-accident voltage required at 161 kV level, the minimum post-accident voltage required at 500 kV level is not provided. It is not clear whether 520 kV is the minimum bus voltage required corresponding to the post-accident at 500 kV level. Please provide necessary information and confirm that minimum post-accident voltage(s) are based upon appropriate supporting calculation (s)/documentation. Also, confirm the voltage level(s) of 161 kV and 500 kV sources below which these sources will be declared inoperable.

Response Date/Time	**8/13/2014 6:00 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel**

	Khadijah Hemphill **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**8/13/2014 9:39 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**332**
NRC Question Number	**VKG003**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**The offsite transmission network supplies power to SQN onsite loads via the 161 kV and the 500 kV switchyard. In order to ensure that adequate power can be supplied to the onsite power loads for a Design Basis Event, a minimum worst case transient voltage has been established for each switchyard. The minimum voltage for the 161 kV and the 500 kV switchyard has been set at 153 kV and 480 kV, respectively. Voltage drops below these values would indicate inoperable offsite power sources. The TVA Transmission Group has established normal operational parameters for each switchyard that SQN monitors. Operators in the Main Control Room monitor the 161 kV switchyard for voltages between 165 kV and 170 kV. The 500 kV switchyard is monitored for voltages between 510 kV and 530 kV. If the switchyard voltages are outside these limits, the Transmission Operator is required to be notified within 30 minutes. The TVA Transmission Group then determines if the offsite power source has the necessary capacity and capability to be considered OPERABLE.**
Response Date/Time	**9/11/2014 4:30 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Lynn Mynatt**
Date Added	**9/11/2014 3:24 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**333**
NRC Question Number	**VKG003**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/15/2014**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**9/15/2014 7:47 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**156**
NRC Question Number	**VKG004**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.1**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Vijay Goel**
Conf Call Requested	**N**
NRC Question	**ITS LCO 3.8.1, Condition C, Required Action C.3 states, "Declare associated required feature(s) inoperable." Completion Time: 7 days** **In the ITS Bases, Page B 3.8.1-8a (LAR, Enclosure 2, Volume 13, Page 114), for Action C.3, the licensee stated that, "The required offsite circuit must be returned to OPERABLE status within 7 days, or the support function for the associated required feature is considered inoperable." To be consistent with ITS Bases, the Action C.3 of LCO 3.8.1 should be revised to state, "Return required offsite circuit to OPERABLE status OR Declare associated required feature(s) inoperable." Please provide detailed justification why declaring only the associated required feature(s) is considered adequate. Also provide detailed justification for completion time of 7 days for Action C.3 comparing it to the corresponding Completion Time of 72 hours for Action A.3.**
Attach File 1	
Attach File 2	
Issue Date	**6/18/2014**
Added By	**Matthew Hamm**
Date Modified	
Modified By	
Date Added	**6/18/2014 2:44 PM**

Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**178**
NRC Question Number	**VKG004**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	

TSTF-GG-05-01, "Writer's Guide for Plant-Specific Improved Technical Specifications," Section 4.1.6.g states, "A Required Action which requires restoration, such that the Condition is no longer met, is considered superfluous. It is only included if it would be the only Required Action for the Condition or it is needed for presentation clarity." Therefore, it is unnecessary to include a Required Action to return a required DG to an operable status, as it is always an option to restore compliance with the LCO.

Proposed ITS 3.8.1 Condition C is entered when one offsite circuit is inoperable solely due to an inoperable offsite power source to an opposite unit's shutdown board. Therefore, Required Action C.3 requires declaration that the associated required features are inoperable with a Completion Time of 7 days. This action is appropriate due to the limited amount of shared equipment that exists on an opposite unit's shutdown board (see lists below). In addition, notwithstanding the inoperability of the power source, the current technical specifications (CTS 3.0.5) allow equipment to be considered operable for an indefinite amount of time with an inoperable normal or emergency power supply, as long as the redundant equipment remains operable.

Major shared equipment on an opposite unit's shutdown board:

<u>6.9 kV Shutdown Board 1A-A (and associated 480 V shutdown boards)</u>
ERCW Pump J-A (Note 1)
ERCW Pump Q-A (Note 1)
Control Room AHU A-A (Note 2)
Control Room AC Compressor A-A (Note 2)
CCS Pump 1A-A (Note 3)
EGTS Fan A-A (Note 4)
125 V Vital Battery Charger I (Note 5)

<u>6.9 kV Shutdown Board 1B-B (and associated 480 V shutdown boards)</u>
ERCW Pump L-B (Note 1)
ERCW Pump N-B (Note 1)
Control Room AHU B-B (Note 2)
Control Room AC Compressor B-B (Note 2)
CCS Pump 1B-B (Note 3)
EGTS Fan B-B (Note 4)
125 V Vital Battery Charger II (Note 5)

<u>6.9 kV Shutdown Board 2A-A (and associated 480 V shutdown boards)</u>

ERCW Pump R-A (Note 1)
ERCW Pump K-A (Note 1)
CCS Pump 2A-A (Note 3)
ABGTS Fan A-A (Note 6)
Auxiliary Control Air Compressor A-A (Note 7)
125 V Vital Battery Charger III (Note 5)

6.9 kV Shutdown Board 2B-B (and associated 480 V shutdown boards)
ERCW Pump P-B (Note 1)
ERCW Pump M-B (Note 1)
CCS Pump 2B-B (Note 3)
CCS Pump C-S (Note 3)
ABGTS Fan B-B (Note 6)
Auxiliary Control Air Compressor B-B (Note 7)
125 V Vital Battery Charger IV (Note 5)

NOTES:

1. The current requirement is for one operable ERCW pump per 6.9 kV Shutdown Board. Following implementation of an approved license amendment (TS-SQN-13-01 and TS-SQN-13-02, ML13280A267) an operable ERCW system train can require as few as one ERCW pump with consideration of the UHS temperature requirements. Until then, ITS 3.7.8, Condition A will require an inoperable ERCW system train to be restored in 72 hours.
2. Per ITS 3.7.10, Condition A, an inoperable train of CREVS is required to be restored in 7 days. Per ITS 3.7.11, Condition A, an inoperable CRACS train is required to be restored in 30 days.
3. CCS trains can be aligned and meet the requirements of ITS LCO 3.7.7 with the remaining operable pumps with one 6.9 kV Shutdown Board inoperable.
4. Per ITS 3.6.10, Condition A, an inoperable EGTS train is required to be restored in 7 days.
5. With the adoption of TSTF-500, ITS 3.8.4, Condition A requires an inoperable battery charger to be restored in 7 days, provided battery terminal voltage can be maintained greater than or equal to the minimum established float voltage and battery float current is maintained less than or equal to 2 amps.
6. Per ITS 3.7.12, Condition A, an inoperable ABGTS train is required to be restored in 7 days.

7. Following implementation of the proposed plant modification to install one or more auxiliary control air compressor(s), two trains of auxiliary control air can be maintained with either 6.9 kV Shutdown Board 2A-A or 2B-B inoperable. Until then, the most limiting components are the Atmospheric Relief Valves (ARVs) and the Auxiliary Feedwater (AFW) System level control valves. ITS 3.7.4, Condition A requires one or more ARV lines inoperable due to one train of Auxiliary Control Air nonfunctional to be restored in 72 hours. ITS 3.7.5, AFW, Condition B requires (in MODE 1, 2, or 3) one AFW train inoperable for reasons other than an inoperable steam supply to a turbine driven train to be restored in 72 hours.

Response Date/Time **7/16/2014 2:40 PM**

Closure Statement

Question Closure Date

Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/16/2014 1:39 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**229**
NRC Question Number	**VKG004**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/4/2014**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**8/4/2014 5:53 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**157**
NRC Question Number	**VKG005**
Category	**Technical**
ITS Section	**3.8**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Vijay Goel**
Conf Call Requested	**N**
NRC Question	**According to UFAR Section 8.1.4, the onsite (standby) power system is designed for postulated accident conditions in one unit and safe shutdown of the other unit, considering loss of offsite power and considering a single failure.** **Please provide summary of worst case diesel generator (DG) loadings, considering loss of offsite power to both units; Unit 1 in accident condition; Unit 2 in safe shutdown condition; and single failure considered as follows (two separate scenarios): (1) One DG inoperable in Unit 1 (say DG 1A-A or DG 1B-B), and (2) One DG inoperable in Unit 2 (say DG 2A-A or DG 2B-B).**
Attach File 1	
Attach File 2	
Issue Date	**6/18/2014**
Added By	**Matthew Hamm**
Date Modified	
Modified By	
Date Added	**6/18/2014 2:46 PM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**179**
NRC Question Number	**VKG005**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1, RAI VKG-005 Draft Response.pdf** (94KB)
Attachment 2	
Response Statement	**The diesel generator (DG) loading calculation evaluates the loading of each DG separately, in that all permanently connected and sequenced loads are considered to load onto each respective DG during any loss of offsite power (LOOP) event. The calculation contains analysis to support the safe shutdown during a LOOP, as well as a LOOP with a loss of coolant accident (LOCA). Because each DG is analyzed separately to its respective worst case loading, it is not necessary to differentiate which unit is in an accident condition or which DG is inoperable.** **Attachment 1 contains excerpts from the DG loading calculation that reflect the calculated worst-case loading for each DG.**
Response Date/Time	**7/16/2014 2:45 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/16/2014 1:42 PM**
Date Modified	
Modified By	

Attachment 1 – SQN DG Loading

DG Load Carrying Capability

The following tables show the maximum steady state (running) load of each DG during a loss of offsite power (LOOP), LOOP with safety injection and containment isolation Phase A (LOOP+SIA), and LOOP with safety injection and containment isolation Phase B (LOOP+SIB). These tables represent the total steady-state running load of all sequenced loads plus the base continuous load on each DG plus random loads.

DG Loading, Load Carrying Capability

Maximum Steady-State Running Load, 0 hrs to 2 hrs

kW	1A-A	1B-B	2A-A	2B-B	Short-Time Rating	Minimum Margin (%)
LOOP Time	3413.13 >120 sec	3589.95 >25 min	3594.86 >25 min	3687.63 >120 sec	4840	23.8
LOOP + SIA Time	3726.18 >720 sec	3868.80 >25 min	3901.45 >25 min	3975.06 >720 sec	4840	17.9
LOOP + SIB Time	4056.42 >720 sec	4197.20 >25 min	4272.39 >25 min	4344.83 >720 sec	4840	10.2

kVA	1A-A	1B-B	2A-A	2B-B	Short-Time Rating	Minimum Margin (%)
LOOP Time	3775.66 >120 sec	3977.05 >25 min	3971.53 >25 min	4073.29 >120 sec	5500	25.9
LOOP + SIA Time	4207.34 >720 sec	4368.94 >25 min	4399.56 >25 min	4478.99 >720 sec	5500	18.6
LOOP + SIB Time	4550.78 >720 sec	4708.11 >25 min	4798.90 >25 min	4863.29 >720 sec	5500	11.6

Maximum Steady-State Running Load, 2 hrs to End

kW	1A-A	1B-B	2A-A	2B-B	Continuous Rating	Minimum Margin
LOOP Time	3351.98 End	3514.35 End	3576.16 End	3615.91 End	4400	17.8
LOOP + SIA Time	3601.39 End	3731.80 End	3748.77 End	3842.54 End	4400	12.7
LOOP + SIB Time	3931.46 End	4060.05 End	4119.03 End	4154.04 End	4400	5.6

kVA	1A-A	1B-B	2A-A	2B-B	Short-Time Rating	Minimum Margin (%)
LOOP Time	3706.21 End	3894.81 End	3950.92 End	3991.01 End	5000	20.2
LOOP + SIA Time	4063.12 End	4213.80 End	4225.24 End	4323.80 End	5000	13.5
LOOP + SIB Time	4407.27 End	4553.99 End	4624.65 End	4644.92 End	5000	7.1

Attachment 1 – SQN DG Loading

Motor Starting Capability

The following tables show the maximum transient loading (starting + running) load of each DG during LOOP, LOOP+SIA, and LOOP+SIB. These tables represent the total transient loading of all sequenced loads plus the base continuous load on each DG including the random loads and the starting of the largest random load.

DG Loading, Motor Starting Capability

Maximum Transient Loading (Real Power) 0 to 180 sec

kW	1A-A	1B-B	2A-A	2B-B	Cold Engine Capability	Minimum Margin (%)
LOOP Time	3613.12 120 sec	3580.40 120 sec	3617.84 120 sec	3906.18 120 sec	4785	18.4
LOOP + SIA Time	3720.74 30 sec	3694.47 30 sec	3702.74 30 sec	4181.53 30 sec	4785	12.6
LOOP + SIB Time	3476.26 30 sec	3398.37 30 sec	3510.32 30 sec	3978.24 30 sec	4785	16.9

Maximum Transient Loading (Real Power) 180 sec to End

kW	1A-A	1B-B	2A-A	2B-B	Hot Engine Capability	Minimum Margin (%)
LOOP Time	3497.08 25 min	3837.82 25 min	3852.93 25 min	3789.31 25 min	5073	24.1
LOOP + SIA Time	3844.69 210 sec	4114.06 25 min	4155.07 25 min	4117.81 210 sec	5073	18.1
LOOP + SIB Time	4622.41 180 sec	4508.76 180 sec	4639. 12 180 sec	4930.42 180 sec	5073	2.8

Maximum Step Load Increase (Apparent Power) 0 sec to End

kVA	1A-A	1B-B	2A-A	2B-B	Generator Step Load Capability	Minimum Margin (%)
LOOP Time	4670.59 0 sec	4820.23 0 sec	4197.17 2 sec	4351.30 0 sec	6500	25.8
LOOP + SIA Time	4772.05 0 sec	4904.62 0 sec	4171.27 2 sec	4458.34 0 sec	6500	24.5
LOOP + SIB Time	4174.37 180 sec	4186.03 180 sec	4249.41 180 sec	4200.36 180 sec	6500	34.6
Parallel Time	6298.45 N/A	6390.36 N/A	6246.06 N/A	6376.23 N/A	6500	1.7

Attachment 1 – SQN DG Loading

The following is a summary of DG loads compared to the DG ratings and capabilities, and the margin available:

<u>Worst Case DG Loading, Load Carrying Capability</u>

Maximum Steady-State Running Load, 0 hrs to 2 hrs

	1A-A	. 1B-B	2A-A	2B-B	Short-Time Rating	Minimum Margin (%)
kW Event/Time	4056.42 SI B >720 sec	4197.20 SI B >25 min	4272.39 SI B >25 min	4344.83 SI B >720 sec	4840	10.2
kVA Event/Time	4550.78 SI B >720 sec	4708.11 SI B >25 min	4798.90 SI B >25 min	4863.29 SI B >720 sec	5500	11.6

Maximum Steady-State Running Load, 2 hrs to End

	1A-A	. 1B-B	2A-A	2B-B	Short-Time Rating	Minimum Margin (%)
kW Event/Time	3931.46 SI B End	4060.05 SI B End	4119.03 SI B End	4154.04 SI B End	4400	5.6
kVA Event/Time	4407.27 SI B End	4553.99 SI B End	4624.65 SI B End	4644.92 SI B End	5000	7.1

Licensee Response/NRC Response/NRC Question Closure

Id	**230**
NRC Question Number	**VKG005**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/4/2014**
Notification	**Scott Bowman** **Michelle Conner** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**8/4/2014 5:54 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**158**
NRC Question Number	**VKG006**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.1**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Vijay Goel**
Conf Call Requested	**N**
NRC Question	**ITS LCO 3.8.1, Condition B also applies to the condition when two DGs of the same train A or B become inoperable.** **Provide summary of worst case DG loadings, considering loss of offsite power to both units; Unit 1 in accident condition; Unit 2 in safe shutdown condition; and two DGs considerable inoperable as follows (two separate scenarios): (1) DGs 1A-A and 2A-A of the same train inoperable, and (2) DGs 1B-B and 2B-B of the same train inoperable.**
Attach File 1	
Attach File 2	
Issue Date	**6/18/2014**
Added By	**Matthew Hamm**
Date Modified	
Modified By	
Date Added	**6/18/2014 2:48 PM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**180**
NRC Question Number	**VKG006**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1, RAI VKG-006 Draft Response.pdf** (94KB)
Attachment 2	
Response Statement	**The diesel generator (DG) loading calculation evaluates the loading of each DG separately, in that all permanently connected and sequenced loads are considered to load onto each respective DG during any loss of offsite power (LOOP) event. The calculation contains analysis to support the safe shutdown during a LOOP, as well as a LOOP with a loss of coolant accident (LOCA). Because each DG is analyzed separately to its respective worst case loading, it is not necessary to differentiate which unit is in an accident condition or which DG is inoperable.** **Attachment 1 contains excerpts from the DG loading calculation that reflect the calculated worst-case loading for each DG.**
Response Date/Time	**7/16/2014 2:45 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/16/2014 1:44 PM**
Date Modified	
Modified By	

Attachment 1 – SQN DG Loading

DG Load Carrying Capability

The following tables show the maximum steady state (running) load of each DG during a loss of offsite power (LOOP), LOOP with safety injection and containment isolation Phase A (LOOP+SIA), and LOOP with safety injection and containment isolation Phase B (LOOP+SIB). These tables represent the total steady-state running load of all sequenced loads plus the base continuous load on each DG plus random loads.

DG Loading, Load Carrying Capability

Maximum Steady-State Running Load, 0 hrs to 2 hrs

kW	1A-A	1B-B	2A-A	2B-B	Short-Time Rating	Minimum Margin (%)
LOOP Time	3413.13 >120 sec	3589.95 >25 min	3594.86 >25 min	3687.63 >120 sec	4840	23.8
LOOP + SIA Time	3726.18 >720 sec	3868.80 >25 min	3901.45 >25 min	3975.06 >720 sec	4840	17.9
LOOP + SIB Time	4056.42 >720 sec	4197.20 >25 min	4272.39 >25 min	4344.83 >720 sec	4840	10.2

kVA	1A-A	1B-B	2A-A	2B-B	Short-Time Rating	Minimum Margin (%)
LOOP Time	3775.66 >120 sec	3977.05 >25 min	3971.53 >25 min	4073.29 >120 sec	5500	25.9
LOOP + SIA Time	4207.34 >720 sec	4368.94 >25 min	4399.56 >25 min	4478.99 >720 sec	5500	18.6
LOOP + SIB Time	4550.78 >720 sec	4708.11 >25 min	4798.90 >25 min	4863.29 >720 sec	5500	11.6

Maximum Steady-State Running Load, 2 hrs to End

kW	1A-A	1B-B	2A-A	2B-B	Continuous Rating	Minimum Margin
LOOP Time	3351.98 End	3514.35 End	3576.16 End	3615.91 End	4400	17.8
LOOP + SIA Time	3601.39 End	3731.80 End	3748.77 End	3842.54 End	4400	12.7
LOOP + SIB Time	3931.46 End	4060.05 End	4119.03 End	4154.04 End	4400	5.6

kVA	1A-A	1B-B	2A-A	2B-B	Short-Time Rating	Minimum Margin (%)
LOOP Time	3706.21 End	3894.81 End	3950.92 End	3991.01 End	5000	20.2
LOOP + SIA Time	4063.12 End	4213.80 End	4225.24 End	4323.80 End	5000	13.5
LOOP + SIB Time	4407.27 End	4553.99 End	4624.65 End	4644.92 End	5000	7.1

Attachment 1 – SQN DG Loading

Motor Starting Capability

The following tables show the maximum transient loading (starting + running) load of each DG during LOOP, LOOP+SIA, and LOOP+SIB. These tables represent the total transient loading of all sequenced loads plus the base continuous load on each DG including the random loads and the starting of the largest random load.

DG Loading, Motor Starting Capability

Maximum Transient Loading (Real Power) 0 to 180 sec

kW	1A-A	1B-B	2A-A	2B-B	Cold Engine Capability	Minimum Margin (%)
LOOP Time	3613.12 120 sec	3580.40 120 sec	3617.84 120 sec	3906.18 120 sec	4785	18.4
LOOP + SIA Time	3720.74 30 sec	3694.47 30 sec	3702.74 30 sec	4181.53 30 sec	4785	12.6
LOOP + SIB Time	3476.26 30 sec	3398.37 30 sec	3510.32 30 sec	3978.24 30 sec	4785	16.9

Maximum Transient Loading (Real Power) 180 sec to End

kW	1A-A	1B-B	2A-A	2B-B	Hot Engine Capability	Minimum Margin (%)
LOOP Time	3497.08 25 min	3837.82 25 min	3852.93 25 min	3789.31 25 min	5073	24.1
LOOP + SIA Time	3844.69 210 sec	4114.06 25 min	4155.07 25 min	4117.81 210 sec	5073	18.1
LOOP + SIB Time	4622.41 180 sec	4508.76 180 sec	4639. 12 180 sec	4930.42 180 sec	5073	2.8

Maximum Step Load Increase (Apparent Power) 0 sec to End

kVA	1A-A	1B-B	2A-A	2B-B	Generator Step Load Capability	Minimum Margin (%)
LOOP Time	4670.59 0 sec	4820.23 0 sec	4197.17 2 sec	4351.30 0 sec	6500	25.8
LOOP + SIA Time	4772.05 0 sec	4904.62 0 sec	4171.27 2 sec	4458.34 0 sec	6500	24.5
LOOP + SIB Time	4174.37 180 sec	4186.03 180 sec	4249.41 180 sec	4200.36 180 sec	6500	34.6
Parallel Time	6298.45 N/A	6390.36 N/A	6246.06 N/A	6376.23 N/A	6500	1.7

Attachment 1 – SQN DG Loading

The following is a summary of DG loads compared to the DG ratings and capabilities, and the margin available:

<u>Worst Case DG Loading, Load Carrying Capability</u>

Maximum Steady-State Running Load, 0 hrs to 2 hrs

	1A-A	. 1B-B	2A-A	2B-B	Short-Time Rating	Minimum Margin (%)
kW Event/Time	4056.42 SI B >720 sec	4197.20 SI B >25 min	4272.39 SI B >25 min	4344.83 SI B >720 sec	4840	10.2
kVA Event/Time	4550.78 SI B >720 sec	4708.11 SI B >25 min	4798.90 SI B >25 min	4863.29 SI B >720 sec	5500	11.6

Maximum Steady-State Running Load, 2 hrs to End

	1A-A	. 1B-B	2A-A	2B-B	Short-Time Rating	Minimum Margin (%)
kW Event/Time	3931.46 SI B End	4060.05 SI B End	4119.03 SI B End	4154.04 SI B End	4400	5.6
kVA Event/Time	4407.27 SI B End	4553.99 SI B End	4624.65 SI B End	4644.92 SI B End	5000	7.1

Licensee Response/NRC Response/NRC Question Closure

Id	**231**
NRC Question Number	**VKG006**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/4/2014**
Notification	**Scott Bowman** **Michelle Conner** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**8/4/2014 5:54 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**159**
NRC Question Number	**VKG007**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.1**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Vijay Goel**
Conf Call Requested	**N**
NRC Question	**ITS LCO 3.8.1, Condition D, Required Action D.4 states, "Declare associated required feature(s) inoperable." Completion Time: 7 days** **In the ITS Bases, Page B 3.8.1-8c (LAR, Enclosure 2, Volume 13, Page 116), for Action D.4, the licensee stated that, "<u>The required DG must be returned to OPERABLE status within 7 days, or</u> the support function for the associated required feature is considered inoperable." To be consistent with ITS Bases, the Action D.4 for LCO 3.8.1 should be revised to state, "Return required DG OPERABLE status <u>OR</u> Declare associated required feature(s) inoperable." Please provide detailed justification why declaring only the associated required feature(s) is considered adequate.**
Attach File 1	
Attach File 2	
Issue Date	**6/18/2014**
Added By	**Matthew Hamm**
Date Modified	
Modified By	
Date Added	**6/18/2014 2:49 PM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**181**
NRC Question Number	**VKG007**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	

TSTF-GG-05-01, "Writer's Guide for Plant-Specific Improved Technical Specifications," Section 4.1.6.g states, "A Required Action which requires restoration, such that the Condition is no longer met, is considered superfluous. It is only included if it would be the only Required Action for the Condition or it is needed for presentation clarity." Therefore, it is unnecessary to include a Required Action to return a required DG to an operable status, as it is always an option to restore compliance with the LCO.

Proposed ITS 3.8.1 Condition D is entered when one opposite unit's DG is inoperable. Therefore, Required Action C.4 requires declaration that the associated required features are inoperable with a Completion Time of 7 days. This action is appropriate due to the limited amount of shared equipment that exists on an opposite unit's shutdown board (see lists below). In addition, notwithstanding the inoperability of the power source, the current technical specifications (CTS 3.0.5) allow equipment to be considered operable for an indefinite amount of time with an inoperable normal or emergency power supply, as long as the redundant equipment remains operable.

Major shared equipment on an opposite unit's shutdown board:

<u>6.9 kV Shutdown Board 1A-A (and associated 480 V shutdown boards)</u>
ERCW Pump J-A (Note 1)
ERCW Pump Q-A (Note 1)
Control Room AHU A-A (Note 2)
Control Room AC Compressor A-A (Note 2)
CCS Pump 1A-A (Note 3)
EGTS Fan A-A (Note 4)
125 V Vital Battery Charger I (Note 5)

<u>6.9 kV Shutdown Board 1B-B (and associated 480 V shutdown boards)</u>
ERCW Pump L-B (Note 1)
ERCW Pump N-B (Note 1)
Control Room AHU B-B (Note 2)
Control Room AC Compressor B-B (Note 2)
CCS Pump 1B-B (Note 3)
EGTS Fan B-B (Note 4)
125 V Vital Battery Charger II (Note 5)

<u>6.9 kV Shutdown Board 2A-A (and associated 480 V shutdown boards)</u>
ERCW Pump R-A (Note 1)

ERCW Pump K-A (Note 1)
CCS Pump 2A-A (Note 3)
ABGTS Fan A-A (Note 6)
Auxiliary Control Air Compressor A-A (Note 7)
125 V Vital Battery Charger III (Note 5)

6.9 kV Shutdown Board 2B-B (and associated 480 V shutdown boards)
ERCW Pump P-B (Note 1)
ERCW Pump M-B (Note 1)
CCS Pump 2B-B (Note 3)
CCS Pump C-S (Note 3)
ABGTS Fan B-B (Note 6)
Auxiliary Control Air Compressor B-B (Note 7)
125 V Vital Battery Charger IV (Note 5)

NOTES:

1. **The current requirement is for one operable ERCW pump per 6.9 kV Shutdown Board. Following implementation of an approved license amendment (TS-SQN-13-01 and TS-SQN-13-02, ML13280A267) an operable ERCW system train can require as few as one ERCW pump with consideration of the UHS temperature requirements. Until then, ITS 3.7.8, Condition A will require an inoperable ERCW system train to be restored in 72 hours.**
2. **Per ITS 3.7.10, Condition A, an inoperable train of CREVS is required to be restored in 7 days. Per ITS 3.7.11, Condition A, an inoperable CRACS train is required to be restored in 30 days.**
3. **CCS trains can be aligned and meet the requirements of ITS LCO 3.7.7 with the remaining operable pumps with one 6.9 kV Shutdown Board inoperable.**
4. **Per ITS 3.6.10, Condition A, an inoperable EGTS train is required to be restored in 7 days.**
5. **With the adoption of TSTF-500, ITS 3.8.4, Condition A requires an inoperable battery charger to be restored in 7 days, provided battery terminal voltage can be maintained greater than or equal to the minimum established float voltage and battery float current is maintained less than or equal to 2 amps.**
6. **Per ITS 3.7.12, Condition A, an inoperable ABGTS train is required to be restored in 7 days.**
7. **Following implementation of the proposed plant modification to install one or more additional auxiliary control air compressor(s), two trains of auxiliary control air can be maintained with either 6.9 kV Shutdown Board 2A-A or 2B-B inoperable. Until then, the most limiting components are the Atmospheric Relief Valves (ARVs) and the Auxiliary Feedwater System (AFW) level control valves. ITS 3.7.4, ARVs, Condition A requires one or more ARV lines inoperable due to one train of auxiliary control air nonfunctional to be restored in 72 hours. ITS 3.7.5, AFW, Condition B requires (in MODE 1, 2, or 3) one AFW train inoperable for reasons other than an inoperable steam supply valve to a turbine driven train to be restored in 72 hours.**

Response Date/Time	**7/16/2014 2:50 PM**
Closure Statement	
Question Closure Date	

Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/16/2014 1:47 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**232**
NRC Question Number	**VKG007**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/4/2014**
Notification	**Scott Bowman** **Michelle Conner** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**8/4/2014 5:55 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**160**
NRC Question Number	**VKG008**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.1**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Vijay Goel**
Conf Call Requested	**N**
NRC Question	**ITS 3.8.1, Condition E states, "Two offsite circuits inoperable."** **Condition E should be expanded to clarify the two circuits to which 6.9 kV switchboards are inoperable, such as: "Two offsite circuits to 6.9 kV Switchboards 1A-A and 1B-B inoperable." Please provide rewording of Condition E or justify otherwise.**
Attach File 1	
Attach File 2	
Issue Date	**6/18/2014**
Added By	**Matthew Hamm**
Date Modified	
Modified By	
Date Added	**6/18/2014 2:51 PM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**182**
NRC Question Number	**VKG008**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**ITS 3.8.1 Condition E is written to be similar to the wording of CTS 3.8.1.1 Action d, which states, "With two of the above required offsite circuits inoperable. . ." The intent of the CTS 3.8.1.1 Action d and ITS 3.8.1 Condition E wording is to enter the Action / Condition when two offsite circuits are inoperable for any offsite circuit configuration and regardless of the 6.9 kV Shutdown Boards that are affected. Therefore, ITS 3.8.1, Condition E is correct as written.**
Response Date/Time	**7/16/2014 2:50 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman Michelle Conner Vijay Goel Khadijah Hemphill Andrew Hon Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/16/2014 1:49 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**233**
NRC Question Number	**VKG008**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/4/2014**
Notification	**Scott Bowman** **Michelle Conner** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**8/4/2014 5:55 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**161**
NRC Question Number	**VKG009**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.1**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Vijay Goel**
Conf Call Requested	**N**
NRC Question	**ITS LCO 3.8.1, Condition F states, "One offsite circuit inoperable for reasons other than Condition C. AND DG 1A-A or DG 1B-B inoperable."** **It is not clear how the Condition F is related to Condition C. Since there are four 6 kV Shutdown Boards 1A-A, 2A-A, 1B-B, and 2B-B, the Condition F should clearly state the offsite circuit to which specific Shutdown Board(s) is considered inoperable as part of Condition F. Condition F should be revised (similar to the Condition F the licensee presented in the pre-submittal meeting dated June 4, 2013), as follows: "One offsite circuit to 6.9 kV Shutdown Board 1A-A or 1B-B inoperable. AND DG 1A-A or 1B-B inoperable." Please provide requisite re-wording of Condition F or justify otherwise.**
Attach File 1	
Attach File 2	
Issue Date	**6/18/2014**
Added By	**Matthew Hamm**
Date Modified	
Modified By	
Date Added	**6/18/2014 2:52 PM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**183**
NRC Question Number	**VKG009**
Select Application	**Licensee Response**
Attachment 1	**RAI VKG-009 Response Attachment 1, Rev 1.pdf** (13KB)
Attachment 2	

Response Statement

ITS 3.8.1 Condition C is applicable to the specific cases of an inoperable offsite circuit due to an inoperable power source to an opposite unit's 6.9 kV Shutdown Board. ITS 3.8.1 Condition F addresses the combination of an inoperable offsite circuit for reasons other than Condition C (similar to Condition A) concurrent with an inoperable DG on the associated unit's 6.9 kV Shutdown Board. ITS 3.8.1 Condition F addresses the instances of an inoperable offsite circuit concurrent with an inoperable DG that are currently addressed by CTS 3.8.1.1 Action c, with the exception of:

1. **An offsite circuit inoperable due to an inoperable offsite power source to an opposite unit's 6.9 kV Shutdown Board concurrent with an inoperable DB on the associated unit's 6.9 kV Shutdown Board (ITS 3.8.1 Condition G),**

2. **An inoperable offsite circuit for reasons other than Condition C concurrent with an inoperable DG on the opposite unit's 6.9 kV Shutdown Board (ITS 3.8.1 Condition H), and**

3. **An offsite circuit inoperable due to an inoperable offsite power source to an opposite unit's 6.9 kV Shutdown Board concurrent with an inoperable DG on the opposite unit's 6.9 kV Shutdown Board (ITS 3.8.1 Condition I).**

Therefore ITS 3.8.1 Condition F is correct as written.

Attachment 1 provides a table that compares the CTS Actions and proposed ITS Actions for each combination of inoperable AC power sources. Proposed ITS Actions that differ from the CTS Actions are highlighted.

Response Date/Time	**7/16/2014 3:00 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**

Date Added	**7/16/2014 1:56 PM**
Date Modified	
Modified By	

Inoperable power source	CTS Action	ITS Action
DG 1A-A or DG 1B-B	Restore DG in 7 days.	Restore DG in 7 days.
DG 1A-A and DG 2A-A <u>OR</u> DG 1B-B and DG 2B-B	Restore DGs in 7 days.	Restore DGs in 7 days.
DG 1A-A and/or DG 2A-A <u>AND</u> DG 1B-B and/or DG 2B-B	Restore one train of DGs in 2 hours.	Restore one train of DGs in 2 hours.
DG 2A-A or DG 2B-B	Restore DG in 7 days.	Declare associated required features inoperable in 7 days.
Offsite power to 1A-A or 1B-B	Restore offsite circuit in 72 hours.	Restore offsite circuit in 72 hours.
Offsite power to 1A-A and 2A-A <u>OR</u> Offsite power to 1B-B and 2B-B	Restore offsite circuit in 72 hours.	Restore offsite circuit in 72 hours.
Offsite power to 1A-A and/or 2A-A <u>AND</u> Offsite power to 1B-B and/or 2B-B	Restore one offsite circuit in 24 hours.	Restore one offsite circuit in 24 hours.
Offsite power to 2A-A or 2B-B only	Restore in 72 hours.	Declare associated required features inoperable in 7 days.
Offsite power to 1A-A, or 1A-A and 2A-A, or 1B-B, or 1B-B and 2B-B <u>AND</u> DG 1A-A or 1B-B	Restore offsite circuit or DG in 12 hours.	Restore offsite circuit or DG in 12 hours.

Inoperable power source	CTS Action	ITS Action
Offsite power to 2A-A or 2B-B <u>AND</u> DG 1A-A or 1B-B	Restore offsite circuit or DG in 12 hours.	Restore DG in 7 days. AND Declare associated required features inoperable in 7 days.
Offsite power to 1A-A, or 1A-A and 2A-A, or 1B-B, or 1B-B and 2B-B <u>AND</u> DG 2A-A or 2B-B	Restore offsite circuit or DG in 12 hours.	Restore offsite circuit in 72 hours. AND Declare associated required features inoperable in 72 hours.
Offsite power to 2A-A or 2B-B <u>AND</u> DG 2A-A or 2B-B	Restore offsite circuit or DG in 12 hours.	Restore offsite circuit or DG in 7 days. AND Immediately declare associated required features inoperable, if power sources are on the same 6.9 kV Shutdown Board.
Two offsite circuits <u>AND</u> One or more Train A or Train B DGs	Enter LCO 3.0.3	Enter LCO 3.0.3
One offsite circuit <u>AND</u> One or more Train A <u>AND</u> Train B DGs	Enter LCO 3.0.3	Enter LCO 3.0.3

Licensee Response/NRC Response/NRC Question Closure

Id	**234**
NRC Question Number	**VKG009**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/4/2014**
Notification	**Scott Bowman Michelle Conner Lynn Mynatt Ray Schiele Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**8/4/2014 5:56 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**162**
NRC Question Number	**VKG010**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.1**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Vijay Goel**
Conf Call Requested	**N**
NRC Question	**ITS LCO 3.8.1, Condition G states, "One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B inoperable. AND DG 1A-A or 1B-B inoperable."** **As stated in the ITS Bases, Conditions B and C will be entered concurrent with entry into Condition G. Similar to the request for re-wording for Condition C, please provide re-wording of Condition G or justify otherwise. Also, justify 7 days of Completion Time considering both Conditions B and C will be entered concurrently.**
Attach File 1	
Attach File 2	
Issue Date	**6/18/2014**
Added By	**Matthew Hamm**
Date Modified	
Modified By	
Date Added	**6/18/2014 2:54 PM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**184**
NRC Question Number	**VKG010**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	

Response Statement

ITS 3.8.1 Condition G addresses the combination of an offsite circuit inoperable due to an inoperable offsite power source to an opposite unit's 6.9 kV Shutdown Board concurrent with an inoperable DG on the associated unit's 6.9 kV Shutdown Board. ITS 3.8.1 Condition G addresses the instances of an inoperable offsite circuit concurrent with an inoperable DG that are currently addressed by CTS 3.8.1.1 Action c, with the exception of:

1. **An inoperable offsite circuit for reasons other than Condition C concurrent with an inoperable DG on the associated unit's 6.9 kV Shutdown Board (ITS 3.8.1 Condition F),**

2. **An inoperable offsite circuit for reasons other than Condition C concurrent with an inoperable DG on the opposite unit's 6.9 kV Shutdown Board (ITS 3.8.1 Condition H), and**

3. **An offsite circuit inoperable due to an inoperable offsite power source to an opposite unit's 6.9 kV Shutdown Board concurrent with an inoperable DG on the opposite unit's 6.9 kV Shutdown Board (ITS 3.8.1 Condition I).**

In Condition G, individual redundancy is lost in the offsite electrical power system for one unit and the onsite AC electrical power system for the other unit. Because Conditions B and C are entered concurrently with entry into Condition G, the Required Actions of Conditions B and C provide the appropriate compensatory measures to ensure the onsite and offsite power sources are either restored to an OPERABLE status, or the associated required features are declared inoperable, thereby requiring entry into the appropriate Conditions associated with the associated feature's LCO. The 7 day Completion Time of Required Action G.1 is consistent with the 7 day Completion Time of Required Action C.3

Therefore, ITS 3.8.1 Condition G is correct as written.

Response Date/Time	**7/16/2014 3:00 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel**

	Khadijah Hemphill **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/16/2014 1:59 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**235**
NRC Question Number	**VKG010**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/4/2014**
Notification	**Scott Bowman** **Michelle Conner** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**8/4/2014 5:56 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**163**
NRC Question Number	**VKG011**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.1**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Vijay Goel**
Conf Call Requested	**N**
NRC Question	**ITS LCO 3.8.1, Condition H states, "One offsite circuit inoperable for reasons other than Condition C. AND DG 2A-A or 2B-B inoperable."** **As stated in the ITS Bases, Conditions A and D will be entered concurrent with entry into Condition H. Similar to the request for re-wording for Condition A, please provide re-wording of Condition H or justify otherwise. Also, justify 7 days of Completion Time considering both Conditions A and D will be entered concurrently.**
Attach File 1	
Attach File 2	
Issue Date	**6/18/2014**
Added By	**Matthew Hamm**
Date Modified	
Modified By	
Date Added	**6/18/2014 2:55 PM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**185**
NRC Question Number	**VKG011**
Select Application	**Licensee Response**
Attachment 1	**RAI VKG-011 Response Attachment 1, Rev 1.pdf** (2MB)
Attachment 2	
Response Statement	**In response to RAI VKG-011, the Completion Time for ITS 3.8.1 Required Action H.1 (pages 52 and 76 of Enclosure 2, Volume 13) will be changed to 72 hours, consistent with the Completion Time for ITS 3.8.1 Required Action A.3. This change also results in a change to ITS 3.8.1 discussion of change (DOC) L01 (page 33) and to the ITS 3.8.1 Bases discussion of Required Action H.1 (pages 119 and 169).** **See Attachment 1 for the draft ITS 3.8.1 changes discussed above.**
Response Date/Time	**7/16/2014 3:05 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/16/2014 2:03 PM**
Date Modified	
Modified By	

DISCUSSION OF CHANGES
ITS 3.8.1, AC SOURCES - OPERATING

restored to an OPERABLE status. ITS 3.8.1 ACTION D requires declaration that the affected required feature(s) with no OPERABLE DG are inoperable when its redundant required feature is inoperable in 4 hours. Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the DG cannot be restored to an OPERABLE status. ITS 3.8.1 ACTION E requires declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 12 hours. Otherwise, one offsite circuit is required to be restored to an OPERABLE status in 24 hours. ITS 3.8.1 ACTION F provides actions for one associated unit's offsite circuit inoperable concurrent with one associated unit's DG inoperable, and allows 12 hours to restore one of the inoperable AC sources to OPERABLE status. ITS ACTION G requires declaring the required feature(s) on the opposite unit's 6.9 kV Shutdown Board with no offsite power available inoperable in 7 days. ITS ACTION H requires declaring the required feature(s) on the opposite unit's 6.9 kV Shutdown Board with no DG available inoperable in ~~7 days~~ 72 hours. ITS ACTION I provides actions for one offsite circuit inoperable solely due to an inoperable offsite power source to an opposite unit's 6.9 kV Shutdown Board concurrent with one opposite unit's DG inoperable, and allows 7 days to restore one of the inoperable AC sources to OPERABLE status. In addition, a Note modifying ITS ACTION I requires entry into the applicable Conditions and Required Actions of LCO 3.8.9 with no AC power source to an opposite unit's 6.9 kV Shutdown Board. ITS 3.8.1 ACTION J provides actions for one or more Train A and one or more Train B DGs inoperable and allows 2 hours to restore one Train of DGs to OPERABLE status. ITS 3.8.1 ACTION K requires the unit to be shut down and cooled down if a Required Action and associated Completion Time of Condition A, B, E, F, I, or J is not met. These changes to the CTS provide separate ACTIONS to declare the required features powered from the opposite unit's Class 1E AC Electrical Power Distribution System inoperable as the remedial measures for the inoperable AC sources.

The purpose of the CTS 3.8.1.1 ACTIONS is to limit the time the unit can remain operating with different combinations of inoperable offsite circuits and DGs. The onsite Class 1E AC Electrical Distribution System supplies electrical power to two power trains shared between the two units. The core cooling and containment cooling system loads (e.g., Safety Injection (SI) pumps, Auxiliary Feedwater (AFW) pumps, Residual Heat Removal (RHR) pumps, Centrifugal Charging pumps, Containment Spray pumps, and Air Return System (ARS) fans) are unitized to the respective unit's 6.9 kV Shutdown Boards. However, some safety-related systems (e.g., Essential Raw Cooling Water (ERCW), Component Cooling (CCS), Emergency Gas Treatment (EGTS), Auxiliary Building Gas Treatment, (ABGTS), Control Room Emergency Ventilation (CREVs), and Control Room HVAC (CRACS)) are shared between the units. The AC sources for the shared loads are distributed across both unit's shutdown boards. Therefore, two qualified offsite circuits and four DGs capable of supplying the onsite Class 1E AC Electrical Distribution System are required to be OPERABLE. However, the impacts of an inoperable offsite power source or DG on an opposite unit's 6.9 kV Shutdown Board differ from the impacts of an inoperable offsite power source or DG on an associated unit's 6.9 kV Shutdown Board, due to the loads powered from the respective board.

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5 **INSERT 3**

DOC L01	G. One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B inoperable. AND DG 1A-A or 1B-B inoperable.	G.1	Declare required feature(s) on associated Unit 2 6.9 kV Shutdown Board inoperable.	7 days
DOC L01	H. One offsite circuit inoperable for reasons other than Condition C. AND DG 2A-A or 2B-B inoperable.	H.1	Declare required feature(s) on associated Unit 2 6.9 kV Shutdown Board inoperable.	~~7 days~~ $\boxed{\text{72 hours}}$

Insert Page 3.8.1-3a

5 **INSERT 3**

DOC L01	G. One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 1A-A or 1B-B inoperable. AND DG 2A-A or 2B-B inoperable.	G.1	Declare required feature(s) on associated Unit 1 6.9 kV Shutdown Board inoperable.	7 days
DOC L01	H. One offsite circuit inoperable for reasons other than Condition C. AND DG 1A-A or 1B-B inoperable.	H.1	Declare required feature(s) on associated Unit 1 6.9 kV Shutdown Board inoperable.	~~7 days~~ 72 hours

Insert Page 3.8.1-3a

5 **INSERT 12**

G.1 and H.1

In Conditions G and H, individual redundancy is lost in the offsite electrical power system for one unit and the onsite AC electrical power system for the other unit. Since Conditions B and C are entered concurrent with entry into Condition G, and Conditions A and D are entered concurrent with entry into Condition H, the Required Actions of Conditions B and C (or Conditions A and D) provide the appropriate compensatory measures to ensure the onsite and offsite power sources are either restored to an OPERABLE status, or the associated required features are declared inoperable, thereby requiring entry into the appropriate Conditions associated with the associated feature's LCO. The Completion Time~~s~~ of Required Action~~s~~ G.1 ~~and H.1 are~~ is consistent with the Completion Time~~s~~ of Required Action~~s~~ C.3 ~~and D.4~~. The Completion Time of Required Action H.1 is consistent with the Completion Time of Required Action A.3. If, while in Condition G or H, a redundant required feature is determined to be inoperable, the required feature(s) would be declared inoperable at the Completion Times specified in Conditions A, B, C, or D, as applicable.

I.1 and I.2

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Actions of Condition I are modified by a Note to indicate that when Condition I is entered with no AC source to 6.9 kV Shutdown Board 2A-A or 2B-B, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows Condition I to provide requirements for the loss of one offsite power source and one DG, without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized 6.9 kV Shutdown Board.

In Condition I, individual redundancy is lost in the offsite electrical power system and the onsite AC electrical power system. Concurrent with entry into Condition I, entry into Condition C (inoperable offsite power source) and Condition D (inoperable DG) are required. The Required Actions of Conditions C and D ensure the remaining offsite circuit and DGs are OPERABLE and that required features with no offsite or onsite power sources are declared inoperable when its redundant required feature is inoperable within the Completion Times of Required Actions C.2 and D.2.

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5 **INSERT 12**

G.1 and H.1

In Conditions G and H, individual redundancy is lost in the offsite electrical power system for one unit and the onsite AC electrical power system for the other unit. Since Conditions B and C are entered concurrent with entry into Condition G, and Conditions A and D are entered concurrent with entry into Condition H, the Required Actions of Conditions B and C (or Conditions A and D) provide the appropriate compensatory measures to ensure the onsite and offsite power sources are either restored to an OPERABLE status, or the associated required features are declared inoperable, thereby requiring entry into the appropriate Conditions associated with the associated feature's LCO. The Completion Time~~s~~ of Required Action~~s~~ G.1 ~~and H.1 are~~ is consistent with the Completion Time~~s~~ of Required Action~~s~~ C.3 ~~and D.4~~. The Completion Time of Required Action H.1 is consistent with the Completion Time of Required Action A.3. If, while in Condition G or H, a redundant required feature is determined to be inoperable, the required feature(s) would be declared inoperable at the Completion Times specified in Conditions A, B, C, or D, as applicable.

I.1 and I.2

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Actions of Condition I are modified by a Note to indicate that when Condition I is entered with no AC source to 6.9 kV Shutdown Board 1A-A or 1B-B, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows Condition I to provide requirements for the loss of one offsite power source and one DG, without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized 6.9 kV Shutdown Board.

In Condition I, individual redundancy is lost in the offsite electrical power system and the onsite AC electrical power system. Concurrent with entry into Condition I, entry into Condition C (inoperable offsite power source) and Condition D (inoperable DG) are required. The Required Actions of Conditions C and D ensure the remaining offsite circuit and DGs are OPERABLE and that required features with no offsite or onsite power sources are declared inoperable when its redundant required feature is inoperable within the Completion Times of Required Actions C.2 and D.2.

Licensee Response/NRC Response/NRC Question Closure

Id	**236**
NRC Question Number	**VKG011**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/4/2014**
Notification	**Scott Bowman** **Michelle Conner** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**8/4/2014 5:57 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**164**
NRC Question Number	**VKG012**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.1**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Vijay Goel**
Conf Call Requested	**N**
NRC Question	**ITS LCO 3.8.1, Condition I states, "One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B inoperable. AND DG 2A-A or 2B-B inoperable."** **It is not clear why in the Condition I, the "offsite circuit inoperable" is constrained to "solely due to an offsite power source inoperable." Condition I should be revised (similar to the Condition I the licensee presented in the pre-submittal meeting dated June 4, 2013), as follows: "One offsite circuit to 6.9 kV Shutdown Board 2A-A or 2B-B inoperable. AND DG 2A-A or 2B-B inoperable." with a NOTE: "Only applicable when offsite circuits to 6.9 kV Shutdown Boards 1A-A and 1B-B are OPERABLE, and DGs 1A-A and 1B-B are OPERABLE." Please provide requisite re-wording of Condition I or justify otherwise. Also, provide justification of Completion Time of 7 days for Action I.1 when compared to the Completion Time of 72 hours for Action A.3.**
Attach File 1	
Attach File 2	
Issue Date	**6/18/2014**
Added By	**Matthew Hamm**
Date Modified	
Modified By	
Date Added	**6/18/2014 2:56 PM**
Notification	**Scott Bowman** **Michelle Conner**

Vijay Goel
Matthew Hamm
Khadijah Hemphill
Andrew Hon
Lynn Mynatt
Ray Schiele
Roger Scott

Licensee Response/NRC Response/NRC Question Closure

Id	**186**
NRC Question Number	**VKG012**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	

Proposed ITS 3.8.1 Condition I is entered when one DG on an opposite unit's 6.9 kV Shutdown Board is inoperable concurrent with one offsite circuit inoperable solely due to an inoperable offsite power source to an opposite unit's 6.9 kV Shutdown Board. The assumption for the affected offsite circuit is that it is otherwise operable, i.e., capable of providing adequate power to the associated unit's 6.9 kV Shutdown Board to power the required features on that board used to mitigate an accident on the associated unit. Therefore, the Condition focuses on the impact to the shared equipment that the associated unit is crediting that is powered from the opposite unit's 6.9 kV Shutdown Board.

The Required Actions require restoration of either the offsite circuit or the DG in 7 days. In addition, if the inoperable AC sources result in an opposite unit's 6.9 kV Shutdown Board having no AC power, the applicable Conditions and Required Actions of ITS 3.8.9 are entered. ITS 3.8.9 Condition D is entered when one or more opposite unit's AC electrical power distribution subsystems are inoperable. ITS 3.8.9 Required Action D.1 requires the associated required features to be declared inoperable immediately.

The ITS 3.8.1 Required Action I.1 and I.2 Completion Times of 7 days are appropriate due to the limited amount of shared equipment that exists on an opposite unit's shutdown board. In addition, notwithstanding the inoperability of the power source, the current technical specifications (CTS 3.0.5) allow equipment to be considered operable for an indefinite amount of time with an inoperable normal or emergency power supply, as long as the redundant equipment remains operable. If the inoperable offsite circuit and inoperable DG are on different 6.9 kV Shutdown Boards such that redundancy for one or more systems is lost, ITS 3.8.1 Required Actions C.2 and D.2 will direct the affected required features to be declared inoperable in 24 hours and 4 hours, respectively. Therefore, the Conditions and Required Actions of the associated LCOs provide adequate actions to address the inoperable required features.

Major shared equipment on an opposite unit's shutdown board:

<u>6.9 kV Shutdown Board 1A-A (and associated 480 V shutdown boards)</u>
ERCW Pump J-A (Note 1)
ERCW Pump Q-A (Note 1)
Control Room AHU A-A (Note 2)
Control Room AC Compressor A-A (Note 2)
CCS Pump 1A-A (Note 3)
EGTS Fan A-A (Note 4)

125 V Vital Battery Charger I (Note 5)

<u>6.9 kV Shutdown Board 1B-B (and associated 480 V shutdown boards)</u>
ERCW Pump L-B (Note 1)
ERCW Pump N-B (Note 1)
Control Room AHU B-B (Note 2)
Control Room AC Compressor B-B (Note 2)
CCS Pump 1B-B (Note 3)
EGTS Fan B-B (Note 4)
125 V Vital Battery Charger II (Note 5)

<u>6.9 kV Shutdown Board 2A-A (and associated 480 V shutdown boards)</u>
ERCW Pump R-A (Note 1)
ERCW Pump K-A (Note 1)
CCS Pump 2A-A (Note 3)
ABGTS Fan A-A (Note 6)
Auxiliary Control Air Compressor A-A (Note 7)
125 V Vital Battery Charger III (Note 5)

<u>6.9 kV Shutdown Board 2B-B (and associated 480 V shutdown boards)</u>
ERCW Pump P-B (Note 1)
ERCW Pump M-B (Note 1)
CCS Pump 2B-B (Note 3)
CCS Pump C-S (Note 3)
ABGTS Fan B-B (Note 6)
Auxiliary Control Air Compressor B-B (Note 7)
125 V Vital Battery Charger IV (Note 5)

<u>NOTES</u>:

1. The current requirement is for one operable ERCW pump per 6.9 kV Shutdown Board. Following implementation of an approved license amendment (TS-SQN-13-01 and TS-SQN-13-02, ML13280A267) an operable ERCW system train can require as few as one ERCW pump with consideration of the UHS temperature requirements. Until then, ITS 3.7.8, Condition A will require an inoperable ERCW system train to be restored in 72 hours.
2. Per ITS 3.7.10, Condition A, an inoperable train of CREVS is required to be restored in 7 days. Per ITS 3.7.11, Condition A, an inoperable CRACS train is required to be restored in 30 days.
3. CCS trains can be aligned and meet the requirements of ITS LCO 3.7.7 with the remaining operable pumps with one 6.9 kV Shutdown Board inoperable.
4. Per ITS 3.6.10, Condition A, an inoperable EGTS train is required to be restored in 7 days.
5. With the adoption of TSTF-500, ITS 3.8.4, Condition A requires an inoperable battery charger to be restored in 7 days, provided battery terminal voltage can be maintained greater than or equal to the minimum established float voltage and battery float current is maintained less than or equal to 2 amps.
6. Per ITS 3.7.12, Condition A, an inoperable ABGTS train is required to be restored in 7 days.

7. Following implementation of the proposed plant modification to install one or more additional auxiliary control air compressor(s), two trains of auxiliary control air can be maintained with either 6.9 kV Shutdown Board 2A-A or 2B-B inoperable. Until then, the most limiting components are the Atmospheric Relief Valves (ARVs) and the Auxiliary Feedwater System (AFW) level control valves. ITS

3.7.4, ARVs, Condition A requires one or more ARV lines inoperable due to one train of auxiliary control air nonfunctional to be restored in 72 hours. ITS 3.7.5, AFW, Condition B requires (in MODE 1, 2, or 3) one AFW train inoperable for reasons other than an inoperable steam supply to a turbine driven train to be restored in 72 hours.

Response Date/Time	**7/16/2014 3:05 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/16/2014 2:06 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**237**
NRC Question Number	**VKG012**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/4/2014**
Notification	**Scott Bowman** **Michelle Conner** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**8/4/2014 5:57 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**165**
NRC Question Number	**VKG013**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.1**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Vijay Goel**
Conf Call Requested	**N**
NRC Question	**ITS LCO 3.8.1, Condition L states, "Two offsite circuits inoperable. AND…"** **Condition L should be expanded to clarify the two circuits to which specific Shutdown Boards are inoperable, such as: "Two offsite circuits to 6.9 kV Shutdown Boards 1A-A and 1B-B inoperable. AND…" Please provide rewording of Condition L or justify otherwise.**
Attach File 1	
Attach File 2	
Issue Date	**6/18/2014**
Added By	**Matthew Hamm**
Date Modified	
Modified By	
Date Added	**6/18/2014 2:57 PM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**187**
NRC Question Number	**VKG013**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**When ITS Condition L is entered, one or more DGs in either train are inoperable concurrent with two inoperable offsite circuits regardless of the 6.9kV Shutdown Boards that are affected. In this Condition, there are inadequate AC power sources available to power the required features needed to mitigate an accident. In this Condition, entry into LCO 3.0.3 is appropriate. Therefore, ITS 3.8.1, Condition L is correct as written.**
Response Date/Time	**7/16/2014 3:10 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/16/2014 2:10 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**238**
NRC Question Number	**VKG013**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/4/2014**
Notification	**Scott Bowman** **Michelle Conner** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**8/4/2014 5:58 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**166**
NRC Question Number	**VKG014**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.1**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Vijay Goel**
Conf Call Requested	**N**
NRC Question	**ITS LCO 3.8.1, Condition M states, "One offsite circuits inoperable. AND…"** **Condition M should be expanded to clarify the circuit to which Shutdown Board is inoperable, such as: "One offsite circuits to 6.9 kV Shutdown Board 1A-A or 1B-B inoperable. AND…" Please provide rewording of Condition M or justify otherwise.**
Attach File 1	
Attach File 2	
Issue Date	**6/18/2014**
Added By	**Matthew Hamm**
Date Modified	
Modified By	
Date Added	**6/18/2014 2:58 PM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Matthew Hamm** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**188**
NRC Question Number	**VKG014**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**When ITS 3.8.1 Condition M is entered, one or more DGs in both trains are inoperable concurrent with an inoperable offsite circuit. In this condition, there are inadequate AC power sources available to power the required features needed to mitigate an accident. Condition M is entered for any offsite circuit configuration regardless of the 6.9 kV Shutdown Boards that are affected. In this Condition, entry into LCO 3.0.3 is appropriate. Therefore, ITS 3.8.1, Condition M is correct as written.**
Response Date/Time	**7/16/2014 3:15 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman Michelle Conner Vijay Goel Khadijah Hemphill Andrew Hon Ray Schiele**
Added By	**Scott Bowman**
Date Added	**7/16/2014 2:12 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**239**
NRC Question Number	**VKG014**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/4/2014**
Notification	**Scott Bowman** **Michelle Conner** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**8/4/2014 5:59 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**175**
NRC Question Number	**VKG015**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.1**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Jake Zimmerman**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**Notes 2 of ITS SRs 3.8.1.9 and 3.8.1.10, and Note 3 of ITS SR 3.8.1.14 state: "If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.89."** **Please provide the basis (summary of calculation) for selecting the above limiting power factor value of 0.89.**
Attach File 1	
Attach File 2	
Issue Date	**7/24/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**7/24/2014 8:07 AM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id **246**

NRC Question Number **VKG015**

Select Application **Licensee Response**

Attachment 1

Attachment 2

Response Statement

ITS SRs 3.8.1.9, 3.8.1.10, and 3.8.1.14 each contain a Note that states, in part, "If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.89." The limiting power factor of 0.89 is based on the most limiting power factor of the four DGs. The following table provides the maximum kW loading, maximum kVA loading and the corresponding power factor for each DG during the first two hours when the DG is operating at 110% load and the running load from zero to two hours and two hours through the end of the 7 days that the DG is required to operate.

Maximum Steady-State Running Load, 0 hours to 2 hours				
110% Load	**1A-A**	**1B-B**	**2A-A**	**2B-B**
kW (LOOP)	3413.13	3589.95	3594.86	3687.63
KVA (LOOP)	3775.66	3977.05	3971.53	4073.29
power factor	0.90	0.90	0.91	0.91
kW (LOOP+SIA)	3726.18	3868.80	3901.45	3975.06
KVA (LOOP+SIA)	4207.34	4368.94	4399.56	4478.99
power factor	0.89	0.89	0.89	0.89
kW (LOOP+SIB)	4056.42	4197.20	4272.39	4344.83
KVA (LOOP+SIB	4550.78	4708.11	4798.90	4863.29
power factor	0.89	0.89	0.89	0.89

Maximum Steady-State Running Load, 2 hours to End				
100% Load	**1A-A**	**1B-B**	**2A-A**	**2B-B**
kW (LOOP)	3351.98	3514.35	3576.16	3615.91
KVA (LOOP)	3706.21	3894.81	3950.92	3991.01
power factor	0.90	0.90	0.91	0.91
kW (LOOP+SIA)	3601.39	3731.80	3748.77	3842.54
KVA (LOOP+SIA)	4063.12	4213.80	4225.24	4323.80
power factor	0.89	0.89	0.89	0.89
kW (LOOP+SIB)	3931.46	4060.05	4119.03	4154.04
KVA (LOOP+SIB	4407.27	4553.99	4624.65	4644.92
power factor	0.89	0.89	0.89	0.89

Loss of Offsite Power (LOOP)
LOOP concurrent with safety injection and containment isolation signal Phase A (LOOP+SIA)
LOOP concurrent with safety injection and containment isolation signal Phase B (LOOP+SIB)

Based on DG loading, the most limiting power factor is 0.89 which corresponds to the Note in ITS SRs 3.8.1.9, 3.8.1.10, and 3.8.1.14.

Response Date/Time	**8/7/2014 3:50 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman Michelle Conner Vijay Goel Khadijah Hemphill Andrew Hon Lynn Mynatt Ray Schiele**
Added By	**Scott Bowman**
Date Added	**8/7/2014 2:49 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**304**
NRC Question Number	**VKG015**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/28/2014**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**8/28/2014 3:54 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**176**
NRC Question Number	**VKG016**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.3**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Jake Zimmerman**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**ITS LCO 3.8.3, Condition A, Action A.1 requires: "Restore fuel oil level to within limits" when the Condition "One or more DGs with fuel level less than a 7 day supply and greater than a 6 day supply in storage tank" occurs.** **ITS LCO 3.8.3, Conditions A, Bases provide volume of fuel oil [53719 gallons] which is equivalent to 6 day supply.** **Please provide summary of calculation which provides fuel consumption rate to verify that fuel oil volume of 53719 gallons is equivalent to 6 day supply, and 62,000 gallons (value provided in CTS) is equivalent to 7 day supply.**
Attach File 1	
Attach File 2	
Issue Date	**7/24/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**7/24/2014 8:09 AM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**247**
NRC Question Number	**VKG016**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**ITS LCO 3.8.3, Bases states that each diesel generator (DG) is provided with a 7 day storage tank, comprised of four inter-connected tanks, having a fuel oil capacity sufficient to operate that diesel for a period of 7 days while the DG is supplying maximum post loss of coolant accident load demand discussed in UFSAR, Section 9.5.4.3 and Regulatory Guide 1.137. LCO 3.8.3, Condition A, Required Action A.1, requires that the fuel oil level be restored to within limits if the fuel oil level is less than a 7 day supply and greater than a 6 day supply. The Bases states that the fuel oil level equivalent to a 6 day supply is 53,719 gallons and the 7 day supply is 62,000 gallons.** **The fuel oil consumption rate for each DG is 337 gallons per hours (GPH) when supplying 100% load. The DG is also assumed to operate at 110% load during the first two hours of the design basis event, at 110% load, the fuel oil consumption rate is 395 GPH. A 6 day supply (144 hours) would require 2 hours at 395 GPH (790 gallons) and 142 hours at 337 GPH (47,854 gallons) for a total of 48,644 gallons. An additional 674 gallons of diesel fuel is added to account for periodic testing of the DG. The total required volume for 6 days would be 49,318 gallons which is less than stated in the Bases for ITS LCO 3.8.3, therefore, 53,719 gallons as stated in the Bases will ensure that the DG has sufficient fuel oil for 6 days.** **The 7 day supply would require 168 hours of operation, 2 hours are at 395 GPH (790 gallons) and 166 hours at 337 GPH (55,942) for a total of 56,732 gallons. An additional 674 gallons is added to account for periodic testing of the DG. The total required volume for 7 days would be 57,406 gallons which is less than stated in the Bases for ITS LCO 3.8.3, therefore, 62,000 gallons as stated in the Bases will ensure that the DG has sufficient fuel oil for 7 days.**
Response Date/Time	**8/8/2014 7:50 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner**

	Vijay Goel **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**8/8/2014 6:47 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**305**
NRC Question Number	**VKG016**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/28/2014**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**8/28/2014 3:55 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**177**
NRC Question Number	**VKG017**
Category	**Technical**
ITS Section	**3.8**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Jake Zimmerman**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**ITS LCO 3.8.3, Condition B, Action B.1 requires: "Restore lube oil inventory to within limits" when the Condition "One or more DGs with lube oil inventory less than a 7 day supply and greater than a 6 day supply" occurs.** **ITS LCO 3.8.3, Conditions B, Bases provide volume of lube oil [120 gallons] which is equivalent to 6 day supply. Please provide summary of calculation which provides lube oil consumption rate to verify that lube oil volume of 120 gallons is equivalent to 6 day supply.**
Attach File 1	
Attach File 2	
Issue Date	**7/24/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**7/24/2014 8:10 AM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**248**
NRC Question Number	**VKG017**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**The ITS 3.8.3 Bases for ACTIONS B.1 states that the lube oil inventory equivalent to a 6 day supply is 120 gallons per diesel engine. The estimated lube oil consumption rate for each diesel engine is 0.83 gal/hr. At that consumption rate, 119.52 gallons of lube oil would be consumed. Therefore, 120 gallons of lube oil will adequately provide a 6 day supply for each diesel engine.**
Response Date/Time	**8/8/2014 8:00 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**8/8/2014 6:56 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**306**
NRC Question Number	**VKG017**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/28/2014**
Notification	**Scott Bowman Michelle Conner Vijay Goel Khadijah Hemphill Andrew Hon Lynn Mynatt Ray Schiele Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**8/28/2014 3:56 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**178**
NRC Question Number	**VKG018**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.4**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Jake Zimmerman**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**ITS LCO 3.8.4 Bases, Required Action A.2 contains the following statement: "The 2 amp value is based on returning the battery to 95% charge and assumes a 5% design margin for the battery." Page E9-1 of the LAR contains the following statement: "Describes how a 5 percent design margin for the 125 V Vital batteries corresponds to a 2 amp float current value indicating that the battery is 98 percent charged." Please explain the relationship between the 95% charge value stated in ITS Bases and 98% charge value stated in the commitment made on Page E9-1 of the LAR.**
Attach File 1	
Attach File 2	
Issue Date	**7/24/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**7/24/2014 8:11 AM**
Notification	**Scott Bowman Michelle Conner Vijay Goel Khadijah Hemphill Andrew Hon Lynn Mynatt Ray Schiele Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**249**
NRC Question Number	**VKG018**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 for VKG018.pdf** (25KB)
Attachment 2	
Response Statement	**In response to VKG018, the ITS 3.8.4 Bases for ACTIONS A.1, A.2, and A.3, on pages 326 and 341 of Enclosure 2, Volume 13, will be revised. Specifically, the sentence, "The 2 amp value is based on returning the battery to 95% charge and assumes a 5% design margin for the battery," in the fifth paragraph will be revised to state, "The 2 amp value is based on returning the battery to 98% charge and assumes a 5% design margin for the battery."** **This change aligns the statement provided on page E9-1 of Enclosure 9, which states Sequoyah will change or verify that the FSAR describes how a 5 percent design margin for the 125V Vital batteries corresponds to a 2 amp float current value indicating that the battery is 98 percent charged, and the letter provided by the battery manufacturer, C&D Technologies, Inc., provided in the response to RAI GMW-002, which states, "For the LCUN-33 batteries, after a discharge, when the float current drops to less than or equal to 2 amps, the battery should be at least 98% recharged," with the ITS 3.8.4 Bases.** **See Attachment 1 for the draft revised ITS 3.8.4 Bases.**
Response Date/Time	**8/8/2014 8:00 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**8/8/2014 7:00 AM**
Date Modified	
Modified By	

BASES

ACTIONS (continued)

A discharged battery having terminal voltage of at least the minimum established float voltage indicates that the battery is on the exponential charging current portion (the second part) of its recharge cycle. The time to return a battery to its fully charged state under this condition is simply a function of the amount of the previous discharge and the recharge characteristic of the battery. Thus there is good assurance of fully recharging the battery within ~~[~~12~~]~~ hours, avoiding a premature shutdown with its own attendant risk.

If established battery terminal float voltage cannot be restored to greater than or equal to the minimum established float voltage within ~~[~~2~~]~~ hours, and the charger is not operating in the current-limiting mode, a faulty charger is indicated. A faulty charger that is incapable of maintaining established battery terminal float voltage does not provide assurance that it can revert to and operate properly in the current limit mode that is necessary during the recovery period following a battery discharge event that the DC system is designed for.

If the charger is operating in the current limit mode after 2 hours that is an indication that the battery is partially discharged and its capacity margins will be reduced. The time to return the battery to its fully charged condition in this case is a function of the battery charger capacity, the amount of loads on the associated DC system, the amount of the previous discharge, and the recharge characteristic of the battery. The charge time can be extensive, and there is not adequate assurance that it can be recharged within ~~[~~12~~]~~ hours (Required Action A.2).

Required Action A.2 requires that the battery float current be verified as less than or equal to ~~[~~2~~]~~ amps. This indicates that, if the battery had been discharged as the result of the inoperable battery charger, it is now fully capable of supplying the maximum expected load requirement. The ~~[~~2~~]~~ amp value is based on returning the battery to ~~[95]~~ 98% charge and assumes a ~~[~~5~~]~~% design margin for the battery. If at the expiration of the initial ~~[~~12~~]~~ hour period the battery float current is not less than or equal to ~~[~~2~~]~~ amps this indicates there may be additional battery problems and the battery must be declared inoperable.

2

~~REVIEWER'S NOTE~~

~~Any licensee wishing to adopt Completion Time greater than 72 hours for Required Action A.3 will need to demonstrate that the longer Completion Time is appropriate for the plant in accordance with the guidance in Regulatory Guide (RG) 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," and RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis."~~

4

BASES

ACTIONS (continued)

A discharged battery having terminal voltage of at least the minimum established float voltage indicates that the battery is on the exponential charging current portion (the second part) of its recharge cycle. The time to return a battery to its fully charged state under this condition is simply a function of the amount of the previous discharge and the recharge characteristic of the battery. Thus there is good assurance of fully recharging the battery within ~~[~~12~~]~~ hours, avoiding a premature shutdown with its own attendant risk.

If established battery terminal float voltage cannot be restored to greater than or equal to the minimum established float voltage within ~~[~~2~~]~~ hours, and the charger is not operating in the current-limiting mode, a faulty charger is indicated. A faulty charger that is incapable of maintaining established battery terminal float voltage does not provide assurance that it can revert to and operate properly in the current limit mode that is necessary during the recovery period following a battery discharge event that the DC system is designed for. 2

If the charger is operating in the current limit mode after 2 hours that is an indication that the battery is partially discharged and its capacity margins will be reduced. The time to return the battery to its fully charged condition in this case is a function of the battery charger capacity, the amount of loads on the associated DC system, the amount of the previous discharge, and the recharge characteristic of the battery. The charge time can be extensive, and there is not adequate assurance that it can be recharged within ~~[~~12~~]~~ hours (Required Action A.2).

Required Action A.2 requires that the battery float current be verified as less than or equal to ~~[~~2~~]~~ amps. This indicates that, if the battery had been discharged as the result of the inoperable battery charger, it is now fully capable of supplying the maximum expected load requirement. The ~~[~~2~~]~~ amp value is based on returning the battery to ~~[95]~~ 98% charge and assumes a ~~[~~5~~]~~% design margin for the battery. If at the expiration of the initial ~~[~~12~~]~~ hour period the battery float current is not less than or equal to ~~[~~2~~]~~ amps this indicates there may be additional battery problems and the battery must be declared inoperable.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Any licensee wishing to adopt Completion Time greater than 72 hours for Required Action A.3 will need to demonstrate that the longer Completion Time is appropriate for the plant in accordance with the guidance in Regulatory Guide (RG) 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," and RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis."~~ 4

Licensee Response/NRC Response/NRC Question Closure

Id	**307**
NRC Question Number	**VKG018**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/28/2014**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**8/28/2014 3:57 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**179**
NRC Question Number	**VKG019**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.4**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Jake Zimmerman**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**ITS Bases SR 3.8.4.1 contains the following statement: "The voltage requirements are based on the nominal design voltage of the battery and are consistent with the minimum float voltage established by the manufacturer (129 V for the Vital batteries and 124 V for the DG batteries)."** **Provide the basis for selecting 124 V minimum float voltage for DG batteries.**
Attach File 1	
Attach File 2	
Issue Date	**7/24/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**7/24/2014 8:12 AM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**351**
NRC Question Number	**VKG019**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 for RAI VKG019.pdf** (2MB)
Attachment 2	**Attachment 2 for RAI VKG019.pdf** (360KB)
Response Statement	**In response to RAI VKG019, the following information is being provided regarding the basis for selecting 124 volts as the minimum float voltage for the DG batteries.** **The minimum float voltage requirements for the DG batteries, as discussed in ITS 3.8.4 Bases Surveillance Requirements Section 3.8.4.1, reflects CTS 4.8.1.1.3.a.2 that requires verifying, "the total battery terminal voltage is greater than or equal to 124 volts on float charge," for the DG batteries. By letter dated September 17, 1982 (Accession Number 8209220277), SQN requested a license amendment to change the minimum float voltage requirement specified in surveillance requirement 4.8.1.1.3.a.2 for the DG batteries from 129 volts to 124 volts. The change was necessary because SQN replaced the DG batteries with lead calcium batteries with 57 cells with a manufacturer's recommended minimum float voltage of 2.17 volts/cell. The original minimum float voltage requirement of 129 volts exceeded the manufacturer's recommended maximum of 128.25 volts and could contribute to shorter battery life. Therefore, 124 volts should be the minimum total float voltage requirement. By letter dated December 23, 1982 (Accession Number 8301060001), the Commission issued Amendments 17 and 8 for SQN, Units 1 and 2, respectively. The Safety Evaluation related to Amendments 17 and 8 stated that, "from this justification, the staff agrees that surveillance requirement 4.8.1.1.3.9.2 [sic] should be changed from 129 volts to 124 volts."** **Attachment 1 is the SQN license amendment request.** **Attachment 2 is the Commission's issuance of Amendments 17 and 8 for SQN, Units 1 and 2.**
Response Date/Time	**9/26/2014 6:55 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner**

	Vijay Goel **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**9/26/2014 5:49 AM**
Date Modified	
Modified By	

TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

September 17, 1982

TVA-SQN-TS-36

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Denton:

In the Matter of	)	Docket Nos. 50-327
Tennessee Valley Authority	)	50-328

In accordance with 10 CFR Part 50.59, we are enclosing 40 copies of a requested amendment to the operating licenses DPR-77 and DPR-79 for a change to the Sequoyah Nuclear Plant units 1 and 2 technical specifications. The proposed changes to the technical specifications and justifications for the changes are provided in the following enclosures.

Enclosure 1 - Change No. 1 - Diesel Generator Battery Float Voltage

Enclosure 2 - Change No. 2 - Isolation Times for Containment Isolation Valves

Enclosure 3 - Change No. 3 - Instrumentation Surveillance Requirement Test Frequency of Tables 4.3-1 and 4.3-2

Enclosure 4 - Change No. 4 - Changes to Reflect Installation of Permanent Hydrogen Mitigation System

Enclosure 5 - Change No. 5 - Addition of Second Level of Undervoltage Protection

NRC approval of the changes to the technical specifications, provided in Enclosures 4 and 5, is required for unit 1 of our Sequoyah Nuclear Plant before startup from the present refueling outage.

B021
s
1/40

8209220277 820917
PDR ADOCK 05000327
P PDR

Mr. Harold R. Denton, Director September 17, 1982

In accordance with the provisions of 10 CFR Part 170.22, we have determined the proposed amendment to be Class IV for unit 1 and Class I for unit 2. This classification is based on the fact that the amendment involves several changes of the Class III type incorporated into this amendment and involves a second essentially identical unit at the same site. The remittance of $12,700 is being wired to the Nuclear Regulatory Commission, Attention: Licensing Fee Management Branch.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

D S Kammer

D. S. Kammer
Nuclear Engineer

Sworn to and subscribed before me
this 17th day of Sept 1982
Bryant M. Lowery
Notary Public
My Commission Expires 4/8/86

Enclosures (40)
cc: U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

ENCLOSURE 1

SEQUOYAH NUCLEAR PLANT

PROPOSED TECHNICAL SPECIFICATIONS

TVA-SQN-TS-36

CHANGE NO. 1

DIESEL GENERATOR BATTERY FLOAT VOLTAGE

8209220281 820917
PDR ADOCK 05000327
P PDR

SURVEILLANCE REQUIREMENTS (Continued)

4.8.1.1.3 The 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger for each diesel generator shall be demonstrated OPERABLE:

a. At least once per 7 days by verifying:

1. That the parameters in Table 4.8-1a meet the Category A limits.

2. That the total battery terminal voltage is greater than or equal to 124-volts on float charge.

b. At least once per 92 days by:

1. Verifying that the parameters in Table 4.8-1a meet the Category B limits,

2. Verifying there is no visible corrosion at either terminals or connectors, or the cell to terminal connection resistance of these items is less than 150 x 10^{-6} ohms, and

3. Verifying that the average electrolyte temperature of 6 connected cells is above 60 F.

c. At least once per 18 months by verifying that:

1. The cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration.

2. The battery to battery and terminal connections are clean, tight and coated with anti-corrosion material.

3. The resistance of each cell to terminal connection is less than or equal to 150 x 10^{-6} ohms.

4.8.1.1.4 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission pursuant to Specification 6.9.1. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests (on a per nuclear unit basis) is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

SURVEILLANCE REQUIREMENTS (Continued)

f. At least once per 10 years* by:

1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypoclorite solution, and

2. Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code at a test pressure equal to 110 percent of the system design pressure.

4.8.1.1.3 The 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger for each diesel generator shall be demonstrated OPERABLE:

a. At least once per 7 days by verifying:

1. That the parameters in Table 4.8-1a meet the Category A limits.

2. That the total battery terminal voltage is greater than or equal to 124-volts on float charge.

b. At least once per 92 days by:

1. Verifying that the parameters in Table 4.8-1a meet the Category B limits,

2. Verifying there is no visible corrosion at either terminals or connectors, or the cell to terminal connection resistance of these items is less than 150×10^{-6} ohms, and

3. Verifying that the average electrolyte temperature of 6 connected cells is above 60 F.

c. At least once per 18 months by verifying that:

1. The cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration.

2. The battery to battery and terminal connections are clean, tight and coated with anti-corrosion material.

3. The resistance of each cell to terminal connection is less than or equal to 150×10^{-6} ohms.

*These requirements are waived for the initial surveillance.

TVA-SQN-TS-36
Change No. 1
Sequoyah Nuclear Plant
Justification for Proposed Technical Specification Change

DIESEL GENERATOR BATTERY FLOAT VOLTAGE

The diesel generator batteries at Sequoyah have been replaced with lead calcium cells. The manufacturer (C&D Batteries) recommends a minimum float voltage of 2.17 volts for each cell. The Sequoyah batteries consist of 19 three cell units. The minimum total float voltage requirement is:

2.17 volts/cell x 57 cells = 123.69 volts

The minimum float voltage specified in surveillance requirement 4.8.1.1.3.a.2 should be 124 volts (rounded up).

The present technical specification test value of 129 volts exceeds the manufacturer's maximum of 128.25 volts. The larger voltage can shorten battery life.

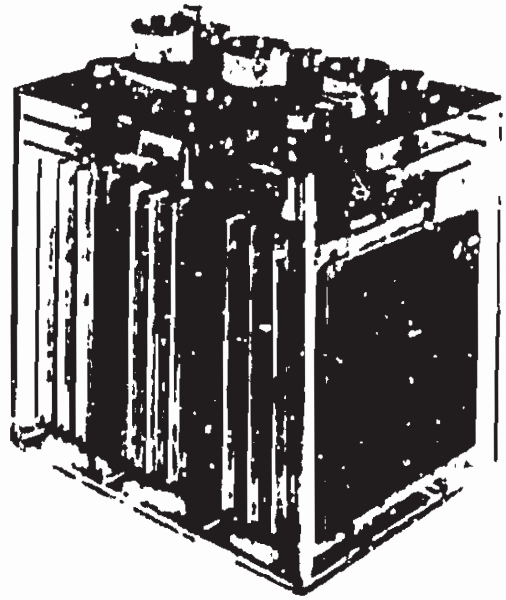
A copy of the manufacturer's specification sheets and part of the instruction manual are included are attachments.

Supersedes Section 12-337

STATIONARY BATTERIES

25 to 200 Amp. Hours
DCU - Lead Calcium
DU - Lead Antimony

SPECIFICATIONS


3DCU-7

CELLS PER UNIT	One, two or three		
PLATES	Height	Width	Thickness
Positive	5.88"	5.63"	0.205"
Negative	5.88"	5.63"	0.170"
Outside Negative	5.88"	5.63"	0.110"

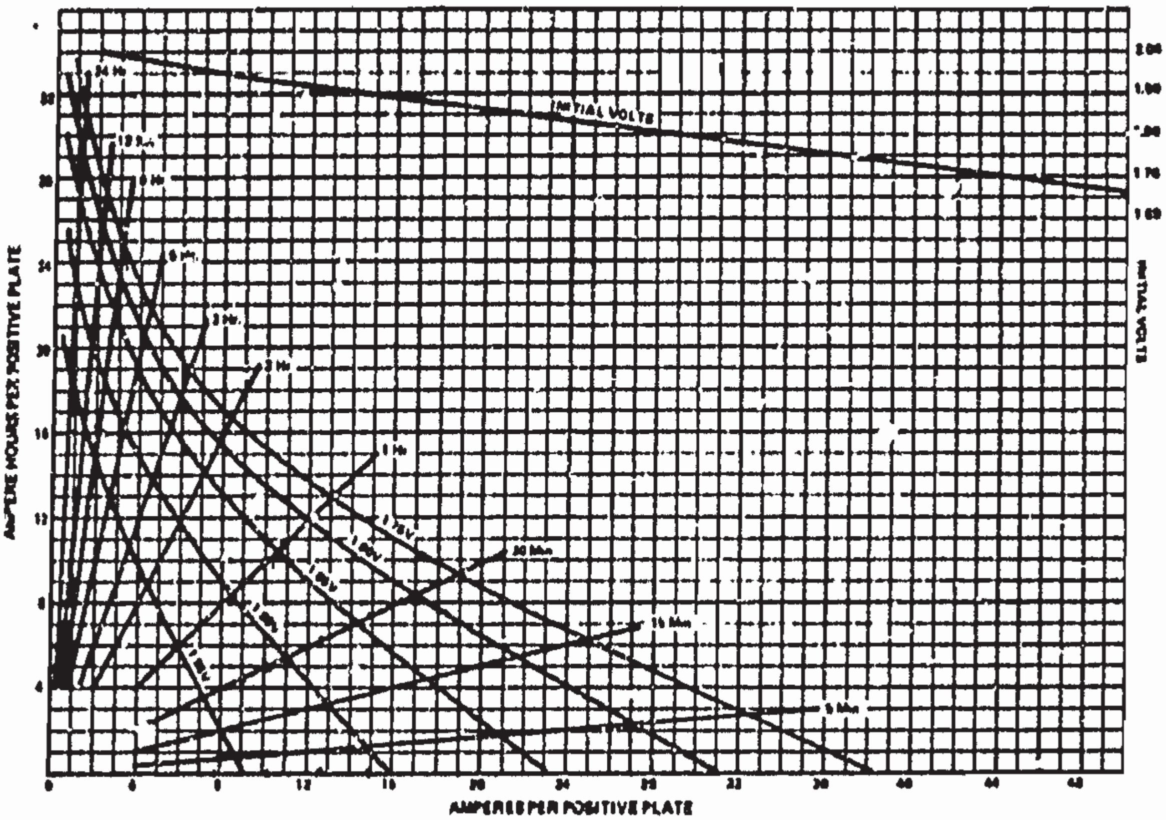
SPECIFIC GRAVITY ..... 1.210 nominal at 77°F
CONTAINER .... Transparent thermoplastic
CELL COVER .... Thermoplastic
SEPARATORS .... Microporous
RETAINERS .. .. Fibrous glass mat
ELECTROLYTE HEIGHT ABOVE PLATES .... 1.75" except 1" plate – 1.63"
SEDIMENT SPACE ...... 0.5' except 11 plate – 0.56"
TERMINALS .... DCU/DU - 3 thru 11. Two flag terminals with 1/4" - 20 bolts
DCU/DU - 13 thru 17: Two 0.75" posts with 5/16" - 18 stud end cap nuts
VENT CAPS .... Flame arrestor type

Type of Cell		Cells per Unit	* Nominal Cap. 1.75 VPC @ 77°F (Includes Connector Voltage Drop)								Overall Dimensions			Approx. Weight (lbs.)		Elect. per Cell
			Ampere Hours					Amperes								
Calcium	Antimony		8 Hrs.	5 Hrs.	3 Hrs.	1.5 Hrs.	1 Hr.	30 Min.	15 Min.	1 Min.	L (in.)	W (in.)	H (in.)	Net Filled	Dry Packed	(lbs.)
2DCU-3	2DU-3	2	25	22	19	15.3	12.5	19	24.9	37.5	3.50			18	22	3
3DCU-3	3DU-3	3	25	22	19	[illegible]	12.5	19	24.9	37.5	5.28			27	32	3
2DCU-5	2DU-5	2	50	44	38	30.6	25	38	49.8	75	3.50			22	26	2.8
3DCU-5	3DU-5	3	50	44	38	30.6	25	38	49.8	75	5.28			33	38	2.8
2DCU-7	2DU-7	2	75	66	57	45.9	38	57	74.7	111	6.38	7.38	10.31	36	40	5.5
3DCU-7	3DU-7	3	75	66	57	45.9	38	57	74.7	111	9.47			53	58	5.5
2DCU-9	2DU-9	2	100	88	76	61.2	50	76	99.6	148	6.38			40	44	5.3
3DCU-9	3DU-9	3	100	88	76	61.2	50	76	99.6	148	9.47			60	65	5.3
2DCU-11	2DU-11	2	120	105	90	75	60	98	126	184	7.50	7.19	10.26	48	55	5.8
3DCU-11	3DU-11	3	120	105	90	75	60	98	126	184	11.13			71	79	5.8
DCU-13	DU-13	1	150	132	114	91.8	75	114	149.4	220	6.38			38	44	12.0
DCU-15	DU-15	1	175	154	132	107.1	88	133	174.3	253	6.38	7.38	10.75	40	46	11.5
DCU-17	DU-17	1	200	176	150	122.4	100	152	199.2	288	6.38			42	48	10.5

Note: Electrolyte weighs approximately 10 lbs. per gallon (1.210).
* Data based on discharge from float at 77°F for a minimum of 72 hours in accordance with Federal Specification W-B-134.

(SWIFT INDUSTRIAL POWER)

TYPICAL DISCHARGE CHARACTERISTICS OF DCU, DU
(EXCEPT DCU-11)



Data based on discharge from float at 77°F for a minimum of 72 hours in accordance with Federal Specification W-B-134.

RACK SPECIFICATIONS

Battery	No. of Cells	TWO TIER Model RD-701-(L) Width: 13 in. Height: 31.38 in. Length (L) Ft.	Weight lbs.	No. Req'd.	TWO STEP Model RD-703-(L) Width: 17.5 in. Height: 24.38 in. Length (L) Ft.	Weight lbs.	No. Req'd.	THREE TIER Model RD-702-(L) Width: 18 in. Height: 56.38 in. Length (L) Ft.	Weight lbs.	No. Req'd.
2DCU/DU-3	12	3	48	1	3	47	1	–	–	–
thru	23/24	3	48	1	3	47	1	–	–	–
	26	3	48	1	3	47	1	–	–	–
3DCU/DU-5	60	6	81	1	6	82	1	6	102	1
2DCU/DU-7	12	3	48	1	3	47	1	–	–	–
thru	23/24	4	54	1	4	55	1	3	79	1
	26	4	54	1	4	55	1	3	73	1
3DCU/DU-9	60	8	106	1	8	108	1	4	91	1
2DCU/DU-11	12	3	48	1	3	47	1	–	–	–
and	23/24	4	54	1	4	56	1	3	79	1
	26	5	61	1	5	62	1	4	91	1
3DCU/DU-11	60	10	114	1	10	110	1	10	201	1
DCU/DU-13	12	4	64	1	4	65	1	–	–	1
thru	23/24	7	90	1	7	92	1	6	102	1
	26	8	98	1	8	100	1	8	114	1
DCU/DU-17	60	8	106	2	9	108	2	4	–	1

Notes: 1. Above data is for C&D standard racks only. For seismic zones, C&D type RP racks are available. See Section 12-660.

2. Rack lengths for other than 60 cell batteries can be calculated by the formula
Number of cells per tier or step x (L + 0.5) – 0.5 = Total Rack Length
(Where "L" is length of cell.)
Where dimensions are critical, check with C&D engineering.

3. Rack width does not include thickness of crossbracing. Increase width by 0.5 for crossbracing when this dimension is critical.

BATTERIES
3043 WALTON ROAD, PLYMOUTH MEETING, PA. 19462
an Eltra company

BATTERIES OF CANADA
180 CONNIE CRESCENT, UNIT 16, CONCORD, ONTARIO L4K 1G6
an Eltra company

Printed in U.S.A. 10M/180

3.11 SUITABLE WATER FOR FILLING

If in doubt about the suitability of the local water supply for use in lead-acid batteries, consult your nearest C & D Representative. If he does not have a recent analysis report available, send a one-quart sample in a chemically clean non-metallic container and stopper, prepaid to Technical Services Dept., C & D Batteries Division, Eltra Corporation, 3043 Walton Road, Plymouth Meeting, PA 19462. The sample will be analyzed and a report as to its safety for use in lead-acid batteries will be forwarded. Indicate the source of the water and the sender's name and location on the sample.

The quantity of water consumed by a battery is proportional to the amount of charge is receives. Lead-antimony batteries begin their life with low water consumption, which increases as much as five or more times toward the end of their life. Lead-calcium batteries, because of the greater purity of their components, require only about one-tenth the water needed by equivalent-sized new lead-antimony batteries. This low requirement remains constant during their entire life. Fig. 10 gives the approximate water consumption for various size cells at the normal operating temperature of 77°F.

3.12 CONNECTING BATTERY TO CHARGER

Only direct current (dc) is used for charging. With the charging source de-energized, connect the positive terminal of the battery to the positive of the charger or system and the negative terminal of the battery to the negative of the charger or system. Re-energize the system following procedures that are provided in charger manual.

4.0 INITIAL CHARGE

All batteries shipped wet and fully charged lose some charge in transit or while standing idle before installation. At the first opportunity, they should be given their first or initial charge using the following method.

4.1 CONSTANT VOLTAGE METHOD

This method of giving the initial charge is the most common and is used when circuit voltage limitations make it impractical to use the constant current method. First, determine the maximum allowable voltage that may be applied to the connected equipment. Divide this voltage by the number of cells in the battery, thus obtaining the maximum voltage per cell. Determine if the battery is a lead-antimony or lead-calcium type by the nomenclature on the cell. If lead-antimony, refer to the following table and charge for the time indicated at the maximum voltage permitted by the associated equipment.

TABLE I - LEAD-ANTIMONY CELLS

CHARGE VOLTAGE PER CELL (VPC) (1.210 SPECIFIC GRAVITY)			
INITIAL		FLOAT	EQUALIZE
VPC	HOURS	VPC	VPC
2.39	40	2.15 to 2.17	2.33 for 8 to 24 hrs.
2.36	60		
2.33	110		
2.30	168		
2.24	210		

If lead-calcium the following applies:

TABLE II - LEAD-CALCIUM CELLS

CHARGE VOLTAGE PER CELL (VPC)				
SP. GR. OF CELLS	FLOAT VPC		INITIAL/EQUALIZE (VPC)	
	MIN.	NOMINAL	CRITICAL CELL VOLT.	NOM. VPC
1.210	2.17	2.20-2.25	2.15	2.33-2.38
1.225	2.18	2.22-2.27	2.15	2.36-2.40
1.250	2.20	2.25-2.30	2.18	2.38-2.43
1.275	2.23	2.29-2.34	2.20	2.40-2.46
1.300	2.27	2.33-2.38	2.23	2.45-2.50

TABLE III - BRUSHING & TORQUE SPECIFICATIONS FOR CELL CONNECTIONS

CELL TYPE	RECOM. TORQUE	TYPE BRUSH
Cells with posts that do not have copper inserts:		
Communications Batteries KT, KCT, LT, LCT UPS & Switchgear Batteries DU & DCU 13, 15, 17 KA & KC 5, 7, 11, 13 KY & KCY-7 KCX 7, 9, 11, 13, 15, 17 LA & LC - 13, 15, 17 LY & LCY - 5, 7 Photovoltaic Batteries DCPSA - 11, 13, 15, 17 DCPSD - 9, 11, 13 KCPSA - 5, 7, 9, 11, 13, 15, 17 KCPSD - 5, 7, 9, 11, 13 LCPSA - 5, 7, 11, 13, 15, 17, 19, 21, 23, 25 LCPSD - 5, 11, 13, 15, 17, 19	110 inch-lbs. -0 inch-lbs. +10 inch-lbs.	wire brush
Mini-Tank Cells MT & MCT	160 inch lbs. -0 inch-lbs. +10 inch-lbs.	wire brush
Cells with posts that have copper inserts:		
Tank Cells RHA & RHC UPS & Switchgear Batteries KA & KC-15, 17, 19, 21 KY & KCY-23, 25 KCX-19, 21, 23, 25, 27, 29, 31, 33 LA & LC - 19, 21, 23, 25, 27, 29, 31, 33 LCX - All sizes LY & LCY - 9, 11, 35, 37, 39	160 inch-lbs. -0 inch-lbs. +5 inch-lbs.	plastic bristle brush
Cells with large flag terminals (no inserts):		
DU & DCU - 3, 5, 7, 9, 11 DCPSA - 3, 5, 7, 9 DCPSD - 3, 5, 7	70 inch-lbs -0 inch-lbs. +5 inch-lbs.	wire brush
Cells with small size terminals (no inserts):		
A, AC, B, BC and small specialty batteries	15 inch-lbs. -3 inch-lbs. +0 inch-lbs.	wire brush

ENCLOSURE 2

SEQUOYAH NUCLEAR PLANT

PROPOSED TECHNICAL SPECIFICATIONS

TVA-SQN-TS-36

CHANGE NO. 2

ISOLATION TIMES FOR CONTAINMENT ISOLATION VALVES

TABLE 3.3-5 (Continued)

TABLE NOTATION

(1) Diesel generator starting and sequence loading delays included. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps, SI and RHR pumps.

(2) Using air operated valve

(3) The following valves are exceptions to the response times shown in the table and will have the values listed in seconds for the initiating signals and function indicated:

Valves: FCV-26-240, -243
Response times:
2.d. $21^{(8)}/31^{(9)}$
3.d. $22^{(8)}$
4.d. $21^{(8)}/31^{(9)}$
5.d. $24^{(8)}/34^{(9)}$
6.d. $21^{(8)}/31^{(9)}$

Valves: FCV-61-96, -97, -110, -122, -191, -192, -193, -194
Response times:
2.d. $31^{(8)}$
3.d. $32^{(8)}$
4.d. $31^{(8)}$
5.d. $34^{(8)}$
6.d. $31^{(8)}$

Valve: FCV-70-143
Response times:
2.d. $61^{(8)}/71^{(9)}$
3.d. $62^{(8)}$
4.d. $61^{(8)}/71^{(9)}$
5.d. $64^{(8)}/74^{(9)}$
6.d. $61^{(8)}/71^{(9)}$

(4) On 2/3 any Steam Generator

(5) On 2/3 in 2/4 Steam Generator

(6) Radiation detectors for Containment Ventilation Isolation may be excluded from Response Time Testing.

(7) Diesel generator starting and sequence loading delays not included. Offsite power available. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps.

(8) Diesel generator starting and sequence loading delays not included. Response time limit includes operating time of valves.

(9) Diesel generator starting and sequence loading delays included. Response time limit includes operating time of valves.

TABLE 3.3-5 (Continued)

TABLE NOTATION

(1) Diesel generator starting and sequence loading delays included. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps, SI and RHR pumps.

(2) Using air operated valve

(3) The following valves are exceptions to the response times shown in the table and will have the values listed in seconds for the initiating signals and function indicated:

Valves: FCV-26-240, -243
Response times:
2.d. $21^{(8)}/31^{(9)}$
3.d. $22^{(8)}$
4.d. $21^{(8)}/31^{(9)}$
5.d. $24^{(8)}/34^{(9)}$
6.d. $21^{(8)}/31^{(9)}$

Valves: FCV-61-96, -97, -110, -122, -191, -192, -193, -194
Response times:
2.d. $31^{(8)}$
3.d. $32^{(8)}$
4.d. $31^{(8)}$
5.d. $34^{(8)}$
6.d. $31^{(8)}$

Valve: FCV-70-143
Response times:
2.d. $61^{(8)}/71^{(9)}$
3.d. $62^{(8)}$
4.d. $61^{(8)}/71^{(9)}$
5.d. $64^{(8)}/74^{(9)}$
6.d. $61^{(8)}/71^{(9)}$

(4) On 2/3 any Steam Generator

(5) On 2/3 in 2/4 Steam Generator

(6) Radiation detectors for Containment Ventilation Isolation may be excluded from Response Time Testing.

(7) Diesel generator starting and sequence loading delays not included. Offsite power available. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps.

(8) Diesel generator starting and sequence loading delays not included. Response time limit includes operating time of valves.

(9) Diesel generator starting and sequence loading delays included. Response time limit includes operating time of valves.

TVA-SQN-TS-36
Change No. 2
Sequoyah Nuclear Plant
Justification for Proposed Technical Specifications

ISOLATION TIMES FOR CONTAINMENT ISOLATION VALVES

The isolation times for the containment isolation valves on the ice condenser glycol lines were increased from 10 seconds to 30 seconds. These changes were approved by the NRC on May 4, 1982 for units 1 and 2 (Amendment 13 for the unit 1 operating license; Amendment 4 to the unit 2 operating license). During the process of revising our procedures, an error of omission was discovered in our original change request. Although the valve stroke time was changed, the overall phase A response time, which includes the valve stroke time, was overlooked. Also, a similar error was discovered in the fire protection system containment isolation valves. The fire protection valves list a 20-second valve stroke time. However, the phase A response time is not consistent with the valve stroke time.

NRC has reviewed and approved the response times for both sets of valves. This change only corrects errors in the implementation of the response time.

ENCLOSURE 3

SEQUOYAH NUCLEAR PLANT

PROPOSED TECHNICAL SPECIFICATIONS

TVA-SQN-TS-36

CHANGE NO. 3

INSTRUMENTATION SURVEILLANCE REQUIREMENT TEST FREQUENCY

OF TABLES 4.3-1 AND 4.3-2

TABLE 4.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. Manual Reactor Trip	N.A.	N.A.	S/U(1)	1, 2, and *
2. Power Range, Neutron Flux	S	D(2), M(3) and Q(6)	Q	1, 2
3. Power Range, Neutron Flux, High Positive Rate	N.A.	R(6)	Q	1, 2
4. Power Range, Neutron Flux, High Negative Rate	N.A.	R(6)	[illegible]	1, 2
5. Intermediate Range, Neutron Flux	S	R(6)	S/U(1)	1, 2, and *
6. Source Range, Neutron Flux	S(7)	R(6)	Q and S/U(1)	2, 3, 4, 5, and *
7. Overtemperature Delta T	S	R	M	1, 2
8. Overpower Delta T	S	R	M	1, 2
9. Pressurizer Pressure--Low	S	R	Q	1, 2
10. Pressurizer Pressure--High	S	R	Q	1, 2
11. Pressurizer Water Level--High	S	R	Q	1, 2
12. Loss of Flow - Single Loop	S	R		1
13. Loss of Flow - Two Loops	S	R	N.A.	1

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
14. Main Steam Generator Water Level--Low-Low	S	R	Q	1, 2
15. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	S	R	Q	1, 2
16. Undervoltage - Reactor Coolant Pumps	N.A.	R	M	1
17. Underfrequency - Reactor Coolant Pumps	N.A.	R	M	1
18. Turbine Trip				
A. Low Fluid Oil Pressure	N.A.	N.A.	S/U(1)	1
B. Turbine Stop Valve Closure	N.A.	N.A.	S/U(1)	1
19. Safety Injection Input from ESF	N.A.	N.A.	M(4)	1, 2
20. Reactor Trip Breaker	N.A.	N.A.	M(5) and S/U(1)	1, 2, and *
21. Automatic Trip Logic	N.A.	N.A.	M(5)	1, 2, and *
22. Reactor Trip System Interlocks				
A. Intermediate Range Neutron Flux, P-6	N.A.	R	S/U(8)	2, and #
B. Power Range Neutron Flux, P-7	N.A.	R	S/U(8)	1
C. Power Range Neutron Flux, P-8	N.A.	R	S/U(8)	1
D. Power Range Neutron Flux, P-10	N.A.	R	S/U(8)	1, 2
E. Turbine Impulse Chamber Pressure, P-13	N.A.	R	S/U(8)	1
F. Power Range Neutron Flux, P-9	N.A.	R	S/U(8)	1
G. Reactor Trip, P-4	N.A.	R	S/U(8)	1, 2, and *

MAR 25 1982

TABLE 4.3-2

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. SAFETY INJECTION AND FEEDWATER ISOLATION				
a. Manual Initiation	N.A.	N.A.	M(1)	1, 2, 3, 4
b. Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
c. Containment Pressure-High	S	R	Q	1, 2, 3
d. Pressurizer Pressure--Low	S	R	Q	1, 2, 3
e. Differential Pressure Between Steam Lines--High	S	R	Q	1, 2, 3
f. Steam Flow in Two Steam Lines--High Coincident with T_{avg}--Low-Low or Steam Line Pressure--Low	S	R		1, 2, 3
2. CONTAINMENT SPRAY				
a. Manual Initiation	N.A.	N.A.	M(1)	1, 2, 3, 4
b. Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
c. Containment Pressure--High-High	S	R	Q	1, 2, 3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
3. CONTAINMENT ISOLATION				
a. Phase "A" Isolation				
1) Manual	N.A.	N.A.	M(1)	1, 2, 3, 4
2) From Safety Injection Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
b. Phase "B" Isolation				
1) Manual	N.A.	N.A.	M(1)	1, 2, 3, 4
2) Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
3) Containment Pressure--High-High	S	R	Q	1, 2, 3
c. Containment Ventilation Isolation				
1) Manual	N.A.	N.A.	M(1)	1, 2, 3, 4
2) Automatic Isolation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
3) Containment Gas Monitor Radioactivity-High	S	R	M	1, 2, 3, 4

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
4) Containment Purge Air Exhaust Monitor Radio-activity-High	S	R	M	1, 2, 3, 4
5) Containment Particulate Activity-High	S	R	M	1, 2, 3, 4
4. STEAM LINE ISOLATION				
a. Manual	N.A.	N.A.	M(1)	1, 2, 3
b. Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3
c. Containment Pressure--High-High	S	R	Q	1, 2, 3
d. Steam Flow in Two Steam Lines--High Coincident with T_{avg}-- Low-Low or Steam Line Pressure--Low	S	R	Q	1, 2, 3
5. TURBINE TRIP AND FEEDWATER ISOLATION				
a. Steam Generator Water Level--High-High	S	R	Q	1, 2, 3
6. AUXILIARY FEEDWATER				
a. Manual	N.A.	N.A.	M(1)	1, 2, 3
b. Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
c. Main Steam Generator Water Level-Low-Low	S	R	Q	1, 2, 3
d. S.I.	See 1 above (all SI surveillance requirements)			
e. Station Blackout	N.A.	R	N.A.	1, 2, 3
f. Trip of Main Feedwater Pumps	N.A.	N.A.	R	1, 2
g. Auxiliary Feedwater Suction Pressure - Low	N.A.	R	M	1, 2, 3
7. LOSS OF POWER				
a. 6.9 kv Shutdown Board Undervoltage				
1. Loss of Voltage	S	R	M	1, 2, 3, 4
2. Load Shedding	S	R	N.A.	1, 2, 3, 4
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS				
a. Pressurizer Pressure, P-11	N.A.	R (4)	N.A.	1, 2, 3
b. T_{avg}, P-12	N.A.	R (4)	N.A.	1, 2, 3
c. Steam Generator Level, P-14	N.A.	R (4)	N.A.	1, 2

TABLE 4.3-1

REALTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
1. Manual Reactor Trip	N.A.	N.A.	S/U(1)	1, 2, and *
2. Power Range, Neutron Flux	S	D(2), M(3) and Q(6)	Q	1, 2
3. Power Range, Neutron Flux, High Positive Rate	N.A.	R(6)	Q	1, 2
4. Power Range, Neutron Flux, High Negative Rate	N.A.	R(6)	Q	1, 2
5. Intermediate Range, Neutron Flux	S	R(6)	S/U(1)	1, 2, and *
6. Source Range, Neutron Flux	S(7)	R(6)	M and S/U(1)	2, 3, 4, 5, and *
7. Overtemperature ΔT	S	R	M	1, 2
8. Overpower ΔT	S	R	M	1, 2
9. Pressurizer Pressure--Low	S	R	Q	1, 2
10. Pressurizer Pressure--High	S	R	Q	1, 2
11. Pressurizer Water Level--High	S	R	Q	1, 2
12. Loss of Flow - Single Loop	S	R	Q	1
13. Loss of Flow - Two Loops	S	R	N.A.	1
14. Steam Generator Water Level--Low-Low	S	R	Q	1, 2

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
15. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	S	R	Q	1, 2
16. Undervoltage - Reactor Coolant Pumps	N.A.	R	M	1
17. Underfrequency - Reactor Coolant Pumps	N.A.	R	M	1
18. Turbine Trip				
A. Low Fluid Oil Pressure	N.A.	N.A.	S/U(1)	1
B. Turbine Stop Valve Closure	N.A.	N.A.	S/U(1)	1
19. Safety Injection Input f.om ESF	N.A.	N.A.	M(4)	1, 2
20. Reactor Trip Breaker	N.A.	N.A.	M(5) and S/U(1)	1, 2, and *
21. Automatic Trip Logic	N.A.	N.A.	M(5)	1, 2, and *
22. Reactor Trip System Interlocks				
A. Intermediate Range Neutron Flux, P-6	N A	R	S/U (8)	2, and *
B. Power Range Neutron Flux, P-7	N.A.	R	S/U (8)	1
C. Power Range Neutron Flux, P-8	N.A.	R	S/U (8)	1
D. Power Range Neutron Flux, P-10	N.A.	R	S/U (8)	1, 2
E. Turbine Impulse Chamber Pressure, P-13	N.A.	R	S/U (8)	1
F. Power Range Neutron Flux, P-9	N.A.	R	S/U (8)	1
G. Reactor Trip, P-4	N.A.	R	S/U (8)	1, 2, and *

TABLE 4.3-2

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
1. SAFETY INJECTION AND FEEDWATER ISOLATION				
a. Manual Initiation	N.A.	N.A.	M(1)	1, 2, 3, 4
b. Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
c. Containment Pressure-High	S	R	Q	1, 2, 3
d. Pressurizer Pressure--Low	S	R	Q	1, 2, 3
e. Differential Pressure Between Steam Lines--High	S	R	Q	1, 2, 3
f. Steam Flow in Two Steam Lines--High Coincident with T_{avg}--Low-Low or Steam Line Pressure--Low	S	R	Q	1, 2, 3
2. CONTAINMENT SPRAY				
a. Manual Initiation	N.A.	N.A.	M(1)	1, 2, 3, 4
b. Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
c. Containment Pressure--High-High	S	R	Q	1, 2, 3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
3. CONTAINMENT ISOLATION				
a. Phase "A" Isolation				
1) Manual	N.A.	N.A.	M(1)	1, 2, 3, 4
2) From Safety Injection Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
b. Phase "B" Isolation				
1) Manual	N.A.	N.A.	M(1)	1, 2, 3, 4
2) Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
3) Containment Pressure--High-High	S	R	Q	1, 2, 3
c. Containment Ventilation Isolation				
1) Manual	N.A.	N.A.	M(1)	1, 2, 3, 4
2) Automatic Isolation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
3) Containment Gas Monitor Radioactivity-High	S	R	M	1, 2, 3, 4

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
4) Containment Purge Air Exhaust Monitor Radio-activity-High	S	Q	M	1, 2, 3, 4
5) Containment Particulate Activity-High	S	R	M	1, 2, 3, 4
4. STEAM LINE ISOLATION				
a. Manual	N.A.	N.A.	M(1)	1, 2, 3
b. Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3
c. Containment Pressure--High-High	S	R	Q	1, 2, 3
d. Steam Flow in Two Steam Lines--High Coincident with T_{avg} -- Low-Low or Steam Line Pressure--Low	S	R	Q	1, 2, 3
5. TURBINE TRIP AND FEEDWATER ISOLATION				
a. Steam Generator Water Level--High-High	S	R	Q	1, 2, 3
6. AUXILIARY FEEDWATER				
a. Manual	N.A.	N.A.	M(1)	1, 2, 3
b. Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
c. Main Steam Generator Water Level-Low-Low	S	R	Q	1, 2, 3
d. S.I.	See 1 above (all SI surveillance requirements)			
e. Station Blackout	N.A.	R	N.A.	1, 2, 3
f. Trip of Main Feedwater Pumps	N.A.	N.A.	R	1, 2
g. Auxiliary Feedwater Suction Pressure-Low	N.A.	R	M	1, 2, 3
7. LOSS OF POWER				
a. 6.9 kv Shutdown Board Undervoltage				
1. Loss of Voltage	S	R	M	1, 2, 3, 4
2. Load Shedding	S	R	N.A.	1, 2, 3, 4
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS				
a. Pressurizer Pressure, P-11	N.A.	R (4)	N.A.	1, 2, 3
b. T_{avg}, P-12	N.A.	R (4)	N.A.	1, 2, 3
c. Steam Generator Level, P-14	N.A.	R (4)	N.A.	1, 2

An instruction can be adaquately reviewed in approximately 10 minutes. This is an accumulated time of .667 hours per instruction or 392 manhours or 49 (8 hour) man days per year. The average salary is approximately $30 per hour for a cost of $11,760 per year.

CONCLUSION

The total time saved on both units 1 & 2 where the plants would be in a condition where a single failure would cause a safeguard actuation is 784 hours or 98 (8 hour) days. The operator distraction time saved would be 196 hours or 24.5 (8 hour) days.

The total manhour savings for both units would be 3920 man hours or 490 (8 hour) days at a cost of $98,000 in instrument mechanic time. The review time savings would be 523 manhours or 65.33 (8 hour) man days for a savings of $15,690.

The data collected and reviewed (attachment 1) shows these selected loops to be highly reliable. Extending the frequency to quarterly would have the previously covered positive benefits and would not jeopardize the overall reliability of the plant safety systems.

The plant will maintain a periodic assessment program to guarantee that the systems specified maintain their high reliability. This will include review of SI packages, and repair or replacement of components when problems occur.

TVA-SQN-TS-36
Change No. 3
Sequoyah Nuclear Plant
Justification for Proposed Technical Specifications

This request encompasses 49 instructions in total. There are a number of considerations to be addressed.

1. Each instruction requires an average of 1.0 hour with the loop actually removed from service. This totals 588 hours per year, per unit, that the plant is in a ½ trip condition. In other words this is 73.5 (8 hour) days with the plant in a compromised state.

   The proposed change would delete 392 hours or 49 (8 hour) days from the number now required. This would remove 2/3 of the time when a single plant failure could cause a safeguard actuation, thereby, improving plant reliability.

   The removal of instrument loops from service for the purpose of testing challenges the safeguards actuation system. We have had several occurrences of safety injection and reactor trip actuations directly related with the performance of surveillance instructions. We believe that by reducing the number of challenges to the safeguards systems, in our test program, we can reduce the possibility of inadvertently challenging our safeguard systems.

2. Each instruction performed requires interface with the unit operator. There is also the problem with status lights and indications that are associated with the loop being tested.

   A. The operator must spend approximately 15 minutes reviewing and approving each instruction. This averages out to 147 hours or 18.375 (8 hour) days a year when he is distracted from his vital duties. The proposed change would return 98 hours or 12.25 (8 hour) days of the operators valuable time per year.

   B. While the loop being tested is removed from service the associated trip status lights and indicators are in an abnormal condition. The times on this are as described in item #1. Although the operators are trained to work with this type of situation it is feasible to consider it contributing to an improper decision at a critical moment.

3. We are expending large quantities of the available instrument mechanic and engineering time to perform and review the monthly functional tests.

   A. The average instruction requires approximately 2.0 hours to perform. The minimum number of people assigned is 2 and normally it is 3. It will take 2.5 persons assigned as average. This yields 2940 manhours or 367.5 (8 hour) man days per unit per year to perform these 49 instructions. At an average salary of $25 per hour, this is a cost of $73,500 per year. The proposed change would reduce the cost for performing these instructions to $24,500. More importantly it would free 1960 manhours or 245 (8 hour) man days for a much needed plant secondary preventive maintenance program.

   One additional factor is that the work load associated with the monthly testing is so great that many times they are performed on overtime. This creates budgetary problems and manpower problems.

   B. All instructions performed must be reviewed by the senior instrument mechanic foreman, the instrument engineer, the instrument assistant supervisor, and plant QA.

DATA COLLECTED ON SELECTED SQN FUNCTIONAL TEST

Note: The word tolerance used in these papers refers to manufacturer tolerance which is more restricting than technical specification tolerance.

I. Pressurizer Pressure Loops: IMI-99-FT 4.1, 4.2, 4.3, 4.4 for channels I, II, III, & IV.

A. FT 4.1: 13 instructions reviewed (13 consecutive monthly performances)
   1. 1-20-81 PB-455A (high pressure reactor trip) was not out of tolerance but adjusted closer to desired value.

B. FT 4.2: 12 instructions reviewed (12 consecutive monthly performances)
   1. There were no changes required.

C. FT 4.3: 13 instructions reviewed (13 consecutive monthly performances)
   1. 10-11-81 PB-457C (low pressure reactor trip) was not outside of tolerance but adjusted closer to desired value.

D. FT 4.4: 13 instructions reviewed (13 consecutive monthly performances)
   1. There were no changes required.

Conclusion: In total, 51 consecutive performances of pressurizer pressure monthly FTs were reviewed. There were two minor calibrations made to bring bistable setpoints closer to the desired value.

II. Pressurizer Level Loops: IMI-99-FT 5.1, 5.2, 5.3 for channels I, II, & III.

A. FT 5.1: 13 instructions reviewed (13 consecutive monthly performances)
   1. There were no changes required.

B. FT 5.2: 12 instructions reviewed (12 consecutive monthly performances)
   1. There were no changes required.

C. FT 5.3: 13 instructions reviewed (13 consecutive monthly performances)
   1. There were no changes required.

Conclusion: In total, 38 consecutive performances of pressurizer level monthly FTs were reviewed. There were no calibrations required.

III. Reactor Coolant System Flow Loops: IMI-99-FT-6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12 for four loop plant channels I, II, & III in each loop.

A. FT 6.1, 6.4, 6.7, & 6.10 (loops 1, 2, 3, & 4 protection set I): 13 instructions reviewed (13 consecutive monthly performances).
   1. There were no changes required.

B. FT 6.2, 6.5, 6.8, & 6.11 (loops 1, 2, 3, & 4 protection set II): 12 instructions reviewed (12 consecutive monthly performances).
   1. 2-25-81 FB-415 (flow loop 1 protection set II low flow reactor trip) was not outside tolerance but adjusted closer to desired value.

C. FT 6.3, 6.6, 6.9, & 6.12 (loops 1, 2, 3, & 4 protection set III): 13 instructions reviewed (13 consecutive monthly performances)
   1. There were no changes required.

Conclusion: In total, 152 consecutive performances of reactor coolant flow monthly FTs were reviewed. There was one minor calibration made to bring bistable setpoints closer to the desired value.

IV. Steam Generator Level Loops: IMI-99-FT 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9, 7.10, 7.11, 7.12 for four loop plant channels I, II, III, IV in each loop.

A. FT 7.6 & 7.9 (protection set I): 13 instructions reviewed (13 consecutive monthly performances)
   1. There were no changes required.

B. FT 7.3 & 7.12 (protection set II): 12 instructions reviewed (12 consecutive monthly performances)
   1 There were no changes required.

C. FT 7.2, 7.5, 7.8, 7.11 (protection set III): 13 instructions reviewed (13 consecutive monthly performances)
   1. There were no changes required.

D. FT 7.1, 7.4, 7.7, 7.10 (protection set IV): 13 instructions reviewed
   1. There were no changes required.

Conclusion: In total, 154 consecutive performances of steam generator level monthly FTs were reviewed. There was no necessity for any recalibration.

V. Steam Generator Mismatch: IMI-99-FT 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8 for four loop plant channels I & II in each loop.

A. FT 8.1, 8.2, 8.3, 8.4 (protection set I) 14 instructions reviewed (14 consecutive monthly performances)
   1. 3-18-81 FB-522B: Bistable not outside tolerance but calibrated to bring it closer to the desired value.
   2. 10-7-81 FB-542B: Bistable not outside tolerance but calibrated to bring it closer to the desired value.

B. FT 8.5, 8.6, 8.7, 8.8 (protection set II) 12 instructions reviewed (12 consecutive monthly performances)
   1. 6-18-81 FB-513B: Bistable at tolerance, recalibrated to desired value.
   2. 10-16-81 FB-533B: Bistable not out of tolerance but calibrated to bring closer to desired value.
   3. 12-30-81 FB-513B: Bistable at tolerance recalibrated to desired value.

Conclusion: In total, 104 consecutive performances of steam generator flow mismatch monthly FTs were reviewed. There were no components outside tolerance but 5 bistables were recalibrated to bring them closer to the desired value.

VI. Steam Pressure Deviation: IMI-99-FT 9.1, 9.2 (protection sets III & IV)

A. FT 9.1 (protection set III): 13 instructions reviewed (13 consecutive monthly performances)
   1. There were no changes required.

B. FT 9.2 (protection set IV): 13 instructions reviewed (13 consecutive monthly performances)
   1. There were no changes required.

Conclusion: In total, 26 consecutive performances of steam generator pressure deviation monthly FTs were reviewed. There were no components requiring recalibration.

VII. Containment Pressure: IMI-99-FT 16.1, 16.2, 16.3, 16.4 four channels, protection sets I, II, III, IV

A. FT 16.1 (protection set I): 14 instructions reviewed (14 consecutive monthly performances)
   1. 1-27-81 PB-937A (high-high containment pressure) was not outside tolerance, but was adjusted closer to the desired value.

B. FT 16.2 (protection set II): 12 instructions reviewed (12 consecutive monthly performances)
   1. There were no changes required.

C. FT 16.3 (protection set III): 13 instructions reviewed (13 consecutive monthly performances)
   1. There were no changes required.

D. FT 16.4 (protection set IV): 13 instructions reviewed (13 consecutive monthly performances)
   1. 10-23-81 PB-934A (high-high containment pressure) was not outside tolerance, but was adjusted closer to desired value.

Conclusion: In total, 52 consecutive performances of containment pressure monthly FTs were reviewed. There were two minor calibrations made to bring bistable setpoints closer to the desired value.

VIII. NIS Power Range: IMI-99-PRM-FT 41, 42, 43, 44 four channels, protection sets I, II, III, IV

A. FT 41 (protection set I): 11 consecutive performances reviewed
   1. No changes required.

B. FT 42 (protection set II): 11 consecutive performances reviewed
   1. No changes required.

C. FT 43 (protection set III): 11 consecutive performances reviewed
   1. No changes required.

D. FT 44 (protection set IV): 11 consecutive performances reviewed
   1. No changes required.

Conclusion: In total, 44 consecutive performances of NIS power range monthly FTs were reviewed. There were no recalibrations required.

ENCLOSURE 4

SEQUOYAH NUCLEAR PLANT

PROPOSED TECHNICAL SPECIFICATIONS

TVA-SQN-TS-36

CHANGE NO. 4

CHANGES TO REFLECT INSTALLATION OF PERMANENT HYDROGEN

MITIGATION SYSTEM

CONTAINMENT SYSTEMS

HYDROGEN MITIGATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.4.3 The primary containment hydrogen mitigation system shall be operable.

APPLICABILITY: MODES 1 and 2.

ACTION

With one train of hydrogen mitigation system inoperable, restore the inoperable train to OPERABLE status within 7 days or increase the surveillance interval of S.R. 4.6.4.3 from 92 days to 7 days on the operable train until the inoperable train is returned to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.6.4.3 The hydrogen mitigation system shall be demonstrated OPERABLE:

a. At least once per 92 days by energizing the supply breakers and verifying that at least 62 of 64 igniters are energized.*

b. At least once per 18 months by verifying the cleanliness of each igniter by a visual inspection.

* Inoperable igniters must not be on corresponding redundant circuits which provide coverage for the same region.

TVA-SQN-TS-36
Change No. 4
Sequoyah Nuclear Plant

JUSTIFICATION FOR PROPOSED TECHNICAL SPECIFICATIONS

As required by Sequoyah Nuclear Plant unit 1 operating license condition 2.C(22).D, TVA is required to install a permanent hydrogen mitigation system. These changes reflect the installation of the permanent system. The permanent system hydrogen mitigation system is a two train system with 32 igniters in each train.

The permanent hydrogen mitigation system employs controlled ignition to mitigate the effects of hydrogen during potential degraded core accidents or class 9 accidents. The containment structures and key equipment have been shown by analysis or testing to survive the pressure and temperature loads from selected degraded core accidents and to continue to function. The extensive research program has confirmed our analytical assumptions, demonstrated equipment survivability and shown that controlled ignition can indeed mitigate the effects of hydrogen releases in closed vessels. The permanent hydrogen mitigation system is an adequate hydrogen control system that would perform its intended function in a manner that provides adequate safety margins.

ENCLOSURE 5

SEQUOYAH NUCLEAR PLANT

PROPOSED TECHNICAL SPECIFICATIONS

TVA-SQN-TS-36

CHANGE NO. 5

ADDITION OF SECOND LEVEL OF UNDERVOLTAGE PROTECTION

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
7. LOSS OF POWER					
a. 6.9 kv Shutdown Board —Loss of Voltage					
1. Start Diesel Generators	2/shutdown board	1 loss of voltage on any shutdown board	2/shutdown board	1, 2, 3, 4	20*
2. Load Shedding	2/shutdown board	1/shutdown board	2/shutdown board	1, 2, 3, 4	20*
b. 6.9 kv Shutdown Board , Degraded Voltage					
1. Voltage Sensors	3/shutdown board	2/shutdown board	2/shutdown board	1, 2, 3, 4	20*
2. Diesel Generator Start and Load Shedding Timer	2/shutdown board	1/shutdown board	1/shutdown board	1, 2, 3, 4	20*
3. SI/Degraded Voltage Enable Timer	2/shutdown board	1/shutdown board	1/shutdown board	1, 2, 3, 4	20*
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS					
a. Pressurizer Pressure - Not P-11	3	2	2	1, 2, 3	22a
b. T_{avg} - P-12	4	2	3	1 2, 3	22b
c. Steam Generator Level P-14	3/loop	2/loop any loop	3/loop	1, 2	22c

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
9. AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP					
A. RWST Level - Low	4	2	3	1, 2, 3, 4	18
COINCIDENT WITH Containment Sump Level - High	4	2	3	1, 2, 3, 4	18
AND Safety Injection	(See 1 above for Safety Injection Requirements)				

Note: Manual switchover of RHR pump suction from the RWST to containment sump will be employed until containment sump level indicators are returned OPERABLE. Automatic switchover is not required OPERABLE during the interim. This note will remain in effect for a period not to exceed 30 days (July 18, 1982).

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
6. AUXILIARY FEEDWATER		
a. Manual	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Main Steam Generator Water Level-low-low	$\geq$ 21% of narrow range Instrument span each steam generator	$\geq$ 20% of narrow range Instrument span each steam generator
d. S.I.	See 1 above (all SI Setpoints)	
e. Station Blackout	0 volts with a 5.0 second time delay	0 volts with a 5.0 ± 1.0 second time delay
f. Trip of Main Feedwater Pumps	N.A.	N.A.
g. Auxiliary Feedwater Suction Pressure-Low	$\geq$ 2 psig (motor driven pump) $\geq$ 6.5 psig (turbine driven pump)	$\geq$ 1 psig (motor driven pump) $\geq$ 5.5 psig (turbine driven pump)
7. LOSS OF POWER		
a. 6.9 kv Shutdown Board Undervoltage-Loss of Voltage		
1. Start of Diesel Generators	0 volts with a 1.5 second time delay	0 volts with a 1.5 ± 0.5 second time delay
2. Load Shedding	0 volts with a 5.0 second time delay	0 volts with a 5.0 ± 1.0 second time delay

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
b. 6.9 kv Shutdown Board- Degraded Voltage		
1. Voltage Sensors	6560 volts	6560 volts ± 33 volts
2. Diesel Generator Start and Load Shed Timer	300 seconds	300 seconds ± 15 seconds
3. SI/Degraded Voltage Logic Enable Timer	11 seconds	12 seconds ± 0.6 seconds
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS		
a. Pressurizer Pressure Manual Block of Safety Injection P-11	≤ 1970 psig	≤ 1980 psig

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
10. Station Blackout	
a. Auxiliary Feedwater Pumps	$\leq$ 60
11. Trip of Main Feedwater Pumps	
a Auxiliary Feedwater Pumps	$\leq$ 60
12. Loss of Power	
a. 6.9 kv Shutdown Board - Degraded Voltage or Loss of Voltage	$\leq 10^{(10)}$
13. RWST Level-Low Coincident with Containment Sump Level-High and Safety Injection	
a. Automatic Switchover to Containment Sump	$\leq$ 250
14. Containment Purge Air Exhaust Radioactivity - High	
a. Containment Ventilation Isolation	$\leq 10^{(6)}$
15. Containment Gas Monitor Radioactivity High	
a. Containment Ventilation Isolation	$\leq 10^{(6)}$
16. Containment Particulate Activity High	
a. Containment Ventilation Isolation	$\leq 10^{(6)}$

TABLE 3.3-5 (Continued)

TABLE NOTATION

(1) Diesel generator starting and sequence loading delays included. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps, SI and RHR pumps.

(2) Using air operated valve

(3) Valve FCV-70-143 is an exception to the response time shown in the table and will have the following values in seconds for the initiating signal and function indicated.

2.d. 61(8)/71(9)
3.d. 62(8)
4.d. 61(8)/71(9)
5.d. 64(8)/74(9)
6.d. 61(8)/71(9)

(4) On 2/3 any Steam Generator

(5) On 2/3 in 2/4 Steam Generator

(6) Radiation detectors for Containment Ventilation Isolation may be excluded from Response Time Testing.

(7) Diesel generator starting and sequence loading delays <u>not</u> included. Offsite power available. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps.

(8) Diesel generator starting and sequence loading delays not included. Response time limit includes operating time of valves.

(9) Diesel generator starting and sequence loading delays included. Response time limit includes operating time of valves.

(10) The response time for loss of voltage is measured from the time voltage is lost until the time full voltage is restored by the diesel. The response time for degraded voltage is measured from the time the load shedding signal is generated, either from the degraded voltage or the SI enable timer, to the time full voltage is restored by the diesel. The response time of the timers are covered by the requirements on their setpoints.

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
c. Main Steam Generator Water Level-Low-Low	S	R	M	1, 2, 3
d. S.I.	See 1 above (all SI surveillance requirements)			
e. Station Blackout	N.A.	R	N.A.	1, 2, 3
f. Trip of Main Feedwater Pumps	N.A.	N.A.	R	1, 2
g. Auxiliary Feedwater Suction Pressure - Low	N.A.	R	M	1, 2, 3
7. LOSS OF POWER				
a. 6.9 kv Shutdown Board - Loss of Voltage				
1. Start Diesel Generators	S	R	M	1, 2, 3, 4
2. Load Shedding	S	R	N.A.	1, 2, 3, 4
b. 6.9 kv Shutdown Board - Degraded Voltage				
1. Voltage sensors	S	R	M	1, 2, 3, 4
2. Diesel Generators Start and Load Shedding Timer	N.A.	R	N.A.	1, 2, 3, 4
3. SI/Degraded Voltage Logic Timer	N.A.	R	N.A.	1, 2, 3, 4

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS				
a. Pressurizer Pressure, P-11	N.A.	R (4)	N.A.	1, 2, 3
b. T_{avg}, P-12	N.A.	R (4)	N.A.	1, 2, 3
c. Steam Generator Level, P-14	N.A.	R (4)	N.A.	1, 2
9. AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP				
a. RWST Level - Low COINCIDENT WITH	S	R	M	1, 2, 3, 4
Containment Sump Level - High AND	S	R	M	1, 2, 3, 4
Safety Injection	(See 1 above for all Safety Injection Surveillance Requirements)			

Note: Manual switchover of RHR pump suction from the RWST to containment sump will be employed until containment sump level indicators are returned OPERABLE. Automatic switchover is not required OPERABLE during the interim. This note will remain in effect for a period not to exceed 30 days (July 18, 1982).

SURVEILLANCE REQUIREMENTS (Continued)

d. At least once per 18 months by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual or simulated emergency loads for 2 hours when the battery is subjected to a battery service test

e. At least once per 60 months by verifying that the battery capacity is at least 82% of the manufacturer's rating when subjected to a performance discharge test. Once per 60 month interval, this performance discharge test may be performed in lieu of the battery service test.

f. Annual performance discharge tests of battery capacity shall be given to any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
7. LOSS OF POWER					
a. 6.9 kv Shutdown Board —Loss of Voltage					
1. Start Diesel Generators	2/shutdown board	1 loss of voltage on any shutdown board	2/shutdown board	1, 2, 3, 4	20*
2. Load Shedding	2/shutdown board	1/shutdown board	2/shutdown board	1, 2, 3, 4	20*
b. 6.9 kv Shutdown Board Degraded Voltage					
1. Voltage Sensors	3/shutdown board	2/shutdown board	2/shutdown board	1, 2, 3, 4	20*
2. Diesel Generator Start and Load Shedding Timer	2/shutdown board	1/shutdown board	1/shutdown board	1, 2, 3, 4	20*
3. SI/Degraded Voltage Enable Timer	2/shutdown board	1/shutdown board	1/shutdown board	1, 2, 3, 4	20*
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS					
a. Pressurizer Pressure - Not P-11	3	2	2	1, 2, 3	22a
b. T_{avg} - P-12	4	2	3	1, 2, 3	22b
c. Steam Generator Level P-14	3/loop	2/loop any loop	3/loop	1, 2	22c

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
9. AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP					
A. RWST Level - Low COINCIDENT WITH	4	2	3	1, 2, 3, 4	18
Containment Sump Level - High	4	2	3	1, 2, 3, 4	18
AND					
Safety Injection	(See 1 above for Safety Injection Requirements)				

Note: Manual switchover of RHR pump suction from the RWST to containment sump will be employed until containment sump level indicators are returned OPERABLE. Automatic switchover is not required OPERABLE during the interim. This note will remain in effect for a period not to exceed 30 days (July 18, 1982).

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
6. AUXILIARY FEEDWATER		
a. Manual	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Main Steam Generator Water Level-low-low	$\geq$ 21% of narrow range Instrument span each steam generator	$\geq$ 20% of narrow range Instrument span each steam generator
d. S.I.	See 1 above (all SI Setpoints)	
e. Station Blackout	0 volts with a 5.0 second time delay	0 volts with a 5.0 ± 1.0 second time delay
f. Trip of Main Feedwater Pumps	N.A.	N.A.
g. Auxiliary Feedwater Suction Pressure-Low	$\geq$ 2 psig (motor driven pump) $\geq$ 5.5 psig (turbine driven pump)	$\geq$ 1 psig (motor driven pump) $\geq$ 5.5 psig (turbine driven pump)
7. LOSS OF POWER		
a. 6.9 kv Shutdown Board Undervoltage-Loss of Voltage		
1. Start of Diesel Generators	0 volts with a 1.5 second time delay	0 volts with a 1.5 ± 0.5 second time delay
2. Load Shedding	0 volts with a 5.0 second time delay	0 volts with a 5.0 ± 1.0 second time delay

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
b. 6.9 kv Shutdown Board- Degraded Voltage		
1. Voltage Sensors	6560 volts	6560 volts ± 33 volts
2. Diesel Generator Start and Load Shed Timer	300 seconds	300 seconds ± 15 seconds
3. SI/Degraded Voltage Logic Enable Timer	11 seconds	11 seconds ± 0.6 seconds
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS		
a. Pressurizer Pressure Manual Block of Safety Injection P-11	≤ 1970 psig	≤ 1980 psig

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
10. Station Blackout	
a. Auxiliary Feedwater Pumps	≤ 60
11. Trip of Main Feedwater Pumps	
a. Auxiliary Feedwater Pumps	≤ 60
12. Loss of Power	
a. 6.9 kv Shutdown Board - Degraded Voltage or Loss of Voltage	$\leq 10^{(10)}$
13. RWST Level-Low Coincident with Containment Sump Level-High and Safety Injection	
a. Automatic Switchover to Containment Sump	≤ 250
14. Containment Purge Air Exhaust Radioactivity - High	
a. Containment Ventilation Isolation	$\leq 10^{(6)}$
15. Containment Gas Monitor Radioactivity High	
a. Containment Ventilation Isolation	$\leq 10^{(6)}$
16. Containment Particulate Activity High	
a. Containment Ventilation Isolation	$\leq 10^{(6)}$

TABLE 3.3-5 (Continued)

TABLE NOTATION

(1) Diesel generator starting and sequence loading delays included. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps, SI and RHR pumps.

(2) Using air operated valve

(3) Valve FCV-70-143 is an exception to the response time shown in the table and will have the following values in seconds for the initiating signal and function indicated.

2.d. $61^{(8)}/71^{(9)}$
3.d. $62^{(8)}$
4.d. $61^{(8)}/71^{(9)}$
5.d. $64^{(8)}/74^{(9)}$
6.d. $61^{(8)}/71^{(9)}$

(4) On 2/3 any Steam Generator

(5) On 2/3 in 2/4 Steam Generator

(6) Radiation detectors for Containment Ventilation Isolation may be excluded from Response Time Testing.

(7) Diesel generator starting and sequence loading delays not included. Offsite power available. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps.

(8) Diesel generator starting and sequence loading delays not included. Response time limit includes operating time of valves.

(9) Diesel generator starting and sequence loading delays included. Response time limit includes operating time of valves.

(10) The response time for loss of voltage is measured from the time voltage is lost until the time full voltage is restored by the diesel. The response time for degraded voltage is measured from the time the load shedding signal is generated, either from the degraded voltage or the SI enable timer, to the time full voltage is restored by the diesel. The response time of the timers are covered by the requirements on their setpoints.

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
c. Main Steam Generator Water Level-Low-Low	S	R	M	1, 2, 3
d. S.I.	See 1 above (all SI surveillance requirements)			
e. Station Blackout	N.A.	R	N.A.	1, 2, 3
f. Trip of Main Feedwater Pumps	N.A.	N.A.	R	1, 2
g. Auxiliary Feedwater Suction Pressure - Low	N.A.	R	M	1, 2, 3
7. LOSS OF POWER				
a. 6.9 kv Shutdown Board - Loss of Voltage				
1. Start Diesel Generators	S	R	M	1, 2, 3, 4
2. Load Shedding	S	R	N.A.	1, 2, 3, 4
b. 6.9 kv Shutdown Board - Degraded Voltage				
1. Voltage sensors	S	R	M	1, 2, 3, 4
2. Diesel Generators Start and Load Shedding Timer	N.A.	R	N.A.	1, 2, 3, 4
3. SI/Degraded Voltage Logic Timer	N.A.	R	N.A.	1, 2, 3, 4

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS				
a. Pressurizer Pressure, P-11	N.A.	R (4)	N.A.	1, 2, 3
b. T_{avg}, P-12	N.A.	R (4)	N.A.	1, 2, 3
c. Steam Generator Lev 1, P-14	N.A.	R (4)	N.A.	1, 2
9. AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP				
a. RSWT Lev 1 - Low COINCIDENT WITH	S	R	M	1, 2, 3, 4
Containment Sump Level - High AND	S	R	M	1, 2, 3, 4
Safety Injection	(See 1 above for all Safety Injection Surveillance Requirements)			

Note: Manual switchover of RHR pump suction from the RWST to containment sump will be employed until containment sump level indicators are returned OPERABLE. Automatic switchover is not required OPERABLE during the interim. This note will remain in effect for a period not to exceed 30 days (July 18, 1982).

SURVEILLANCE REQUIREMENTS (Continued)

d. At least once per 18 months by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual or simulated emergency loads for 2 hours when the battery is subjected to a battery service test.

e. At least once per 60 months by verifying that the battery capacity is at least 82% of the manufacturer's rating when subjected to a performance discharge test. Once per 60 month interval, this performance discharge test may be performed in lieu of the battery service test.

f. Annual performance discharge tests of battery capacity shall be given to any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.

TVA-SQN-TS-36
Change No. 5
Sequoyah Nuclear Plant
Justification for Proposed Technical Specifications

These technical specifications are being revised to reflect the addition of a second level of over and undervoltage protection required by operating license conditions 2.C(18).c (unit 1) and 2.C(11).b (unit 2).

The second level of undervoltage relays operate if a 6900-volt shutdown board bus voltage drops below the level required to successfully start all the safety-related equipment that would be required for the design basis accident. The relays will initiate 3 different time delay sequences. The first sequence of 30 seconds will ride through normal system transients before annunciating in the main control room. The second sequence of 10 seconds is short enough to allow safety-related equipment to be powered within the time required by the safety analysis. At the end of 10 seconds, if a safety injection has been initiated or is subsequently initiated, the shutdown board will transfer to its diesel generator.

The third time delay of five minutes is long enough to allow operator action to correct the undervoltage condition but not allow damage to connected safety-related equipment. At the end of the 5-minute delay, the shutdown board will transfer to its diesel if voltage has not been corrected. Since the loss of voltage relays on normal feeder only are set at 80 percent of nominal for four seconds, the band of voltages that a nonaccident degraded voltage condition can exist is from 80-95 percent of nominal for five minutes. At 80 percent of nominal, the voltage at the terminals of running motors will not drop below 71 percent of motor-rated voltage. NEMA class B motors will not stall out or be damaged above this point for the time delay of five minutes. Also, during the five minute time delay, the 125V dc vital battery boards could be powered by the batteries instead of the battery chargers. However, the vital batteries have sufficient capacity to meet this requirement as well as meet the original design requirements as identified in section 8.3.2 of the Sequoyah FSAR.

Attached is supplementary technical information that provides the basis for our justification.

ATTACHMENT

Tennessee Valley Authority
Sequoyah Nuclear Plant Units 1 and 2
Degraded Voltage Relaying
Supplementary Technical Information

061273.01

CONTENTS

SUPPLEMENTARY TECHNICAL INFORMATION
DEGRADED GRID PROTECTION FOR CLASS 1E POWER SYSTEMS
SEQUOYAH NUCLEAR PLANT

1.0 INTRODUCTION

On July 28, 1978, the NRC requested TVA to assess the susceptibility of the safety-related electrical equipment at Sequoyah Nuclear Plant to a sustained voltage degradation of the offsite source and interaction of the offsite and onsite emergency power systems. FSAR question 8.33 contained four positions with which the current design of the plant was to be compared. After comparing the current design to the staff positions, TVA was required to either propose modifications to satisfy the positions and criteria or furnish an analysis to substantiate that the existing facility has equivalent capabilities.

By this submittal, TVA is proposing certain design modifications to satisfy the criteria and staff positions. The modifications include installation of a second-level undervoltage protection system for the Class 1E equipment. The NRC required that the setpoint, surveillance requirements, test requirements, and allowable limits were to be included by TVA in the plant technical specifications.

2.0 DESIGN BASE CRITERIA

The design base criteria that were applied in determining the acceptability of the system modifications to protect the safety-related equipment from a sustained degradation of offsite grid are:

1. General Design Criterion 17 (GDC 17), "Electri Power Systems," of appendix A, "General Design Criteria for Nuc. Power Plants," of 10 CFR 50.

2. IEEE Standard 279-1971, "Criteria for Protection Systems for Nuclear Power Generating Stations."

3. IEEE Standard 308-1974, "Class 1E Power Systems for Nuclear Power Generating Stations."

4. Staff positions as detailed in FSAR question 8.33 dated July 28, 1978.

5. ANSI Standard C84.1-1977, "Voltage Ratings for Electrical Power Systems and Equipment (60 HZ)."

3.0 EVALUATION

This section provides, in subsection 3.2, a description of the proposed modifications for the second-level undervoltage protection; and, in subsection 3.3, a discussion of how the proposed modifications meet the design base criteria.

3.1 Existing Undervoltage Protection. The present design uses three single induction disks, inverse time undervoltage relays with a setpoint of 70 percent of nominal for each 6900V shutdown board to detect loss of voltage.

1. A Westinghouse-type CV-7 relay monitors the voltage on the normal feed to the board and will initiate transfer in 2.5 seconds (at zero volts) to the alternate breaker if the alternate supply voltage is greater than 90 percent of nominal (detected by Westinghouse-type SG relays). The closure of the alternate breaker is delayed until the residual bus voltage is less than 30 percent of nominal (detected by GE-type RAV relays).

2. A GE-type IAV relay on the 6.9-kV bus initiates the automatic start sequence of the diesel generator for a sustained loss of voltage for 1.5 seconds (at zero volts).

3. A second GE-type IAV relay on the 6.9-kV bus for a sustained loss of voltage for a total of five seconds (at zero volts) will initiate load shedding (the normal and alternate feeder breakers are tripped and locked out; all the 6.9-kV motor loads and the major 480V loads are tripped). When the diesel generator set has attained rated speed and voltage (maximum of 10 seconds from initiation of automatic start signal), it is automatically connected to the 6.9-kV shutdown board bus. The return of voltage to the 6.9-kV shutdown board bus initiates logic which connects the required loads in the proper sequence and time.

3.2 Modification. TVA will (1) replace the existing loss of voltage relays, on normal feeder breaker only, with three instantaneous solid-state relays (ITE-type 27H) arranged in a two-out-of-three coincidence logic (see Figure A-II). The logic will energize two timers, either of which will initiate transfer to the alternate, if the alternate supply voltage is greater than 95 percent of nominal by tripping the bus normal supply breaker. The relays will have a nominal setpoint of 5520 volts ± 1 percent (80% of nominal) with a relay/timer combined time delay of 4 seconds + 5 percent. The diesel generator starting and load shedding circuitry described in 3.1 -2,-3 will not be modified. (2) To protect the Class 1E buses from a sustained degraded undervoltage, each of the two 6.9kV Class 1E buses per unit will be provided with a set of three instaneous solid-state undervoltage relays (ITE-type 27/59H). These relays will have a nominal setpoint of 6560V ± 1/2 percent (95% of nominal). The relays will be arranged in a two-out-of-three coincidence logic

to initiate three time delay sequences (see Figure A-I). The first sequence of 30 seconds will ride through normal system voltage transients (motor starts - both safety and nonsafety related) before annunciating the undervoltage in the main control room. The second sequence is short enough to allow safety-related equipment to be powered within the time required by the safety analysis. At the end of 10 seconds if an SIS has been initiated, or is subsequently initiated, the shutdown board degraded voltage relays will initiated load shedding and subsequently transfer the shutdown board to its diesel generator. The return of bus voltage initiates load sequencing of safety-related equipment. The third time delay is long enough to allow operator action but not result in damage to connected safety-related equipment. At the end of five minutes, the shutdown board will initiate load shedding and subsequently transfer the shutdown board to its diesel generator if degraded voltage has not been corrected. The error associated with these relay/timers is ± 0.5 percent.

To protect the Class 1E buses from a sustained over-voltage, each of the two 6.9-KV Class 1E buses per unit will be provided with a set of three instantaneous solid-state overvoltage relays (ITE-type 59H). These relays will be arranged in a one-out-of-three coindence logic which will annunciate in the control room. The relays will have a nominal voltage setpoint of 7260 volts $\pm$ 1 percent (105 percent of nominal). The operator will take the action necessary to reduce the voltage.

Load shedding for a loss of bus voltage ($\leq$70 percent) is being being maintained once the diesel generators are supplying their respective buses. Degraded voltage relaying will not open the standby supply breaker and will not initiate load shedding and resequencing if a 6900-volt shutdown board is supplied by its diesel generator. The output of these relays is blocked when the standby breaker is closed. TVA's bases for this is discussed in section 3.3.2.

Proposed changes to the plant's technical specifications, adding the surveillance requirements, allowable limits for the setpoint and time delay, and limiting conditions for operation for the second level undervoltage monitors are furnished in appendix B. An analysis to substantiate the limiting conditions and minimum and maximum setpoint limits is furnished in appendix A.

3.3 Discussion

3.3.1 NRC staff position 1 requires that a second level of undervoltage protection for the onsite power system be provided. The position stipulates other cirteria that the undervoltage protection must meet. Each criterion is restated below followed by a discussion regarding TVA's compliance with that criterion.

1. "The selection of voltage and time setpoints shall be determined from an analysis of the voltage requirements of the safety-related loads at all onsite system distribution levels."

   TVA's proposed setpoint of 6560 volts at the 6.9-kV bus is 99 percent of the motor-rated voltage of 6.6 kV. This setpoint reflected down to the 480V buses will be at least 90 percent of the motor-rated voltage during their operation. As the 460-volt motors are the most limiting equipment in the system, this setpoint is adequate. See analysis in appendix A for details.

2. "The voltage protection shall include coincidence logic to preclude spurious trips of the offsite power sources."

   The proposed modification incorporates a two-out-of-three logic scheme which satisfies this criterion.

3. "The time delay selected shall be based on the following conditions:

   a. The allowable time delay, including margin, shall not exceed the maximum time delay that is assumed in the FSAR accident analysis."

      For a degraded voltage condition simultaneous with a SI actuation, the proposed time delay of 10 seconds, to load shed and connect the diesel generator to the bus does not exceed the maximum time delay in the accident analysis.

      Without the presence of a SI signal, the time delay of 5 minutes will not be the cause of any damage to the safety-related equipment. The setpoint is within voltage ranges recommended by ANSI C84.1-1977.

   b. "The time delay shall minimize the effect of short-duration disturbances from reducing the availability of the offsite power source(s)."

      The time delays selected will prevent spurious trips from the offsite source on starting the largest driven motor loads.

   c. "The allowable time duration of a degraded voltage condition at all distribution system levels shall not result in failure of safety systems or components."

      The time delays chosen will not cause any failures of the safety-related equipment since the voltage setpoint is within the allowable tolerance of the equipment-rated voltage.

4. "The voltage monitors shall automatically initiate the disconnection of offsite power sources whenever the voltage setpoint and time-delay limits have been exceeded."

This criterion is met due to multiple logic sensing of the voltage monitors and redundant timing relays (for the under-voltage scheme).

5. "The voltage monitors shall be designed to satisfy the requirements of IEEE Standard 279-1971."

The proposed modifications are designed to meet the applicable requirements IEEE Standard 279.

6. "The technical specifications shall include limiting conditions for operation, surveillance requirements, trip setpoints with minimum and maximum limits, and allowable values for the second-level voltage protection monitors."

TVA's proposal for technical specification changes are furnished in appendix B.

3.3.2 The second NRC staff position requires "that the system design automatically prevents load shedding of the emergency buses once the onsite sources are supplying power to all sequenced loads. The load shedding must also be reinstated if the onsite breakers are tripped. In the event an adequate basis can be provided for retaining the load-shed feature when loads are energized by the onsite power system, the licensee's bases for the setpoint and limits must be documented."

TVA has elected to retain the loss-of-voltage ($\leq$70 percent) load-shed feature once the diesel generators are supplying their respective buses. TVA's bases for retention of the this feature is that it provides for automatic resequencing of the loads following any temporary loss of bus voltage. Since the loss-of-voltage load shedding relay setpoint is fixed at 4860 volts (70 percent of nominal), the starting of the largest driven load will not cause actuation of the load shedding feature. Therefore, the operation of the load shedding relay system is:

1. To shed loads to relieve overloading the diesel generator.

2. Allow the diesel generator to recover to rated speed and voltage.

3. Reconnect required loads in the proper sequence.

It is TVA's position that only mechanical or electrical component failures of the diesel generator could cause the voltage to reach a this level (70 percent) for the time delay required to initiate the loss-of-voltage load shed relays. Should this occur, the second redundant safety train would safely shut down the unit. The minimum and maximum value of the undervoltage setpoints will be included in the Technical Specifications.

3.3.3 The third NRC staff position requires that certain test requirements be added to the technical specifications. These tests were to demonstrate the full-functional operability and independence of the onsite power sources and are to be performed at least once per 18 months during shutdown. The tests are to simulate loss of offsite power in conjunction with a safety injection actuation signal and to simulate interruption and subsequenct reconnection of onsite power sources.

These requirements are already met by Sequoyah surveillance requirements 4.8.1.1.2.d.6 and 4.8.1.1.2.d.7.

3.3.4 The fourth NRC staff position requires that the voltage levels at the safety-related buses be optimized for the full load and minimum load conditions that are expected throughout the anticipated range of voltage variations of the power source by appropriate adjustment of the voltage tap settings of the intervening transformers. It is required that the adequacy of the design in this regard be verified by actual measurement, and by correlation of measured values with analytical results.

An analysis of Sequoyah unit 1 has been completed and the results submitted to A. Schwencer, Chief, Licensing Branch No. 2, from our L. M. Mills, Manager, Nuclear Regulation and Safety, on October 3, 1980. These results verified the adequacy of our design calculations for the ac auxiliary power system used in optimizing the transformer taps for varying conditions of operation. On April 2, 1981, another letter was sent to your A. Schwencer concerning NRC's agreement to not repeat the test for our Sequoyah Unit 2. Therefore, TVA satisfies the requirements of this position.

4.0 CONCLUSIONS

TVA has determined that the modifications comply with the three staff positions. All the staff's requirements and design base criteria have been met. The modifications will protect the Class 1E equipment from a sustained degraded voltage condition of the offsite power source.

The proposed changes to the technical specification adequately test the system modifications. The surveillance requirements, limiting conditions for operation, minimum and maximum limits for the trip setpoint, and allowable values meet the intent of the staff positions.

It is therefore concluded that TVA's proposed modifications and technical specification changes are adequate. TVA intends to incorporate these modifications in the plant design on both units by the end of the first refueling outage of unit 1 and the technical specification changes will be implemented at that time. This is in accordance with the requirements stated in our unit operating license.

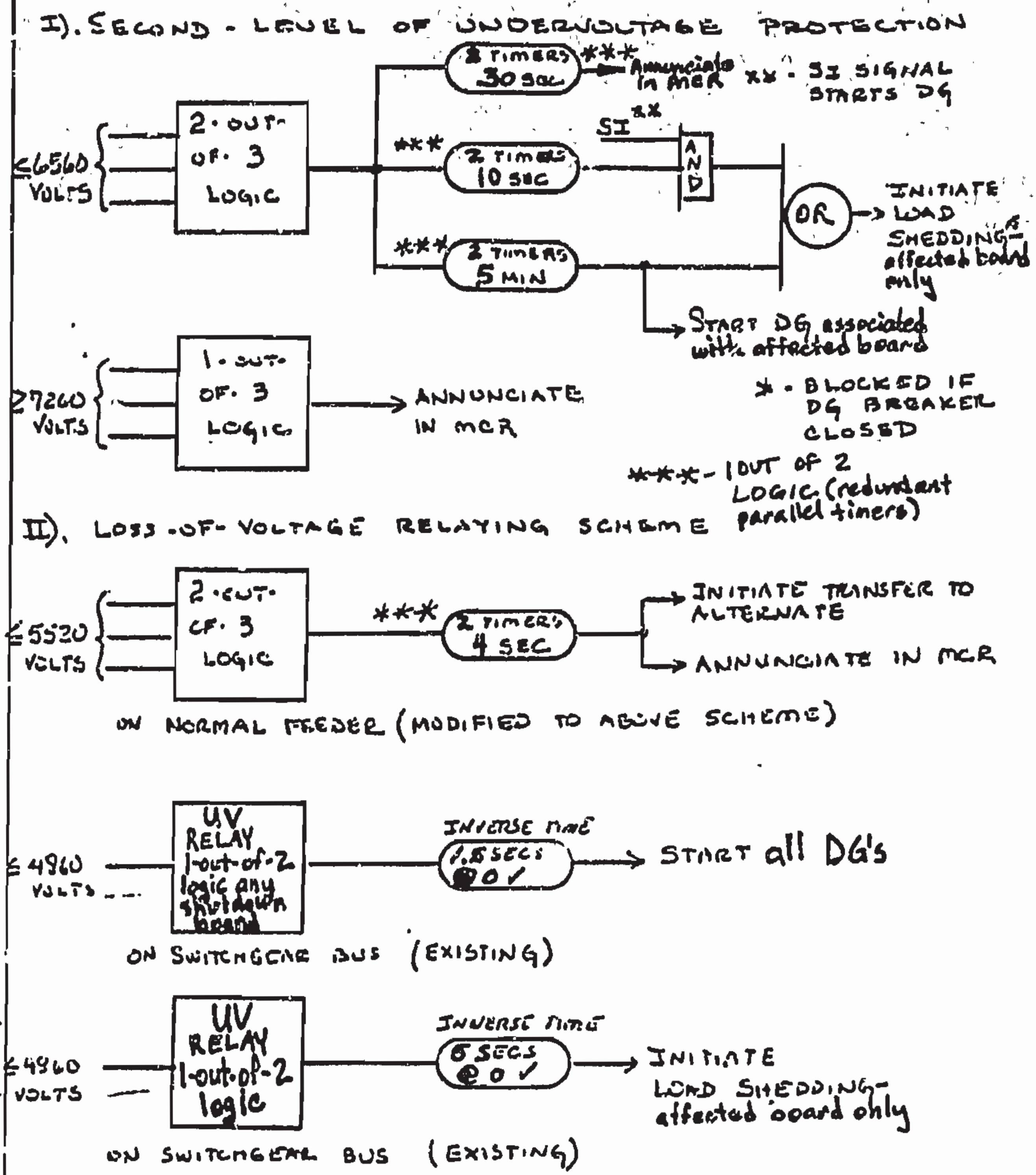
061198.06

SHEET ____ OF ____

SEQUOYAH NUCLEAR PLANT
DEGRADED AND LOSS OF VOLTAGE
RELAYING SCHEME

COMPUTED GLN DATE 10-15-81
CHECKED ____ DATE ____

FIGURE A



TVA 10030 (WM 7-75)

Tennessee Valley Authority
Sequoyah Nuclear Plant Units 1 and 2
Degraded Voltage Relaying
Supplementary Technical Information

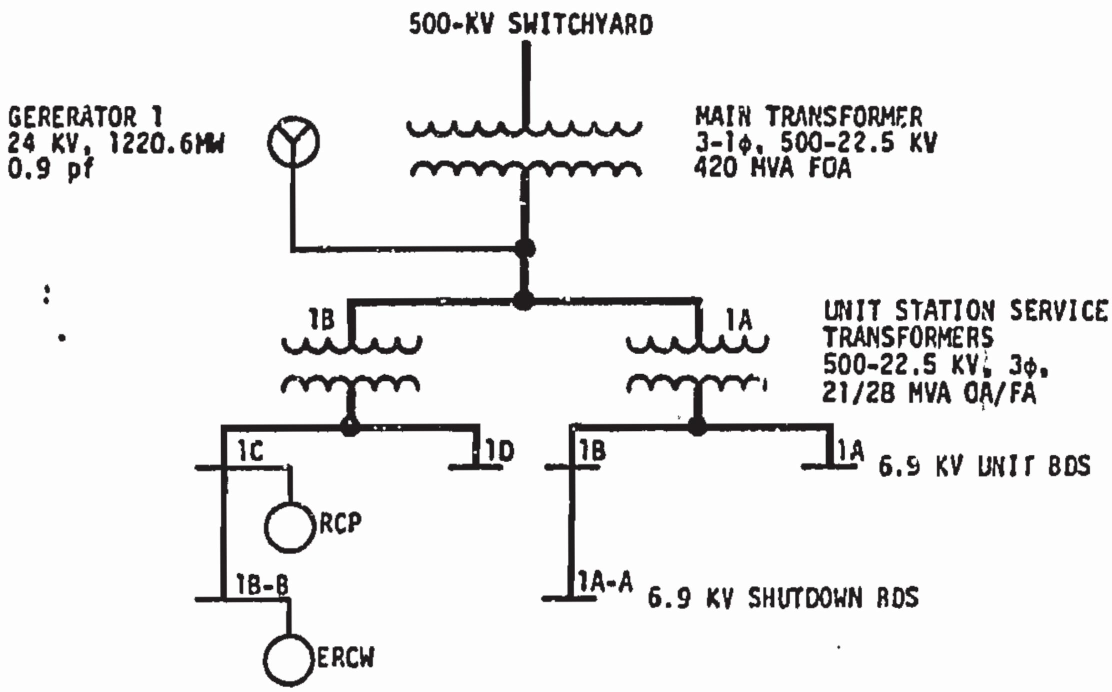
Appendix A
Voltage and Time Delay Analysis

061273.02

FIGURE B

PROGRAM N2DVUN

THE PURPOSE OF THIS PROGRAM IS TO EVALUATE THE VOLTAGES ASSOCIATED WITH NORMAL OPERATION.



MOTOR AND BOARD VOLTAGES

MOTOR	HP	BOARD	STARTUP KV		MAX. RECOVERY TIME (SEC)	STEADY STATE KV	
			MOTOR	BD		MOTOR	BD
RCP	6000	UNIT	5956	6120	28	6600	6624
ERCW pp	700	SHUTDOWN	6285	6498	2	6528	6580

CONDITIONS:

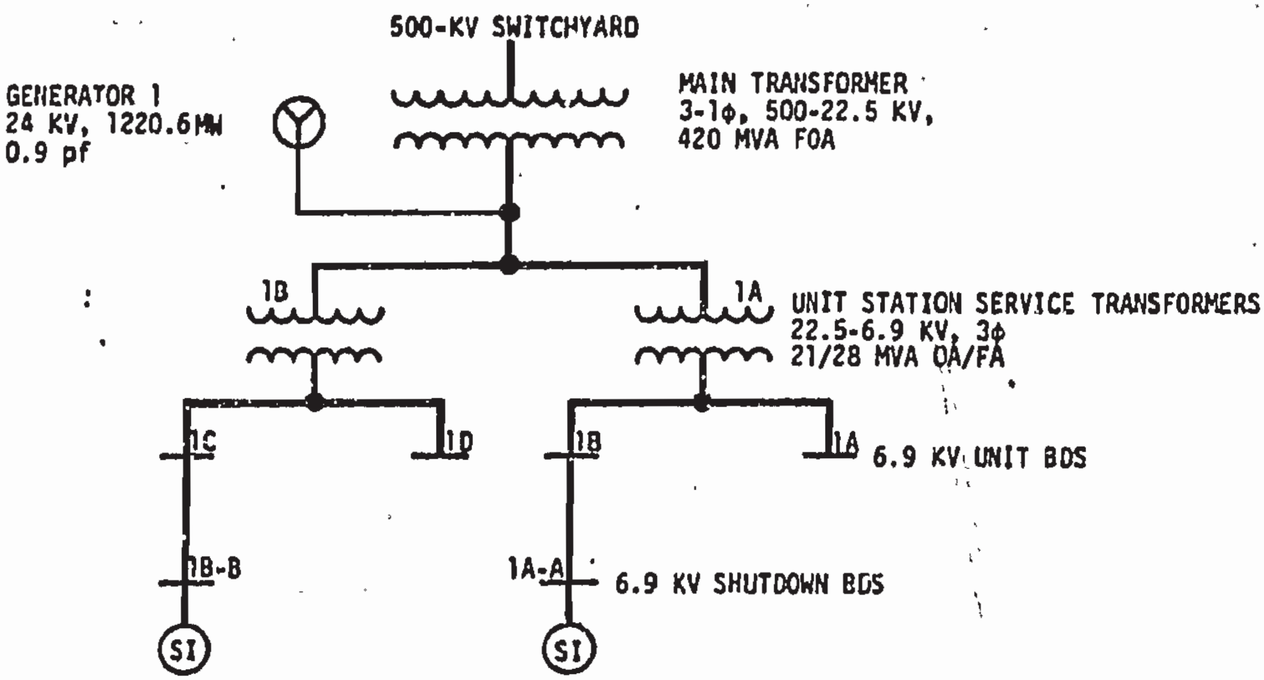
1. Generator Voltage at its Minimum of 22.8 kV.

2. USST Voltage Taps at the +2-1/2 Percent Buck Position.

FIGURE C

PROGRAM NEDVUL

THE PURPOSE OF THIS PROGRAM IS TO EVALUATE VOLTAGES ASSOCIATED WITH THE DESIGN-BASIS ACCIDENT WHILE UNIT CONNECTED.



MOTOR AND BOARD VOLTAGES

MOTOR	HP	BOARD	BOARD START-UP KV	RECOVERY TIME (SEC)	BOARD STEADY-STATE KV
ALL SI ACTUATED LOADS	-	UNIT	6387	~4	6685
	~4000	SHUTDOWN	6197	~4	6639

CONDITIONS:

1. Generator Voltage at its Minimum of 22.8 kV.

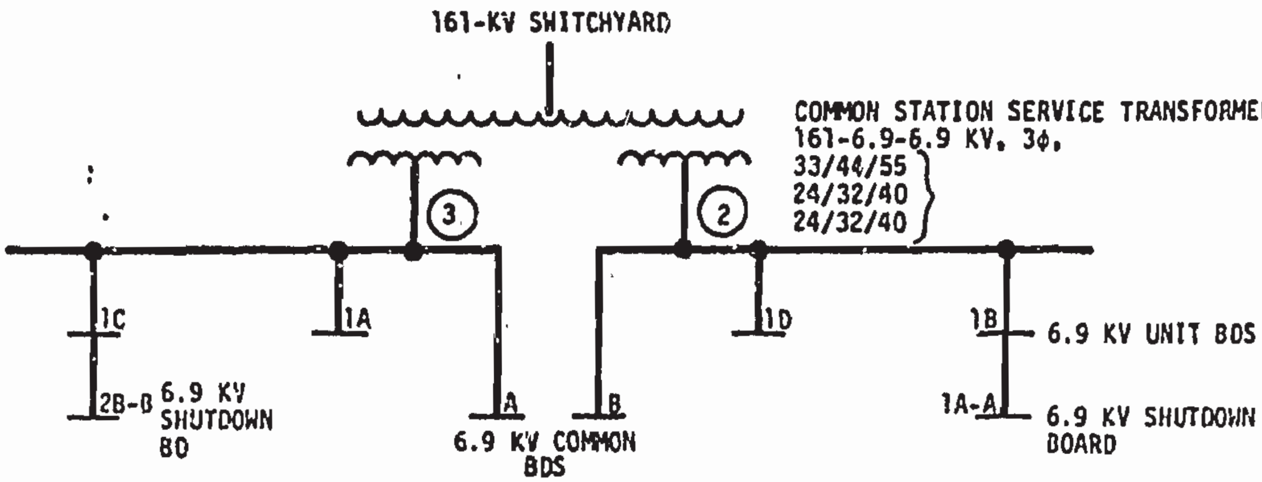
2. USST Voltage Taps at the +2-1/2 Percent Buck Position.

FIGURE D

PROGRAM N2DVCL

THE PURPOSE OF THIS PROGRAM IS TO EVALUATE VOLTAGES ASSOCIATED WITH THE DESIGN-BASIS ACCIDENT UNDER THE FOLLOWING CONDITIONS:

1) UNIT 1 LOCA WITH SWITCHYARD ELECTRICAL FAULT.
2) UNIT 2 FULL-LOAD REJECTION STILL UNIT CONNECTED.
3) ONE CSST OUT-OF-SERVICE.
4) 161-KV GRID VOLTAGE AT 162 KV.
5) CSST VOLTAGE TAPS AT THE -5% BOOST POSITION.



MOTOR AND BOARD VOLTAGES

COMPUTER NODE: 2

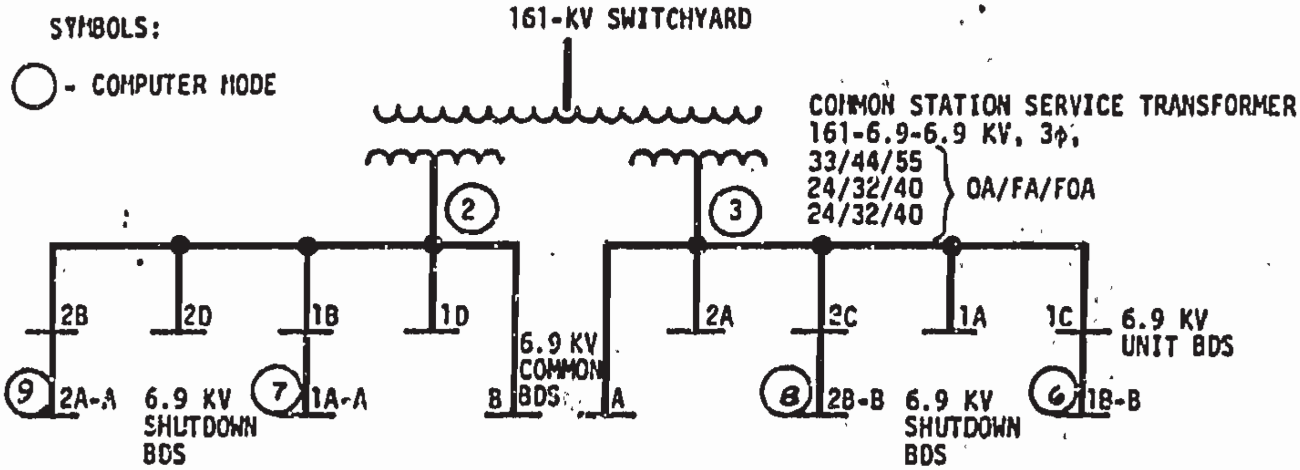
MOTOR	HP	BOARD	BOARD START-UP KV	RECOVERY TIME (SEC)	BOARD STEADY-STATE KV
ALL SI ACTUATED LOADS	4000	UNIT 2	6577	~4	7045
		SHUTDOWN	6370	~4	6995
	4000	UNIT 3	6578	~4	7059
		SHUTDOWN	6375	~4	7007

FIGURE E

PROGRAM N2FLR2U

THE PURPOSE OF THIS PROGRAM IS TO EVALUATE VOLTAGES ASSOCIATED WITH THE WORST-CASE COMMON STATION SERVICE TRANSFORMER (CSST) LOADING UNDER THE FOLLOWING CONDITIONS:

1) ONE CSST OUT-OF-SERVICE
2) BOTH UNITS IN FULL-LOAD REJECTION
3) 161-KV GRID AT 162 KV
4) CSST VOLTAGE TAPS AT THE -5% BOOST POSITION



BOARD	NODE	STEADY-STATE KV
UNIT	2	6629
SHUTDOWN	9	6589
SHUTDOWN	7	6585
UNIT	3	6662
SHUTDOWN	8	6618
SHUTDOWN	6	6617

Tennessee Valley Authority
Sequoyah Nuclear Plant Units 1 and 2
Degraded Voltage Relaying
Supplementary Technical Information

Appendix B
Technical Specification Changes

061273.03

The justifications for the proposed technical specification changes required for the degraded voltage protection modification are provided below. Marked up copies of the affected page follow.

Page 3/4 3-21

The engineered safety feature actuation system instrumentation for loss of electric power has been modified to include the degraded voltage instrumentation.

Page 3/4 3-27

The setpoints are determined to be adequate for protection based on the study presented in appendix A, "Voltage and Time Delay Analysis," to the degraded voltage report.

Page 3/4 3-32

The footnote was added to the loss of power response time to identify exactly what is measured for the degraded voltage channels. The timers are excluded because the response time is dependent on both the timers selected and the presence of a safety injection (SI) signal. The response will be measured from the time of a signal out of the timers to the time full voltage is restored. This eliminates the need to consider the SI signal and the different timer setpoints. The response time of the timers is covered by the setpoints specified in table 3.3-4.

Page 3/4 3-37

The surveillance requirements are modified to include testing of the degraded voltage channels. The channel check for the voltage sensors will consist of a verification that the annunciator panel is not lit if the voltage is in specification. Channel checks cannot be performed on the timers and are, therefore, listed as not applicable. The channel functional test will consist of a test of the annunciator circuits only. The timers cannot be tested without actuating the diesels and shedding loads, therefore, these circuits are listed as not applicable.

Page 3/4 8-13

The minimum battery capacity has been increased to 82 percent to account for possible discharge during the five minute delay on the degraded voltage protection channel actuation. The new limit will ensure that the batteries can meet the two hour accident load requirement for all cases.

MJB:COH
5/28/82

Tennessee Valley Authority
Sequoyah Nuclear Plant Units 1 and 2
Degraded Voltage Relaying
Licensing Submittal

Appendix C
FSAR Changes

061273.04

Replace pages 8.3-8 and 8.3-9 of "Standby Diesel Generator Operation" with the following:

061274.04

Standby Diesel Generator Operation

The diesel generator system is shown on single line diagram, Figure 8.3-20. The schematic of the engine start and stop circuits is shown in Figure 8.3-21. Remote control of the engine from the main control room is accomplished through interposing relays located in the diesel building. The schematic for this control is shown in figure 8.3-22.

The 6.9-kV shutdown boards in each power train derive power from either of two circuits from the 6.9-kV unit boards, or from their respective standby power source. During conditions where neither the nuclear unit nor preferred (offsite) power are available, each 6.9-kV shutdown board is energized from a separate, independent dedicated standby diesel generator unit. See table 8.2-2 for complete description of board transfer schemes.

The connection of the diesel generators to the 6.9-kV shutdown boards is initiated by either the loss-of-voltage relays on the 6.9-kV bus or the degraded voltage relays. The loss-of-voltage relays are set to pickup at 70 percent of nominal whereas the degraded voltage relays are set to pickup at 95 percent of nominal. A sustained voltage below these setpoints will initiate starting the diesel generators, tripping the normal or alternate feeder breaker, all 6.9-kV loads except the 480V shutdown board transformers, and the major 480V loads. Table 8.3-2 lists the loads that are automatically tripped. For a complete description of the voltage relay logic, see the system description of section (page 8.3-4). When the diesel generator set has reached rated speed and voltage (maximum of 10 seconds from initiation of automatic start signal), it is automatically connected to the 6.9-kV shutdown board bus. The return of voltage to the 6.9-kV shutdown board bus initiates logic which connects the required loads in the proper sequence. Table 8.3-3 shows the order in which the loads are applied.

The loss of voltage load shedding relays remain in the circuit at all times. If the load shedding relays ($\leq$70 percent) and time delay (5 seconds at 0 volts) setpoint is reached, the proper operation is:

1. To shed loads to prevent overloading the diesel generator.

2. Allow the diesel generator to recover to rated speed and voltage.

3. Reconnect the loads in the proper sequence.

Since the load shedding relays recognize loss of voltage, the starting of the largest driven load will not cause actuation of the load shedding feature.

As shown in Table 8.3-3, there are two loading sequences. One, which is applied in the absence of a "safety injection signal (SIS)," the non-accident condition," and the other, the "accident condition," applied when a safety injection signal is received prior to, or coincident with a sustained loss of voltage on the 6.9-kV shutdown board. A safety injection signal received during the course of a nonaccident shutdown loading sequence will cause the actions described below:

1. Loads already sequentially connected which are not required for an accident will be disconnected.

2. Loads already sequentially connected which are required for an accident will remain connected.

3. Loads awaiting sequential loading that are not required for an accident will not be connected.

4. Loads awaiting sequential loading that are required for an accident will have their sequential timers reset to time zero from which they will then be sequentially loaded.

061203.06

Replace the bus transfer scheme description for the 6.9-kV shutdown boards in Table 8.2.2 with the following:

Item	Board/Bus	Power Supplies Normal	Alternate	Standby	Remarks
15	6.9-kV Shutdown Board 1A-A	6.9-kV Unit Board 1B	6.9-kV Unit Board 1A	Diesel Gen 1A-A	Automatic transfer to the alternate is initiated by undervoltage on the normal feeder at 80% nominal voltage for four seconds. Transfer between normal and alternate is accomplished by closing alternate breaker at 30% nominal voltage if alternate supply voltage 95% nominal. Loss-of-bus voltage (≤70 percent) for 1.5 seconds starts the diesel generators and continued failure for an additional 3.5 seconds will trip incoming feeder breakers and most motor breakers. When diesel generator is up to rated speed and voltage, the emergency breaker will close automatically to connect the diesel to the board, and loads will be applied as required by a sequential timer. Return to normal supply is manual only and is a fast transfer (≤6 cycles). MCR is annunciated on under voltage condition at 80% nominal. Transfer to the diesel generator for a sustained degraded undervoltage (UV) is initiated in 10 seconds (if a SI has been initiated, or is subsequently initiated) and 5 minutes for non-SI if below setpoint of 95% nominal. MCR annunciation occurs for UV of 95% nominal and overvoltage of 105% nominal. The shutdown utility bus allows any 6.9-kV shutdown board to be connected to any other or all other 6.9-kV shutdown boards. All circuit breakers connected to this bus are normally open and disconnected. Use of the bus requires manual insertion and closing of two of the breakers.
16	6.9-kV Shutdown Board 1B-B	6.9-kV Unit Board 1C	6.9-kV Unit Board 1D	Diesel Gen 1B-B	

061257.05

Replace "System Operation" in section 8.3.1.1 with the following:

061274.04

To protect the Class 1E buses from a sustained degraded undervoltage, each of the two 6.9-kV Class 1E buses per unit will be provided with a set of three instaneous solid-state undervoltage relays (ITE-type 27/59H). These relays will have a nominal setpoint of 6560V ± 1/2 percent (95 percent of nominal). The relays will be arranged in a two-out-of-three coincidence logic to initiate three time delay sequences. The first sequence of 30 seconds will ride through normal system voltage transients before annunciating the undervoltage in the main control room. The second sequence of 10 seconds is short enough to allow safety-related equipment to be powered within the time required by the safety analysis. At the end of 10 seconds if a SIS has been initiated, or is subsequently initiated, the shutdown board will transfer to its diesel generator. The third time delay of five minutes is long enough to allow operator action but not allow damage to connected safety-related equipment. At the end of five minutes, the shutdown board will transfer to its diesel generator if the voltage has not returned to normal.

To protect the Class 1E buses from a sustained overvoltage, each of the two 6.9-kV Class 1E buses per unit will be provided with a set of three instantaneous solid-state overvoltage relays (ITE-type 59H). These relays will be arranged in a one-out-of-three coindence logic which will annunciate in the control room. The relays will have a nominal voltage setpoint of 7260 volts ± 1 percent (105 percent of nominal). The operator will take the action necessary to reduce the voltage.

There are no automatic transfers of board supplies between redundant power sources. All 480V shutdown boards and all motor control centers have alternate feeders to their respective board buses. Transfers between the normal and alternate feeder are manual. Some manual transfers of loads between power trains are used. These transfers are at the 480V level and involve nine loads which are tabulated in Table 8.3-10.

A means of manually interconnecting power sources at the 6.9-kV level is provided. This is provided by the shutdown utility bus, which on figure 8.1-2, allows any 6.9-kV shutdown board to be connected to any other or all other 6.9-kV shutdown boards. All circuit breakers connected to this bus are normally open and disconnected (racked out). Use of the bus requires manual insertion and closing of two of the breakers. The purpose of this utility bus is to increase the flexibility of the Standby Power System.

A manual means of supplying power to the 480V auxiliary building common board (which is not normally supplied power from the diesel generators during a condition where offsite power is lost) is provided. Provisions have been made to manually connect this board to the 480V shutdown boards 1B2 and 2B2. This is shown in figure 8.3-9. The purpose is to provide power to operate the ice condenser refrigeration units and glycol pumps during the unlikely condition of a loss of offsite power that exceeds 2-3 days. The two normal bus feeder breakers must be moved from their normal compartments to the compartments which are connected to the 480V shutdown boards 1B2 and 2B2.

System Operation

The 6.9-kV shutdown boards in each power train derive power from either of two circuits from the 6.9-kV unit boards, or from their respective standby power source (diesel generator). The feeders connecting each shutdown board with these three sources are termed the normal, alternate, and standby feeders. The normal and alternate feeders can derive power from the nuclear unit, via separate unit station service transformers and separate 6.9-kV unit boards. The normal and alternate feeders can also derive power from the separate preferred source circuits, via separate windings (on either of two separate common station service transformers) and separate 6.9-kV unit boards. During conditions where neither nuclear unit nor preferred (offsite) power is available, each 6.9-kV shutdown board is energized from a separate standby diesel generator, via the standby feeder.

The alignment of each unit's standby distribution system is determined by plant conditions, the sources selected to energize it, and the status of components within the distribution system.

A loss of voltage (≤ 80%) on a normal feeder to a 6.9-kV shutdown board is detected by a two-out-of-three logic followed by a definite time delay of four seconds to initiate automatic transfer to the alternate feeder, if the alternate feeder voltage is at least 95 percent of nominal. The transfer is delayed until the bus voltage has decreased to 30 percent of nominal. The return transfer to the normal feeder is initiated manually and is a high-speed transfer, completed in approximately six cycles or less.

A sustained (1.5 seconds at zero volts) loss of voltage (≤ 70 percent) on the 6.9-kV shutdown board starts the diesel generator and initiates (after an additional 3.5 seconds) logic that trips the normal or alternate feeder breaker, all 6900V loads (except the 480V shutdown board transformers), and the major 480V loads. Table 8.3-2 shows the loads that are automatically stripped. Figures 8.318 and 8.3-19 show the load stripping schematically. When the diesel generator has reached rated speed and voltage, the generator will be automatically connected to the 6.9-kV shutdown board bus. (Refer to figure 8.3-20a.) This return of voltage to the 6.9-kV shutdown bus initiates logic which connects the required loads in sequence. Table 8.3-3 shows the sequence of applied loads. The standby (onsite) power system's automatic sequencing logic is designed to automatically connect the required loads in proper sequence should the logic receive an accident signal prior to, concurrent with, or following a loss of all nuclear unit and preferred (offsite) power.

The following analyses evaluates voltages associated with different conditions of unit operation and shutdown.

For normal operation of units 1 and 2, the main generator is used to supply power to the plant auxiliary power system through the unit station service transformers. With the main generator at its minimum voltage of 22.8 kV, starting the largest motor on the 6.9-kV unit and shutdown board will not cause spurious tripping of the normal (see Figure B).

If a safety injection (SI) should occur during normal operation of the unit, the reactor would be tripped and the turbine stop valves closed. If an electrical fault in the generator or switchyard is not present, the generator is not tripped, via the main transformer high-side breaker, for 30 seconds. During this time, approximately 4000 horsepower of SI motors are simultaneously started. The 6.9-kV shutdown board voltage will dip to approximately 6200 volts but will recover to 6640 volts after approximately four seconds, with the main generator voltage at its minimum of 22.8 kV (see Figure C).

For the same condition, but with an electrical fault of the switchyard or main generator, the 6.9-kV unit boards are transferred (approximately six cycles) to the preferred offsite supply. With one of the two CSST's out of service, the starting of the SI actuated loads will cause the 6.9-kV shutdown boards to dip to approximately 6370 volts for approximately four seconds recovering to approximately 7000 volts, with the 161-kV grid at 162 kV (see Figure D).

For the case of a two-unit full-load rejection, with one CSST out of service and the 161-kV grid at 162 kV, the steady-state 6.9-kV shutdown board voltages range from 6585 to 6618 volts, which is adequate for starting the required medium- and low-voltage motors (see Figure E).

For all the cases listed above, the recovery voltages and times are within the time and voltage settings of the degraded undervoltage detection system and would not cause spurious trips of the normal or preferred supplies.

Analysis of Time Delay Selected

The second level of undervoltage relays operate if a 6900-volt shutdown board bus voltage drops below the level required to successfully start all the safety-related equipment that would be required for the design basis accident. The relays will initiate three time delay sequences. The first sequence of 30 seconds will ride through normal system transients before annunciating in the main control room. The second sequence of 10 seconds is short enough to allow safety-related equipment to be powered within the time required by the safety analysis. At the end of 10 seconds, if a safety injection has been initiated, or is subsequently initiated, the shutdown board will transfer to its diesel generator.

The third time delay of five minutes is long enough to allow operator action to correct the undervoltage condition, but not allow damage to connected safety-related equipment. At the end of the 5-minute delay, the

shutdown board will transfer to its diesel if voltage has not been corrected. Since the loss of voltage relays on normal feeder only are set at 80 percent of nominal for four seconds, the band of voltages that a non-accident degraded voltage condition can exist is from 80 to 95 percent of nominal for five minutes. At 80 percent of nominal the voltage at the terminals of running motors will not drop below 71 percent of motor rated voltage. NEMA Class B motors will not stall out or be damaged above this point for the time delay of five minutes. Also, during the five-minute time delay the 125V dc vital battery boards could be powered by the batteries instead of the battery chargers. However, the vital batteries have sufficient capacity to meet this requirement, as well as meet the original design requirements as identified in section 8.3.2 of the Sequoyah FSAR.

For a loss of voltage, both the selected time delays allow for the loss-of-voltage relays to initiate transfer to the alternate supply, if it is greater than 95 percent of nominal, before tripping and transferring to the diesels.

An error of $\pm$ 0.5 percent for the timer/relays in the degraded voltage protection circuits has been considered in the design.

December 23, 1982

Docket Nos: 50-327
and 50-328

Mr. H. G. Parris
Manager of Power
Tennessee Valley Authority
500A Chestnut Street, Tower II
Chattanooga, Tennessee 37401

Dear Mr. Parris:

Subject: Issuance of Amendment No. 17 to Facility Operating License No. DPR-77 and Amendment No. 8 to Facility Operating License No. DPR-79 - Sequoyah Nuclear Plant, Units 1 and 2

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 17 to Facility Operating License No. DPR-77 and Amendment No. 8 to Facility Operating License No. DPR-79.

The amendments change the diesel generator battery float voltage and the isolation times for containment isolation valves. The other changes requested in your September 17, 1982, letter will be addressed in future amendments.

A copy of the related safety evaluation supporting Amendment No. 17 to Facility Operating License DPR-77 and Amendment No. 8 to Facility Operating License DPR-79 is enclosed. Also enclosed is a copy of the Federal Register Notice which has been forwarded to the Office of the Federal Register for publication.

Sincerely,

S/

Elinor G. Adensam, Chief
Licensing Branch No. 4
Division of Licensing

Enclosures:
1. Amendment No. 17 to DPR-77
2. Amendment No. 8 to DPR-79
3. Safety Evaluation
4. Federal Register Notice

cc w/enclosures:
See next page

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P PDR

OFFICE	LA:DL:LB #4	DL:LB #4	DL:LB #4	DL:LB #4			
SURNAME	MDuncan/hmc	MMiller	CStahle	EAdensam			
DATE	10/3/82	10/3/82	10/ /82	10/ /82			

NRC FORM 318 (10-80) NRCM 0240 **OFFICIAL RECORD COPY** USGPO: 1981—335-960

SEQUOYAH

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Nashville, Tennessee 37219

Attorney General
Supreme Court Building
Nashville, Tennessee 37219

U.S. Environmental Protection Agency
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345 Courtland Street
Atlanta, Georgia 30308

Honorable Don Moore, Jr.
County Judge
Hamilton County Courthouse
Chattanooga, Tennessee 37402

Regional Administrator
Nuclear Regulatory Commission, Region II
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

OFFICE							
SURNAME							
DATE							

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-327

SEQUOYAH NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 17
License No. DPR-77

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment to the Sequoyah Nuclear Plant, Unit 1 (the facility) Facility Operating License No. DPR-77 filed by the Tennessee Valley Authority (licensee), dated September 17, 1982, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations as set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the license, as amended, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is hereby amended by page changes to the Appendix A Technical Specifications as indicated in the attachments to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-77 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 17, are hereby incorporated into the license.

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The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Elinor G. Adensam, Chief
Licensing Branch No. 4
Division of Licensing

Attachment:
Appendix A Technical
Specification Changes

Date of Issuance: December 23, 1982

OFFICE	LA:DL:LB #4	DL:LB #4	DL:LB #4	OELD	DL:LB #4	AD:L:DL	
SURNAME	MDuncan/hmc	MMiller	CStahle		EAdensam	TMNovak	
DATE	12/3/82	12/3/82	12/17/82	12/ /82	12/23/82	12/ /82	

ATTACHMENT TO LICENSE AMENDMENT NO. 17

FACILITY OPERATING LICENSE NO. DPR-77

DOCKET NO. 50-327

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change.

Amended Page

3/4 3-33
3/4 8-6

OFFICE ▶							
SURNAME ▶							
DATE ▶							

TABLE 3.3-5 (Continued)

TABLE NOTATION

(1) Diesel generator starting and sequence loading delays included. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps, SI and RHR pumps.

(2) Using air operated valve

(3) The following valves are exceptions to the response times shown in the table and will have the values listed in seconds for the initiating signals and function indicated:

Valves: FCV-26-240, -243
Response times:
2.d. 21[8]/ 31[9]
3.d. 22[8]
4.d. 21[8]/ 31[9]
5.d. 24[8]/ 34[9]
6.d. 21[8]/31[9]

Valves: FCV-61-96, -97, -110, -122, -191, -192, -193, -194
Response times:
2.d 31[8]
3.d. 32[8]
4.d. 31[8]
5.d. 34[8]
6.d. 31[8]

Valve: FCV-70-143
Response times:
2.d. 61[8]/71[9]
3.d. 62[8]
4.d. 61[8]/71[9]
5.d. 64[8]/74[9]
6.d. 61[8]/71[9]

(4) On 2/3 any Steam Generator

(5) On 2/3 in 2/4 Steam Generator

(6) Radiation detectors for Containment Ventilation Isolation may be excluded from Response Time Testing.

(7) Diesel generator starting and sequence loading delays not included. Offsite power available. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps.

(8) Diesel generator starting and sequence loading delays not included. Response time limit includes operating time of valves.

(9) Diesel Generator starting and sequence loading delays included. Response time limit includes operating time of valves.

SURVEILLANCE REQUIREMENTS (Continued)

4.8.1.1.3 The 125-volt D.C. distribution panel, 125 volt D.C. battery bank and associated charger for each diesel generator shall be demonstrated OPERABLE:

a. At least once per 7 days by verifying:

1. That the parameters in Table 4.8-1a meet the Category A limits.

2. That the total battery terminal voltage is greater than or equal to 124 volts on float charge.

b. At least once per 92 days by:

1. Verifying that the parameters in Table 4.8-1a meet the Category B limits,

2. Verifying there is no visible corrosion at either terminals or connectors, or the cell to terminal connection resistance of these items is less than 150 x 10^{-6} ohms, and

3. Verifying that the average electrolyte temperature of 6 connected cells is above 60 F.

c. At least once per 18 months by verifying that:

1 The cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration.

2. The battery to battery and terminal connections are clean, tight and coated with anti-corrosion material.

3. The resistance of each cell to terminal connection is less than or equal to 150 x 10^{-6} ohms.

4.8.1.1.4 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission pursuant to Specification 6.9.1. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests (on a per nuclear unit basis) is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-328

SEQUOYAH NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 8
License No. DPR-79

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment to the Sequoyah Nuclear Plant, Unit 2 (the facility) Facility Operating License No. DPR-79 filed by the Tennessee Valley Authority (licensee), dated September 17, 1982, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations as set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the license, as amended, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is hereby amended by page changes to the Appendix A Technical Specifications as indicated in the attachments to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-79 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 8, are hereby incorporated into the license.

OFFICE							
SURNAME							
DATE							

The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Elinor G. Adensam, Chief
Licensing Branch No. 4
Division of Licensing

Attachment:
Appendix A Technical
Specification Changes

Date of Issuance: December 23, 1982

OFFICE	LA:DL:LB #4	DL:LB #4	DL:LB #4	OELD	DL:LB #4	AD:L:DL	
SURNAME	MDuncan/bmc	MMLiller	CStahle	[illegible]	EAdensam	TNovak	
DATE	12/ 3/82	12/ /82	12/ /82	12/ /82	12/ /82	12/ /82	

ATTACHMENT TO LICENSE AMENDMENT NO. 8

FACILITY OPERATING LICENSE NO. DPR-79

DOCKET NO. 50-328

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change.

Amended Page

3/4 8-6
3/4 3-33

OFFICE							
SURNAME							
DATE							

TABLE 3.3-5 (Continued)

TABLE NOTATION

(1) Diesel generator starting and sequence loading delays included. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps, SI and RHR pumps.

(2) Using air operated valve

(3) The following valves are exceptions to the response times shown in the table and will have the values listed in seconds for the initiating signals and function indicated:

Valves: FCV-26-240, -243
Response times:
2.d. 21[8]/31[9]
3.d. 22[8]
4.d. 21[8]/31[9]
5.d. 24[8]/34[9]
6.d. 21[8]/31[9]

Valves: FCV-61-96, -97, -110, -122, -191, -192, -193, -194
Response times
2.d. 31[8]
3.d. 32[8]
4.d. 31[8]
5.d. 34[8]
6.d. 31[8]

Valve: FCV-70-143
Response times:
2.d. 61[8]/71[9]
3.d. 62[8]
4.d. 61[8]/71[9]
5.d. 64[8]/74[9]
6.d. 61[8]/71[9]

(4) On 2/3 any Steam Generator

(5) On 2/3 in 2/4 Steam Generator

(6) Radiation detectors for Containment Ventilation Isolation may be excluded from Response Time Testing.

(7) Diesel generator starting and sequence loading delays <u>not</u> included. Offsite power available. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps.

(8) Diesel generator starting and sequence loading delays not included. Response time limit includes operating time of valves.

(9) Diesel generator starting and sequence loading delays included. Response time limit includes operating time of valves.

SURVEILLANCE REQUIREMENTS (Continued)

f. At least once per 10 years* by:

1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypoclorite solution, and

2. Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code at a test pressure equal to 110 percent of the system design pressure.

4.8.1.1.3 The 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger for each diesel generator shall be demonstrated OPERABLE:

a. At least once per 7 days by verifying:

1. That the parameters in Table 4.8-1a meet the Category A limits.

2. That the total battery terminal voltage is greater than or equal to 124 volts on float charge.

b. At least once per 92 days by:

1. Verifying that the parameters in Table 4.8-1a meet the Category B limits,

2. Verifying there is no visible corrosion at either terminals or connectors, or the cell to terminal connection resistance of these items is less than 150×10^{-6} ohms, and

3. Verifying that the average electrolyte temperature of 6 connected cells is above 60 F.

c. At least once per 18 months by verifying that:

1. The cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration.

2. The battery to battery and terminal connections are clean, tight and coated with anti-corrosion material.

3. The resistance of each cell to terminal connection is less than or equal to 150×10^{-6} ohms.

*These requirements are waived for the initial surveillance.

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 17 TO FACILITY OPERATING LICENSE DPR-77

AND AMENDMENT NO. 8 TO FACILITY OPERATING LICENSE DPR-79

TENNESSEE VALLEY AUTHORITY

INTRODUCTION

In a September 17, 1982, transmittal TVA requested a correction to their inadvertent errors involving containment isolation valve stroke times which were overlooked in requesting the May 4, 1982, amendments to both licenses.

Also in their September 17 letter, TVA requested a change to the diesel generator battery float voltage. TVA has replaced the diesel generator batteries at Sequoyah with lead calcium cells necessitating a lower float voltage.

EVALUATION

The May 4, 1982, amendments lengthened the valve isolation times for the ice condenser glycol lines from 10 to 30 seconds. Errors in the technical specifications were incurred when the overall phase A response time was not changed to reflect the increased isolation time. Similarly, the isolation time for the fire protection valves had been approved as 20 seconds in the initial issuance of Sequoyah Units 1 and 2 Technical Specifications, which is greater than or equal to the overall phase A response time. For both the glycol line isolation valves and the fire protection isolation valves, the corresponding phase A response times were increased. Because this amendment corrects discrepancies resulting from previously approved tech specs, the staff agrees that the amendment should be instituted.

Additionally, the new deisel generator cells at Sequoyah require a change in the minimum float voltage of surveillance requirement 4.8.1.1.3.9.2 for Units 1 and 2. There are 57 cell units with a manufacturer's recommended minimum float voltage of 2.17 volts/cell. Therefore, 123.69 volts or 124 volts is the minimum total float voltage requirement. Because the manufacturer's recommended maximum of 128.25 volts is presently exceeded in the technical specification, the tech spec voltage of 129 volts could contribute to shorter battery life.

From this justification, the staff agrees that survillance requirement 4.8.1.1.3.9.2 should be changed from 129 volts to 124 volts.

8301060003 821223
PDR ADOCK 05000327
P PDR

OFFICE							
SURNAME							
DATE							

ENVIRONMENTAL CONSIDERATION

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) because the amendments do not involve a significant increase in the probability or consequences of accidents previously considered, do not create the possibility of an accident of a type different from any evaluated previously, and do not involve a significant decrease in a safety margin, the amendments do not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: December 23, 1982

Principal Contributors: Melanie Miller, Licensing Branch No. 4, DL
Carl Stahle, Licensing Branch No. 4, DL
John Knox, Power Systems Branch, DSI
James Pulsipher, Containment Systems Branch, DSI

OFFICE	LA:DL:LB #4	DL:LB #4	DL:LB #4	CSB	PSB	DL:LB #4	
SURNAME	MDuncan/hmc	MMiller	CStahle	WButler	MSrinivasan	EAdensam	
DATE	10/ /82	10/3/82	10/ /82	10/ /82	/ /82	/ /82	

NRC FORM 318 (10-80) NRCM 0240 OFFICIAL RECORD COPY USGPO: 1981—335-960

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NOS. 50-327 AND 50-328

TENNESSEE VALLEY AUTHORITY

NOTICE OF ISSUANCE OF AMENDMENTS

FACILITY OPERATING LICENSE NOS. DPR-77 AND DPR-79

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 17 to Facility Operating License No. DPR-77 and Amendment No. 8 to Facility Operating License No. DPR-79, issued to Tennessee Valley Authority (licensee) for the Sequoyah Nuclear Plant, Units 1 and 2 (the facilities) located in Hamilton County, Tennessee. These amendments change the diesel generator battery float voltage and the isolation times for containment isolation valves. The amendments are effective as of their dates of issuance.

The application for the amendments complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations. The Commission has made appropriate findings as required by the Act and the Commission's regulations in 10 CFR Chapter I, which are set forth in the license amendments. Prior public notice of these amendments was not required since the amendments do not involve a significant hazards consideration.

The Commission has determined that the issuance of these amendments will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) environmental impact statements, or negative declarations and environmental impact appraisals need not be prepared in connection with issuance of these amendments.

8301060005 821223
PDR ADOCK 05000327
P PDR

OFFICE							
SURNAME							
DATE							

NRC FORM 318 (10-80) NRCM 0240

OFFICIAL RECORD COPY

USGPO: 1981—335-960

For further details with respect to this action, see (1) Tennessee Valley Authority letter dated September 17, 1982, (2) Amendment No. 17 to Facility Operating License No. DPR-77 with Appendix A Technical Specification page changes; (3) Amendment No. 8 to Facility Operating License No. DPR-79 with Appendix A Technical Specification page changes; and (4) the Commission's related Safety Evaluation.

All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D. C., and the Chattanooga Hamilton County Bicentennial Library, 1001 Broad Street, Chattanooga, Tennessee 37402. A copy of Amendment No. 17and Amendment No. 8 may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Licensing.

Dated at Bethesda, Maryland, this 23rd day of December 1982.

FOR THE NUCLEAR REGULATORY COMMISSION

/s/

Elinor G. Adensam, Chief
Licensing Branch No. 4
Division of Licensing

form only

OFFICE	LA:DL:LB #4	DL:LB #4	DL:LB #4	OELD	DL:LB #4		
SURNAME	MDuncan/hmc	MMilliam	CStahle		EAdensam		
DATE	10/3/82	10/3/82	10/7/82	10/5/82	10/7/82		

DISTRIBUTION:
Docket Nos. 50-327/328
LB #4 r/f
E. Adensam
C. Stahle
M. Duncan
M. Miller
D. Eisenhut
OELD

December 17, 1982

Docket Nos: 50-327
and 50-328

MEMORANDUM FOR: Thomas M. Novak, Assistant Director
for Licensing
Division of Licensing

THRU: Elinor G. Adensam, Chief
Licensing Branch No. 4
Division of Licensing

FROM: Carl Stahle, Project Manager
Licensing Branch No. 4
Division of Licensing

SUBJECT: ISSUANCE OF AMENDMENT NO. 17 TO FACILITY OPERATING LICENSE DPR-77 AND AMENDMENT NO. 8 TO FACILITY OPERATING LICENSE DPR-79, SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2

Regarding the issuance of subject amendments, there is no known public correspondence or irreversible impact associated with this subject.

/s/

Carl Stahle, Project Manager
Licensing Branch No. 4
Division of Licensing

8301060009 821223
PDR ADOCK 05000327
P PDR

OFFICE	LA:DL:LB #4	DL:LB #4	DL:LB #4	DL:LB #4			
SURNAME	MDuncan/hmc	MMiller	CStahle	EAdensam			
DATE	12/ /82	12/ /82	12/ /82	12/ /82			

NRC FORM 318 (10-80) NRCM 0240 OFFICIAL RECORD COPY USGPO: 1981-335-960

AMENDMENT NO. 17 TO FACILITY OPERATING LICENSE DPR-77 - SEQUOYAH UNIT 1
AMENDMENT NO. 8 TO FACILITY OPERATING LICENSE DPR-79 - SEQUOYAH UNIT 2

DISTRIBUTION w/enclosures:

Docket No. 50-327/328
LB #4 r/f
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D. Eisenhut/R. Purple
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T. Barnhart (8)
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L. J. Harmon, I&E File

bcc w/enclosures:

NRC PDR
Local PDR
NSIC
TERA
A. Rosenthal, ASLAB
ASLBP
ACRS (16)
W. Jones (10)

Licensee Response/NRC Response/NRC Question Closure

Id	**369**
NRC Question Number	**VKG019**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**10/8/2014**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**10/8/2014 6:00 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**180**
NRC Question Number	**VKG020**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.4**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Jake Zimmerman**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**ITS SR 3.8.4.2 contains the following statement: "Verify each vital battery charger can recharge the battery to the fully charged state within 36 hours while supplying the largest combined demands of the various continuous steady state loads, after a battery discharge to the bounding design basis event discharge state."** **Please provide summary of calculation which shows that the battery can be recharged to the fully charged state within 36 hours.**
Attach File 1	
Attach File 2	
Issue Date	**7/24/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**7/24/2014 8:14 AM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**352**
NRC Question Number	**VKG020**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	

The SQN Vital Battery Charger sizing analysis is performed in accordance with IEEE Standard 946-1985 and uses the following formula:

$$I_{CH} = L + \frac{1.1 \ X \ AH}{T}$$

where: I_{CH} = charger rated output (amps),
L = continuous DC load (amps),
1.1 = constant that compensates for battery losses,
AH = Amp-Hours removed from the battery, and
T = time to recharge the battery to approximately 95% of capacity (hours).

SQN Vital Battery Chargers are required to recharge the battery within 36 hours with normal load applied following a station blackout condition that lasts for 4 hours. Assuming the following:

From the battery sizing calculation for Vital Battery Charger I:
AH = 1416 Amp-Hours,
T = 36 hours, and
Continuous load without diversity following a station blackout = 80 amps.

$$I_{CH} = 80 \text{ amps} + \frac{(1.1 \times 1416 \text{ Amp-Hours})}{36 \text{ Hours}} = 123 \text{ Amps}$$

From the battery sizing calculation for Vital Battery Charger II:
AH = 1390 Amp-Hours,
T = 36 hours, and
Continuous load without diversity following a station blackout = 72 amps.

$$I_{CH} = 72 \text{ amps} + \frac{(1.1 \times 1390 \text{ Amp-Hours})}{36 \text{ Hours}} = 114 \text{ Amps}$$

From the battery sizing calculation for Vital Battery Charger III:
AH = 1406 Amp-Hours,
T = 36 hours, and
Continuous load without diversity following a station blackout = 69 amps.

$$I_{CH} = 69 \text{ amps} + \frac{(1.1 \times 1406 \text{ Amp-Hours})}{36 \text{ Hours}} = 112 \text{ Amps}$$

From the battery sizing calculation for Vital Battery Charger IV:
AH = 1423 Amp-Hours,
T = 36 hours, and
Continuous load without diversity following a station blackout = 75 amps.

$$I_{CH} = 75 \text{ amps} + \frac{(1.1 \times 1423 \text{ Amp-Hours})}{36 \text{ Hours}} = 118.5 \text{ Amps}$$

Therefore, the SQN Vital Battery Chargers effective rating is 150A and has the capacity to recharge the batteries in 36 hours.

Response Date/Time	**9/26/2014 6:55 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**9/26/2014 5:53 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**391**
NRC Question Number	**VKG020**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	

SQN responded to RAI VKG020 by providing a summary of the 125V vital battery charger sizing calculation for each charger. Following communications with the NRC, it was discovered that the battery sizing calculations had been revised related to the battery loading for each battery; however, the calculations for charger sizing had not been revised. SQN entered this into the Corrective Action Program and revised the calculations to correct this issue. The new battery sizing calculations increase the requirements for the battery chargers on three of the four chargers. In all cases, the 150 Amp battery chargers exceed the required values listed below and remain capable of recharging the batteries within the required 36 hours.

The revised SQN Vital Battery Charger requirements are summarized below. The italicized and bold numbers reflect the values from the revised charger sizing calculations. The original numbers supplied in the initial response are in () :

For Vital Battery Charger I:
AH = *1417.96* (1416) Amp-Hours,
T = 36 hours, and
Continuous load without diversity following a station blackout = *79.29* (80) amps.

$$I_{CH} = 79.29\ (80)\ \text{amps} + \frac{1.1 \times 1417.96\ (1416)\ \text{Amp-Hours}}{36\ \text{Hours}} = 122.62\ (123)\ \text{Amps}$$

For Vital Battery Charger II:
AH = *1397.36* (1390) Amp-Hours,
T = 36 hours, and
Continuous load without diversity following a station blackout = *74.02* (72) amps.

$$I_{CH} = \mathit{74.02}\ (72)\text{ amps} + \frac{1.1 \times \mathit{1397.36}\ (1390)\text{ Amp-Hours}}{36\text{ Hours}} = \mathit{116.72}\ (114)\text{ Amps}$$

From the battery sizing calculation for Vital Battery Charger III:
AH = *1400.30* (1406) Amp-Hours,
T = 36 hours, and
Continuous load without diversity following a station blackout = *69.99* (69) amps.

$$I_{CH} = \mathit{69.99}\ (69)\text{ amps} + \frac{1.1 \times \mathit{1400.30}\ (1406)\text{ Amp-Hours}}{36\text{ Hours}} = \mathit{112.78}\ (112)\text{ Amps}$$

From the battery sizing calculation for Vital Battery Charger IV:
AH = *1422.43* (1423) Amp-Hours,
T = 36 hours, and
Continuous load without diversity following a station blackout = *75.45* (75) amps.

$$I_{CH} = \mathit{75.45}\ (75)\text{ amps} + \frac{1.1 \times \mathit{1422.43}\ (1423)\text{Amp-Hours}}{36\text{ Hours}} = \mathit{118.91}\ (118.5)\text{ Amps}$$

Response Date/Time	**12/3/2014 5:50 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner**

	Vijay Goel **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**12/3/2014 4:51 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**393**
NRC Question Number	**VKG020**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**12/8/2014**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**12/8/2014 2:09 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**181**
NRC Question Number	**VKG021**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.4**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Jake Zimmerman**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**ITS SR 3.8.4.2 pertains to surveillance of the vital battery charger only. Please either explain why the diesel generator (DG) battery charger does not have the related SR or provide a similar SR.**
Attach File 1	
Attach File 2	
Issue Date	**7/24/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**7/24/2014 8:24 AM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**353**
NRC Question Number	**VKG021**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**ITS LCO 3.8.4 requires two vital DC electrical power trains and four diesel generator (DG) DC electrical power subsystems to be OPERABLE. ITS 3.8.4 does not have a DG battery charger testing requirement because the purpose of the DG batteries is to provide power to initially start the DG. Once the DG is running, the safety function is met and there is not a recharge time or extended load profile required to be tested.**
Response Date/Time	**9/26/2014 7:00 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**9/26/2014 5:55 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**370**
NRC Question Number	**VKG021**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**10/8/2014**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**10/8/2014 6:01 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**182**
NRC Question Number	**VKG022**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.6**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Ravi Grover (for RBE)**
Technical Branch POC	
Conf Call Requested	**N**
NRC Question	**In response to the NRC staff RAI GMW-002 #2, the licensee stated that SQN will incorporate the minimum float current measurement time into the Bases for SR 3.8.6.1. The following sentences will be added to the SR [Bases]: "The minimum required procedural time to measure battery float current will be 30 seconds or as recommended by the float current measurement instrument manufacturer. The minimum float current measurement time is required to provide a more accurate battery float current reading."** **Please provide markup of Bases for SR 3.8.6.1 with the above changes.**
Attach File 1	
Attach File 2	
Issue Date	**8/5/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**8/5/2014 10:33 AM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**250**
NRC Question Number	**VKG022**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 for VKG022.pdf** (33KB)
Attachment 2	
Response Statement	**See Attachment 1 for the draft revised ITS SR 3.8.6.1 Bases insert on pages 459 and 473 of Enclosure 2, Volume 13.**
Response Date/Time	**8/8/2014 8:05 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**8/8/2014 7:04 AM**
Date Modified	
Modified By	

BASES

ACTIONS (continued)

E.1

trains

With one or more batteries in redundant ~~subsystems~~ with battery parameters not within limits there is not sufficient assurance that battery capacity has not been affected to the degree that the batteries can still perform their required function, given that redundant batteries are involved. With redundant batteries involved this potential could result in a total loss of function on multiple systems that rely upon the batteries. The longer Completion Times specified for battery parameters on non-redundant batteries not within limits are therefore not appropriate, and the parameters must be restored to within limits on at least one ~~subsystem~~ train within 2 hours. 1

F.1

With one or more batteries with any battery parameter outside the allowances of the Required Actions for Condition A, B, C, D, or E, sufficient capacity to supply the maximum expected load requirement is not assured and the corresponding battery must be declared inoperable. Additionally, discovering one or more vital batteries ~~in one subsystem~~ with one or more battery cells float voltage less than ~~[~~2.07~~]~~ V and float current greater than ~~[~~2~~]~~ amps indicates that the battery capacity may not be sufficient to perform the intended functions. ~~The battery must therefore be declared inoperable immediately.~~ INSERT 1 5 2 5

SURVEILLANCE REQUIREMENTS

SR 3.8.6.1

Verifying battery float current while on float charge is used to determine the state of charge of the battery. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery and maintain the battery in a charged state. The float current requirements are based on the float current indicative of a charged battery. Use of float current to determine the state of charge of the battery is consistent with IEEE-450 (Ref. 1). ~~[The 7 day Frequency is consistent with IEEE-450 (Ref. 1).~~

The minimum required procedural time to measure battery float current will be 30 seconds or as recommended by the float current measurement instrument manufacturer. The minimum float current measurement time is required to provide a more accurate battery float current reading.

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. 7

BASES

ACTIONS (continued)

E.1

With one or more batteries in redundant ~~subsystems~~ trains with battery parameters not within limits there is not sufficient assurance that battery capacity has not been affected to the degree that the batteries can still perform their required function, given that redundant batteries are involved. With redundant batteries involved this potential could result in a total loss of function on multiple systems that rely upon the batteries. The longer Completion Times specified for battery parameters on non-redundant batteries not within limits are therefore not appropriate, and the parameters must be restored to within limits on at least one ~~subsystem~~ train within 2 hours. 1

F.1

With one or more batteries with any battery parameter outside the allowances of the Required Actions for Condition A, B, C, D, or E, sufficient capacity to supply the maximum expected load requirement is not assured and the corresponding battery must be declared inoperable. Additionally, discovering one or more vital batteries ~~in one subsystem~~ with one or more battery cells float voltage less than ~~[~~2.07~~]~~ V and float current greater than ~~[~~2~~]~~ amps indicates that the battery capacity may not be sufficient to perform the intended functions. INSERT 1 ~~The battery must therefore be declared inoperable immediately.~~ 5 2 5

SURVEILLANCE REQUIREMENTS

SR 3.8.6.1

Verifying battery float current while on float charge is used to determine the state of charge of the battery. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery and maintain the battery in a charged state. The float current requirements are based on the float current indicative of a charged battery. Use of float current to determine the state of charge of the battery is consistent with IEEE-450 (Ref. 1). ~~[The 7 day Frequency is consistent with IEEE-450 (Ref. 1).~~

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. 7

The minimum required procedural time to measure battery float current will be 30 seconds or as recommended by the float current measurement instrument manufacturer. The minimum float current measurement time is required to provide a more accurate battery float current reading.

Licensee Response/NRC Response/NRC Question Closure

Id	**323**
NRC Question Number	**VKG022**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/4/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**9/4/2014 12:13 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**183**
NRC Question Number	**VKG023**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.6**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Jake Zimmerman**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**ITS 3.8.6, Bases, Background states: "The Vital battery cells are of flooded lead acid construction with a nominal specific gravity of 1.215. This specific gravity corresponds to an open circuit battery voltage of approximately 123.78 V for 60 cell battery (i.e., cell voltage of 2.063 volts per cell (Vpc))....This provides adequate over-potential which limits the formation of lead sulfate and self-discharge."** **The above discussion pertains to the Vital batteries. Please provide similar discussion for the DG batteries consisting of 58 cells.**
Attach File 1	
Attach File 2	
Issue Date	**8/13/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**8/13/2014 9:36 AM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**354**
NRC Question Number	**VKG023**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 VKG-023 R1.pdf** (558KB)
Attachment 2	
Response Statement	**In response to VKG023, the ITS 3.8.6 Bases Background Section, on pages 455 and 469 of Enclosure 2, Volume 13, will be modified to include a description of the DG batteries. Specifically, the ITS 3.8.6 Bases will be revised to add, "The DG battery cells are of flooded lead acid construction with a nominal specific gravity of 1.215. Each DG battery consists of 58 cells; however, a battery is considered OPERABLE with 57 cells if one is strapped out. Optimal long term performance is obtained by maintaining a float voltage of 2.20 to 2.25 Vpc. This provides adequate over-potential which limits the formation of lead sulfate and self-discharge."** **See Attachment 1 for the draft revised ITS 3.8.6 Bases.**
Response Date/Time	**9/26/2014 8:15 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**9/26/2014 7:12 AM**
Date Modified	
Modified By	

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.6 Battery Parameters

BASES

BACKGROUND

This LCO delineates the limits on battery float current as well as electrolyte temperature, level, and float voltage for the ~~DC power subsystem~~ Vital and diesel generator (DG) batteries. A discussion of these batteries and their OPERABILITY requirements is provided in the Bases for LCO 3.8.4, "DC Sources - Operating," and LCO 3.8.5, "DC Sources - Shutdown." In addition to the limitations of this Specification, the ~~[licensee controlled program]~~ Battery Monitoring and Maintenance Program also implements a program specified in Specification 5.5.~~17~~ 15 for monitoring various battery parameters. 1 2 3

The Vital battery cells are of flooded lead acid construction with a nominal specific gravity of ~~[~~1.215~~]~~. This specific gravity corresponds to an open circuit battery voltage of approximately ~~120~~ 123.78 V for ~~[58]~~ 60 cell battery (i.e., cell voltage of ~~[2.065]~~ 2.063 volts per cell (Vpc)). The open circuit voltage is the voltage maintained when there is no charging or discharging. ~~Once fully charged with its open circuit voltage ≥ [2.065] Vpc, the battery cell will maintain its capacity for [30] days without further charging per manufacturer's instructions.~~ Optimal long term performance however, is obtained by maintaining a float voltage ~~[2.20 to 2.25]~~ 2.17 Vpc. This provides adequate over-potential which limits the formation of lead sulfate and self discharge. ~~The nominal float voltage of [2.22] Vpc corresponds to a total float voltage output of [128.8] V for a [58] cell battery as discussed in the FSAR, Chapter [8] (Ref. 2).~~ 1 2 4 2 1

The DG battery cells are of flooded lead acid construction with a nominal specific gravity of 1.215. Each DG battery consists of 58 cells; however, a battery is considered OPERABLE with 57 cells if one is strapped out. Optimal long term performance is obtained by maintaining a float voltage of 2.20 to 2.25 Vpc. This provides adequate over-potential which limits the formation of lead sulfate and self-discharge.

The initial conditions of Design Basis Accident (DBA) and transient analyses in the U FSAR, Chapter ~~[~~6~~]~~ (Ref. 3) and Chapter ~~[~~15~~]~~ (Ref. 4), assume Engineered Safety Feature systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the DGs, emergency auxiliaries, and control and switching during all MODES of operation. 1 2

The OPERABILITY of the DC subsystems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining at least one ~~subsystem~~ train of DC sources OPERABLE during accident conditions, in the event of: 1

a. An assumed loss of all offsite AC power or all onsite AC power and

b. A worst-case single failure.

Battery parameters satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.6 Battery Parameters

BASES

BACKGROUND

This LCO delineates the limits on battery float current as well as electrolyte temperature, level, and float voltage for the ~~DC power subsystem~~ Vital and diesel generator (DG) batteries. A discussion of these batteries and their OPERABILITY requirements is provided in the Bases for LCO 3.8.4, "DC Sources - Operating," and LCO 3.8.5, "DC Sources - Shutdown." In addition to the limitations of this Specification, the ~~[licensee controlled program]~~ Battery Monitoring and Maintenance Program also implements a program specified in Specification 5.5.~~17~~ 15 for monitoring various battery parameters. 1 2 3

The Vital battery cells are of flooded lead acid construction with a nominal specific gravity of ~~[~~1.215~~]~~. This specific gravity corresponds to an open circuit battery voltage of approximately ~~120~~ 123.78 V for ~~[58]~~ 60 cell battery (i.e., cell voltage of ~~[2.065]~~ 2.063 volts per cell (Vpc)). The open circuit voltage is the voltage maintained when there is no charging or discharging. ~~Once fully charged with its open circuit voltage ≥ [2.065] Vpc, the battery cell will maintain its capacity for [30] days without further charging per manufacturer's instructions.~~ Optimal long term performance however, is obtained by maintaining a float voltage ~~[2.20 to 2.25]~~ 2.17 Vpc. This provides adequate over-potential which limits the formation of lead sulfate and self discharge. ~~The nominal float voltage of [2.22] Vpc corresponds to a total float voltage output of [128.8] V for a [58] cell battery as discussed in the FSAR, Chapter [8] (Ref. 2).~~ 1 2 4 2 1

The DG battery cells are of flooded lead acid construction with a nominal specific gravity of 1.215. Each DG battery consists of 58 cells; however, a battery is considered OPERABLE with 57 cells if one is strapped out. Optimal long term performance is obtained by maintaining a float voltage of 2.20 to 2.25 Vpc. This provides adequate over-potential which limits the formation of lead sulfate and self-discharge.

The initial conditions of Design Basis Accident (DBA) and transient analyses in the U FSAR, Chapter ~~[~~6~~]~~ (Ref. 3) and Chapter ~~[~~15~~]~~ (Ref. 4), assume Engineered Safety Feature systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the DGs, emergency auxiliaries, and control and switching during all MODES of operation. 1 2

The OPERABILITY of the DC subsystems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining at least one ~~subsystem~~ train of DC sources OPERABLE during accident conditions, in the event of: 1

a. An assumed loss of all offsite AC power or all onsite AC power and

b. A worst-case single failure.

Battery parameters satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

Licensee Response/NRC Response/NRC Question Closure

Id	**368**
NRC Question Number	**VKG023**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**10/8/2014**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**10/8/2014 5:58 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**184**
NRC Question Number	**VKG024**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.7**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Jake Zimmerman**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**ITS SR 3.8.7.1 states: "Verify correct inverter voltage, frequency, and alignment to required AC vital buses." However, ITS SR 3.8.8.1 states: "Verify correct inverter voltage, frequency, and alignments to required AC vital boards."** **Please explain why the ITS 3.8.7 uses the term "AC vital buses," and ITS 3.8.8 uses the term "AC vital boards." Also, verify that the terms "boards" and "buses" are applied appropriately in any other instances in the ITS submittal.**
Attach File 1	
Attach File 2	
Issue Date	**8/13/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**8/13/2014 9:36 AM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**378**
NRC Question Number	**VKG024**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 for RAI VKG024.pdf** (1MB)
Attachment 2	
Response Statement	

In response to VKG024, the ISTS Specifications and ISTS Bases markups for 3.8.7, Inverters - Operating, and 3.8.8, Inverters - Shutdown, on pages 494-497, 500-503, 505-508, and 523-526 of Enclosure 2, Volume 13, will be revised to refer to AC vital instrument power boards vice AC vital buses and DC source vice DC bus. This revision aligns ITS with the CTS nomenclature for these components. Justification for deviation (JFD) 1 indicators will be added to address the revision. Additionally, the ITS submittal was reviewed to identify other locations where the term "bus(es)" was used, and where appropriate, the nomenclature will be revised to "board(s)." See the response to RAI VKG025 for changes in nomenclature associated with ITS Sections 3.8.9 and 3.8.10. See below for additional ITS Sections affected by the proposed revision:

1. **The ITS 3.8.1 Bases Actions and Surveillance Requirements Sections will be revised to replace the term "bus(es)" with "board(s)." JFD 1 indicators will be added, as needed, to address the revision. (Pages 103, 124, 129-133, 139-141, 143, 153, 174, 179-183, 189-191, and 193 of Enclosure 2, Volume 13)**

2. **The ITS 3.8.1 Bases Surveillance Requirement Section for ITS SR 3.8.1.17 will be revised to change the last sentence in the first paragraph to read, "Reference 2 provides a summary of the automatic loading of Shutdown Boards." (Pages 143 and 193 of Enclosure 2, Volume 13)**

3. **The ITS 3.8.2 Bases LCO Section will be revised to replace the term "bus" with "board." Additionally, the following sentence will be revised to remove the word "buses," "The DG must be capable of accepting required loads within the assumed loading sequence intervals, and continue to operate until offsite power can be restored to the 6.9 kV shutdown boards buses." (Pages 225 and 232 of Enclosure 2, Volume 13)**

4. **The ITS 3.8.4 Bases Background Section will be revised to replace the term AC vital "bus" with AC vital "instrument power board." ITS 3.8.4 Bases LCO Section will be revised to replace the term "bus" with "board." JFD 1 indicators will be added, as needed, to address the revisions. (Pages 319, 323, 325, 334, 338 and 340 of Enclosure 2, Volume 13)**

See Attachment 1 for draft revised ISTS markups for Units 1 and 2.

Response Date/Time	**11/4/2014 8:40 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**11/4/2014 7:39 AM**
Date Modified	
Modified By	

BASES

LCO

Two qualified circuits between the offsite transmission network and the onsite Class 1E Electrical Power System and separate and independent DGs for each ~~train~~ 6.9kV Shutdown Board ensure availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an anticipated operational occurrence (AOO) or a postulated DBA. 1

~~Qualified offsite circuits are those that are described in the FSAR and are part of the licensing basis for the unit.~~ 1

~~[In addition, one required automatic load sequencer per train must be OPERABLE.]~~ 2

Each qualified offsite circuit must be physically independent, capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the ~~ESF buses~~ 6.9kV Shutdown Boards. 1 1

INSERT 8 ~~[Offsite circuit #1 consists of Safeguards Transformer B, which is supplied from Switchyard Bus B, and is fed through breaker 52-3 powering the ESF transformer XNB01, which, in turn, powers the #1 ESF bus through its normal feeder breaker. Offsite circuit #2 consists of the Startup Transformer, which is normally fed from the Switchyard Bus A, and is fed through breaker PA 0201, powering the ESF transformer, which, in turn, powers the #2 ESF bus through its normal feeder breaker.]~~ 1

Each DG must be capable of starting, accelerating to rated speed and voltage, and connecting to its respective ~~ESF bus~~ 6.9kV Shutdown Board on detection of ~~bus~~ board undervoltage. This will be accomplished within ~~[~~10~~]~~ seconds. Each DG must also be capable of accepting required loads within the assumed loading sequence intervals, and continue to operate until offsite power can be restored to the ~~ESF buses~~ 6.9kV Shutdown Board. These capabilities are required to be met from a variety of initial conditions such as DG in standby with the engine hot and DG in standby with the engine at ambient conditions. ~~Additional DG capabilities must be demonstrated to meet required Surveillance, e.g., capability of the DG to revert to standby status on an ECCS signal while operating in parallel test mode.~~ 1 2 1 5

Proper sequencing of loads, ~~[~~including tripping of nonessential loads,~~]~~ is a required function for DG OPERABILITY. 2

The AC sources in one train must be separate and independent (to the extent possible) of the AC sources in the other train. For the DGs, separation and independence are complete.

~~For the offsite AC sources, separation and independence are to the extent practical. A circuit may be connected to more than one ESF bus, with fast transfer capability to the other circuit OPERABLE, and not violate separation criteria. A circuit that is not connected to an ESF bus is required to have OPERABLE fast transfer interlock mechanisms to at least two ESF buses to support OPERABILITY of that circuit.~~ 1

BASES

SURVEILLANCE REQUIREMENTS (continued)

has an allowable rating

Although no power factor requirements are established by this SR, the DG ~~is normally operated at a~~ power factor between ~~[~~0.8 lagging~~]~~ and ~~[~~1.0~~]~~. The ~~[~~0.8~~]~~ value is the design rating of the machine, while the ~~[~~1.0~~]~~ is an operational limitation ~~[~~to ensure circulating currents are minimized~~]~~. The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY. 1 2

~~[The 31 day Frequency for this Surveillance is consistent with Regulatory Guide 1.9 (Ref. 3).~~

~~OR~~ 7

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ 6

This SR is modified by four Notes. Note 1 indicates that diesel engine runs for this Surveillance may include gradual loading, as recommended by the manufacturer, so that mechanical stress and wear on the diesel ~~engine are~~ minimized. Note 2 states that momentary transients, because of changing board ~~bus~~ loads, do not invalidate this test. Similarly, momentary power factor transients above the limit do not invalidate the test. Note 3 indicates that this Surveillance should be conducted on only one DG at a time in order to avoid common cause failures that might result from offsite circuit or grid perturbations. Note 4 stipulates a prerequisite requirement for performance of this SR. A successful DG start must precede this test to credit satisfactory performance. 1

SR 3.8.1.4

This SR provides verification that the level of fuel oil in the engine-mounted "day" ~~day~~ tank ~~[and engine mounted tank]~~ is at or above the level at which fuel oil is automatically added. The level is expressed as an equivalent volume in gallons, and is selected to ensure adequate fuel oil for a minimum of 1 hour of DG operation at full load plus 10%. 5 2

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.9

Each DG is provided with an engine overspeed trip to prevent damage to the engine. Recovery from the transient caused by the loss of a large load could cause diesel engine overspeed, which, if excessive, might result in a trip of the engine. This Surveillance demonstrates the DG load response characteristics and capability to reject the largest single load (600kw) without exceeding predetermined voltage and frequency and while maintaining a specified margin to the overspeed trip. ~~[For this unit, the single load for each DG and its horsepower rating is as follows:]~~ This Surveillance may be accomplished by: 1 2

a. Tripping the DG output breaker with the DG carrying greater than or equal to its associated single largest post-accident load while paralleled to offsite power, or while solely supplying the ~~bus~~ board, or 1

b. Tripping its associated single largest post-accident load with the DG solely supplying the ~~bus~~ board. 1

~~As required by IEEE-308~~ Consistent with Regulatory Guide 1.9 (Ref. ~~12~~ 3), the load rejection test is acceptable if the increase in diesel speed does not exceed 75% of the difference between synchronous speed and the overspeed trip setpoint, or 15% above synchronous speed, whichever is lower. 1

The time, voltage, and frequency tolerances specified in this SR are derived from Regulatory Guide 1.9 (Ref. 3) recommendations for response during load sequence intervals. The 3 seconds specified is equal to 60% of a typical 5 second load sequence interval associated with sequencing of the largest load. The voltage and frequency specified are consistent with the design range of the equipment powered by the DG. SR 3.8.1.9.a corresponds to the maximum frequency excursion, while SR 3.8.1.9.b and SR 3.8.1.9.c are steady state voltage and frequency values to which the system must recover following load rejection. ~~[The [18 month] Frequency is consistent with the recommendation of Regulatory Guide 1.108 (Ref. 9).~~ 7

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~ 6
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~

This SR is modified by two Notes. The reason for Note 1 is that during operation with the reactor critical, performance of this SR for DGs 1A-A and 1B-B could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR. 5

Note 2 ensures that the DG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed at a power factor of ≤ ~~[0.9]~~ 0.89. This power factor is representative of the actual inductive loading a DG would see under design basis accident conditions. Under certain conditions, however, Note 2 allows the Surveillance to be conducted at a power factor other than ≤ ~~[0.9]~~ 0.89. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ ~~[0.9]~~ 0.89 results in voltages on the emergency ~~busses~~ boards that are too high. Under these conditions, the power factor should be maintained as close as practicable to ~~[0.9]~~ 0.89 while still maintaining acceptable voltage limits on the emergency ~~busses~~ boards. In other circumstances, the grid voltage may be such that the DG excitation levels needed to obtain a power factor of ~~[0.9]~~ 0.89 may not cause unacceptable voltages on the emergency ~~busses~~ boards, but the excitation levels are in excess of those recommended for the DG. In such cases, the power factor shall be maintained as close as practicable to ~~[0.9]~~ 0.89 without exceeding the DG excitation limits. 2 1 2 1 1

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:~~

~~a. Performance of the SR will not render any safety system or component inoperable,~~

~~b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems, and~~

~~c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.~~

~~---~~

6

SR 3.8.1.10

This Surveillance demonstrates the DG capability to reject a full load without overspeed tripping or exceeding the predetermined voltage limits. The DG full load rejection may occur because of a system fault or inadvertent breaker tripping. This Surveillance ensures proper engine generator load response under the simulated test conditions. This test simulates the loss of the total connected load that the DG experiences following a full load rejection and verifies that the DG does not trip upon loss of the load. These acceptance criteria provide for DG damage protection. While the DG is not expected to experience this transient during an event and continues to be available, this response ensures that the DG is not degraded for future application, including reconnection to the ~~bus~~ board if the trip initiator can be corrected or isolated. 1

~~[The [18 month] Frequency is consistent with the recommendation of Regulatory Guide 1.108 (Ref. 9) and is intended to be consistent with expected fuel cycle lengths.~~

~~OR~~

7

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 6
~~---]~~

This SR has been modified by two Notes. The reason for Note 1 is that during operation with the reactor critical, performance of this SR for DGs 1A-A and 1B-B could cause perturbation to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR. Note 2 ensures that the DG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed at a power factor of ≤ 0.89 ~~[0.9]~~. This power factor is representative of the actual inductive loading a DG would see under design basis accident conditions. Under certain conditions, however, Note 2 allows the Surveillance to be conducted at a power factor other than ≤ 0.89 ~~[0.9]~~. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ 0.89 ~~[0.9]~~ results in voltages on the emergency boards ~~busses~~ that are too high. Under these conditions, the power factor should be maintained as close as practicable to 0.89 ~~[0.9]~~ while still maintaining acceptable voltage limits on the emergency boards ~~busses~~. In other circumstances, the grid voltage may be such that the DG excitation levels needed to obtain a power factor of 0.89 ~~[0.9]~~ may not cause unacceptable voltages on the emergency boards ~~busses~~, but the excitation levels are in excess of those recommended for the DG. In such cases, the power factor shall be maintained as close as practicable to 0.89 ~~[0.9]~~ without exceeding the DG excitation limits.

5 2 1 1 2 1

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE----------------------------~~
~~The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:~~

~~a. Performance of the SR will not render any safety system or component inoperable,~~

~~b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems, and~~

~~c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.~~
~~--~~ 6

SR 3.8.1.11

As required by Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(1), this Surveillance demonstrates the as designed operation of the standby power sources during loss of the offsite source. This test verifies all actions encountered from the loss of offsite power, including shedding of the nonessential loads and energization of the emergency ~~buses~~ boards and respective loads from the DG. It further demonstrates the capability of the DG to automatically achieve the required voltage and frequency within the specified time. 1

The DG autostart time of ~~[~~10~~]~~ seconds is derived from requirements of the accident analysis to respond to a design basis large break LOCA. The Surveillance should be continued for a minimum of 5 minutes in order to demonstrate that all starting transients have decayed and stability is achieved. 2

The requirement to verify the connection and power supply of permanent and autoconnected loads is intended to satisfactorily show the relationship of these loads to the DG loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. For instance, Emergency Core Cooling Systems (ECCS) injection valves are not desired to be stroked open, or high pressure injection systems are not capable of being operated at full flow, or residual heat removal (RHR) systems performing a decay heat removal function are not desired to be realigned to the ECCS mode of operation. In lieu of actual demonstration

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ 6

This Surveillance is modified by three Notes. Note 1 states that momentary transients due to changing ~~bus~~ board loads do not invalidate this test. Similarly, momentary power factor transients above the power factor limit will not invalidate the test. The reason for Note 2 is that during operation with the reactor critical, performance of this Surveillance for DGs 1A-A and 1B-B could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR. Note 3 ensures that the DG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed at a power factor of ≤ ~~[0.9]~~ 0.89. This power factor is representative of the actual inductive loading a DG would see under design basis accident conditions. Under certain conditions, however, Note 3 allows the Surveillance to be conducted as a power factor other than ≤ ~~[0.9]~~ 0.89. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ ~~[0.9]~~ 0.89 results in voltages on the emergency ~~busses~~ boards that are too high. Under these conditions, the power factor should be maintained as close as practicable to ~~[0.9]~~ 0.89 while still maintaining acceptable voltage limits on the emergency ~~busses~~ boards. In other circumstances, the grid voltage may be such that the DG excitation levels needed to obtain a power factor of ~~[0.9]~~ 0.89 may not cause unacceptable voltages on the emergency ~~busses~~ boards, but the excitation levels are in excess of those recommended for the DG. In such cases, the power factor shall be maintained close as practicable to ~~[0.9]~~ 0.89 without exceeding the DG excitation limits.

1 5 2 1 2 1 1

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SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.15

This Surveillance demonstrates that the diesel engine can restart from a hot condition, such as subsequent to shutdown from normal Surveillances, and achieve the required voltage and frequency within ~~[~~10~~]~~ seconds. The ~~[~~10~~]~~ second time is derived from the requirements of the accident analysis to respond to a design basis large break LOCA. 2

~~[The [18 month] Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(5).~~

~~OR~~ 7

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 6

This SR is modified by two Notes. Note 1 ensures that the test is performed with the diesel sufficiently hot. The load band is provided to avoid routine overloading of the DG. Routine overloads may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY. The requirement that the diesel has operated for at least ~~[~~2~~]~~ hours at full load conditions prior to performance of this Surveillance is based on manufacturer recommendations for achieving hot conditions. Momentary transients due to changing board ~~bus~~ loads do not invalidate this test. Note 2 allows all DG starts to be preceded by an engine prelube period to minimize wear and tear on the diesel during testing. 2 1

SR 3.8.1.16

As required by Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(6), this Surveillance ensures that the manual synchronization and automatic load transfer from the DG to the offsite source can be made and the DG can be returned to ready to load status when offsite power is restored. It also ensures that the autostart logic is reset to allow the DG to reload if a

SURVEILLANCE REQUIREMENTS (continued)

subsequent loss of offsite power occurs. The DG is considered to be in ready to load status when the DG is at rated speed and voltage, the output breaker is open and can receive an autoclose signal on ~~bus~~ board undervoltage, and the load sequence timers are reset. 1

~~[The Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(6), and takes into consideration unit conditions required to perform the Surveillance.~~ 7

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 6

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the Surveillance for DGs 1A-A and 1B-B in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR. 5

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BASES

SURVEILLANCE REQUIREMENTS (continued)

~~following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for the assessment.] Credit may be taken for unplanned events that satisfy this SR.~~ 5

17

SR 3.8.1.~~18~~ 5

board

load sequence timers

5

Under accident ~~[and loss of offsite power]~~ conditions loads are sequentially connected to the ~~bus~~ by the ~~[automatic load sequencer]~~. The sequencing logic controls the permissive and starting signals to motor breakers to prevent overloading of the DGs due to high motor starting currents. The ~~[10]~~% load sequence time interval tolerance ensures that sufficient time exists for the DG to restore frequency and voltage prior to applying the next load and that safety analysis assumptions regarding ESF equipment time delays are not violated. Reference 2 provides a summary of the automatic loading of ~~ESF buses~~. 1 2 2 1

~~6.9 kV~~ Shutdown Boards

~~[The Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(2), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.~~

~~OR~~ 7

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ 6

BASES

LCO

Two qualified circuits between the offsite transmission network and the onsite Class 1E Electrical Power System and separate and independent DGs for each ~~train~~ 6.9kV Shutdown Board ensure availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an anticipated operational occurrence (AOO) or a postulated DBA. 1

~~Qualified offsite circuits are those that are described in the FSAR and are part of the licensing basis for the unit.~~ 1

~~[In addition, one required automatic load sequencer per train must be OPERABLE.]~~ 2

Each qualified offsite circuit must be physically independent, capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the ~~ESF buses~~ 6.9kV Shutdown Boards. 1 1

INSERT 8 ~~[Offsite circuit #1 consists of Safeguards Transformer B, which is supplied from Switchyard Bus B, and is fed through breaker 52-3 powering the ESF transformer XNB01, which, in turn, powers the #1 ESF bus through its normal feeder breaker. Offsite circuit #2 consists of the Startup Transformer, which is normally fed from the Switchyard Bus A, and is fed through breaker PA 0201, powering the ESF transformer, which, in turn, powers the #2 ESF bus through its normal feeder breaker.]~~ 1

Each DG must be capable of starting, accelerating to rated speed and voltage, and connecting to its respective ~~ESF bus~~ 6.9kV Shutdown Board on detection of ~~bus~~ board undervoltage. This will be accomplished within ~~[~~10~~]~~ seconds. Each DG must also be capable of accepting required loads within the assumed loading sequence intervals, and continue to operate until offsite power can be restored to the ~~ESF buses~~ 6.9kV Shutdown Board. These capabilities are required to be met from a variety of initial conditions such as DG in standby with the engine hot and DG in standby with the engine at ambient conditions. ~~Additional DG capabilities must be demonstrated to meet required Surveillance, e.g., capability of the DG to revert to standby status on an ECCS signal while operating in parallel test mode.~~ 1 2 1 5

Proper sequencing of loads, ~~[~~including tripping of nonessential loads,~~]~~ is a required function for DG OPERABILITY. 2

The AC sources in one train must be separate and independent (to the extent possible) of the AC sources in the other train. For the DGs, separation and independence are complete.

~~For the offsite AC sources, separation and independence are to the extent practical. A circuit may be connected to more than one ESF bus, with fast transfer capability to the other circuit OPERABLE, and not violate separation criteria. A circuit that is not connected to an ESF bus is required to have OPERABLE fast transfer interlock mechanisms to at least two ESF buses to support OPERABILITY of that circuit.~~ 1

BASES

SURVEILLANCE REQUIREMENTS (continued)

has an allowable
rating

Although no power factor requirements are established by this SR, the DG ~~is normally operated at a~~ power factor between [0.8 lagging] and [1.0]. The [0.8] value is the design rating of the machine, while the [1.0] is an operational limitation [to ensure circulating currents are minimized]. The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY. 1 2

~~[The 31 day Frequency for this Surveillance is consistent with Regulatory Guide 1.9 (Ref. 3).~~

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. 7

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--~~] 6

This SR is modified by four Notes. Note 1 indicates that diesel engine runs for this Surveillance may include gradual loading, as recommended by the manufacturer, so that mechanical stress and wear on the diesel engine are minimized. Note 2 states that momentary transients, because of changing board ~~bus~~ loads, do not invalidate this test. Similarly, momentary power factor transients above the limit do not invalidate the test. Note 3 indicates that this Surveillance should be conducted on only one DG at a time in order to avoid common cause failures that might result from offsite circuit or grid perturbations. Note 4 stipulates a prerequisite requirement for performance of this SR. A successful DG start must precede this test to credit satisfactory performance. 1

SR 3.8.1.4

This SR provides verification that the level of fuel oil in the engine-mounted "day" ~~day~~ tank ~~[and engine mounted tank]~~ is at or above the level at which fuel oil is automatically added. The level is expressed as an equivalent volume in gallons, and is selected to ensure adequate fuel oil for a minimum of 1 hour of DG operation at full load plus 10%. 5 2

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.9

Each DG is provided with an engine overspeed trip to prevent damage to the engine. Recovery from the transient caused by the loss of a large load could cause diesel engine overspeed, which, if excessive, might result in a trip of the engine. This Surveillance demonstrates the DG load response characteristics and capability to reject the largest single load (600kw) without exceeding predetermined voltage and frequency and while maintaining a specified margin to the overspeed trip. ~~[For this unit, the single load for each DG and its horsepower rating is as follows:]~~ This Surveillance may be accomplished by: 1 2

a. Tripping the DG output breaker with the DG carrying greater than or equal to its associated single largest post-accident load while paralleled to offsite power, or while solely supplying the ~~bus~~ board, or 1

b. Tripping its associated single largest post-accident load with the DG solely supplying the ~~bus~~ board. 1

Consistent with Regulatory Guide 1.9 ~~As required by IEEE-308~~ (Ref. ~~12~~ 3), the load rejection test is acceptable if the increase in diesel speed does not exceed 75% of the difference between synchronous speed and the overspeed trip setpoint, or 15% above synchronous speed, whichever is lower. 1

The time, voltage, and frequency tolerances specified in this SR are derived from Regulatory Guide 1.9 (Ref. 3) recommendations for response during load sequence intervals. The 3 seconds specified is equal to 60% of a typical 5 second load sequence interval associated with sequencing of the largest load. The voltage and frequency specified are consistent with the design range of the equipment powered by the DG. SR 3.8.1.9.a corresponds to the maximum frequency excursion, while SR 3.8.1.9.b and SR 3.8.1.9.c are steady state voltage and frequency values to which the system must recover following load rejection. ~~[The [18 month] Frequency is consistent with the recommendation of Regulatory Guide 1.108 (Ref. 9).~~ 7

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~----------]~~ 6

This SR is modified by two Notes. The reason for Note 1 is that during operation with the reactor critical, performance of this SR for DGs 2A-A and 2B-B could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR. 5

Note 2 ensures that the DG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed at a power factor of ≤ ~~[0.9]~~ 0.89. This power factor is representative of the actual inductive loading a DG would see under design basis accident conditions. Under certain conditions, however, Note 2 allows the Surveillance to be conducted at a power factor other than ≤ ~~[0.9]~~ 0.89. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ ~~[0.9]~~ 0.89 results in voltages on the emergency ~~busses~~ boards that are too high. Under these conditions, the power factor should be maintained as close as practicable to ~~[0.9]~~ 0.89 while still maintaining acceptable voltage limits on the emergency ~~busses~~ boards. In other circumstances, the grid voltage may be such that the DG excitation levels needed to obtain a power factor of ~~[0.9]~~ 0.89 may not cause unacceptable voltages on the emergency ~~busses~~ boards, but the excitation levels are in excess of those recommended for the DG. In such cases, the power factor shall be maintained as close as practicable to ~~[0.9]~~ 0.89 without exceeding the DG excitation limits. 2 1 2 1 1

SURVEILLANCE REQUIREMENTS (continued)

~~-----REVIEWER'S NOTE-----~~
~~The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:~~

~~a. Performance of the SR will not render any safety system or component inoperable,~~

~~b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems, and~~

~~c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.~~

~~----------~~

6

SR 3.8.1.10

This Surveillance demonstrates the DG capability to reject a full load without overspeed tripping or exceeding the predetermined voltage limits. The DG full load rejection may occur because of a system fault or inadvertent breaker tripping. This Surveillance ensures proper engine generator load response under the simulated test conditions. This test simulates the loss of the total connected load that the DG experiences following a full load rejection and verifies that the DG does not trip upon loss of the load. These acceptance criteria provide for DG damage protection. While the DG is not expected to experience this transient during an event and continues to be available, this response ensures that the DG is not degraded for future application, including reconnection to the ~~bus~~ board if the trip initiator can be corrected or isolated. 1

~~[The [18 month] Frequency is consistent with the recommendation of Regulatory Guide 1.108 (Ref. 9) and is intended to be consistent with expected fuel cycle lengths.~~

~~OR~~

7

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--~~] 6

This SR has been modified by two Notes. The reason for Note 1 is that during operation with the reactor critical, performance of this SR for DGs 2A-A and 2B-B could cause perturbation to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR. Note 2 ensures that the DG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed at a power factor of ≤ ~~[0.9]~~ 0.89. This power factor is representative of the actual inductive loading a DG would see under design basis accident conditions. Under certain conditions, however, Note 2 allows the Surveillance to be conducted at a power factor other than ≤ ~~[0.9]~~ 0.89. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ ~~[0.9]~~ 0.89 results in voltages on the emergency ~~busses~~ boards that are too high. Under these conditions, the power factor should be maintained as close as practicable to ~~[0.9]~~ 0.89 while still maintaining acceptable voltage limits on the emergency ~~busses~~ boards. In other circumstances, the grid voltage may be such that the DG excitation levels needed to obtain a power factor of ~~[0.9]~~ 0.89 may not cause unacceptable voltages on the emergency ~~busses~~ boards, but the excitation levels are in excess of those recommended for the DG. In such cases, the power factor shall be maintained as close as practicable to ~~[0.9]~~ 0.89 without exceeding the DG excitation limits.

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE----------------------------~~
~~The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:~~

~~a. Performance of the SR will not render any safety system or component inoperable,~~

~~b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems, and~~

~~c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.~~
~~---~~

6

SR 3.8.1.11

As required by Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(1), this Surveillance demonstrates the as designed operation of the standby power sources during loss of the offsite source. This test verifies all actions encountered from the loss of offsite power, including shedding of the nonessential loads and energization of the emergency ~~buses~~ boards and respective loads from the DG. It further demonstrates the capability of the DG to automatically achieve the required voltage and frequency within the specified time. 1

The DG autostart time of ~~[~~10~~]~~ seconds is derived from requirements of the accident analysis to respond to a design basis large break LOCA. The Surveillance should be continued for a minimum of 5 minutes in order to demonstrate that all starting transients have decayed and stability is achieved. 2

The requirement to verify the connection and power supply of permanent and autoconnected loads is intended to satisfactorily show the relationship of these loads to the DG loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. For instance, Emergency Core Cooling Systems (ECCS) injection valves are not desired to be stroked open, or high pressure injection systems are not capable of being operated at full flow, or residual heat removal (RHR) systems performing a decay heat removal function are not desired to be realigned to the ECCS mode of operation. In lieu of actual demonstration

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ 6

This Surveillance is modified by three Notes. Note 1 states that momentary transients due to changing ~~bus~~ board loads do not invalidate this test. Similarly, momentary power factor transients above the power factor limit will not invalidate the test. The reason for Note 2 is that during operation with the reactor critical, performance of this Surveillance for DGs 2A-A and 2B-B could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR. Note 3 ensures that the DG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed at a power factor of ≤ ~~[0.9]~~ 0.89. This power factor is representative of the actual inductive loading a DG would see under design basis accident conditions. Under certain conditions, however, Note 3 allows the Surveillance to be conducted as a power factor other than ≤ ~~[0.9]~~ 0.89. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ ~~[0.9]~~ 0.89 results in voltages on the emergency ~~busses~~ boards that are too high. Under these conditions, the power factor should be maintained as close as practicable to ~~[0.9]~~ 0.89 while still maintaining acceptable voltage limits on the emergency ~~busses~~ boards. In other circumstances, the grid voltage may be such that the DG excitation levels needed to obtain a power factor of ~~[0.9]~~ 0.89 may not cause unacceptable voltages on the emergency ~~busses~~ boards, but the excitation levels are in excess of those recommended for the DG. In such cases, the power factor shall be maintained close as practicable to ~~[0.9]~~ 0.89 without exceeding the DG excitation limits.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.15

This Surveillance demonstrates that the diesel engine can restart from a hot condition, such as subsequent to shutdown from normal Surveillances, and achieve the required voltage and frequency within ~~[~~10~~]~~ seconds. The ~~[~~10~~]~~ second time is derived from the requirements of the accident analysis to respond to a design basis large break LOCA. 2

~~[The [18 month] Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(5).~~

~~OR~~ 7

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 6

This SR is modified by two Notes. Note 1 ensures that the test is performed with the diesel sufficiently hot. The load band is provided to avoid routine overloading of the DG. Routine overloads may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY. The requirement that the diesel has operated for at least ~~[~~2~~]~~ hours at full load conditions prior to performance of this Surveillance is based on manufacturer recommendations for achieving hot conditions. Momentary transients due to changing ~~bus~~ board loads do not invalidate this test. Note 2 allows all DG starts to be preceded by an engine prelube period to minimize wear and tear on the diesel during testing. 2 1

SR 3.8.1.16

As required by Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(6), this Surveillance ensures that the manual synchronization and automatic load transfer from the DG to the offsite source can be made and the DG can be returned to ready to load status when offsite power is restored. It also ensures that the autostart logic is reset to allow the DG to reload if a

SURVEILLANCE REQUIREMENTS (continued)

subsequent loss of offsite power occurs. The DG is considered to be in ready to load status when the DG is at rated speed and voltage, the output breaker is open and can receive an autoclose signal on ~~bus~~ board undervoltage, and the load sequence timers are reset. 1

~~[The Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(6), and takes into consideration unit conditions required to perform the Surveillance.~~ 7

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~REVIEWER'S NOTE~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~]~~ 6

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the Surveillance for DGs 2A-A and 2B-B in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR. 5

SURVEILLANCE REQUIREMENTS (continued)

~~following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for the assessment.] Credit may be taken for unplanned events that satisfy this SR.~~ 5

SR 3.8.1.~~18~~ 17 5

Under accident ~~[and loss of offsite power]~~ conditions loads are sequentially connected to the board ~~bus~~ by the load sequence timers ~~[automatic load sequencer]~~. The sequencing logic controls the permissive and starting signals to motor breakers to prevent overloading of the DGs due to high motor starting currents. The 5 ~~[10]~~% load sequence time interval tolerance ensures that sufficient time exists for the DG to restore frequency and voltage prior to applying the next load and that safety analysis assumptions regarding ESF equipment time delays are not violated. Reference 2 provides a summary of the automatic loading of ~~ESF buses~~ ~~6.9 kV~~ Shutdown Boards. 1 2 2 1

~~[The Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(2), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.~~

~~OR~~ 7

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ 6

BASES

LCO (continued)

INSERT 1 ~~[Offsite circuit #1 consists of Safeguards Transformer B, which is supplied from Switchyard Bus B, and is fed through breaker 52-3 powering the ESF transformer XNB01, which, in turn, powers the #1 ESF bus through its normal feeder breaker. The second offsite circuit consists of the Startup Transformer, which is normally fed from the Switchyard Bus A, and is fed through breaker PA 0201 powering the ESF transformer, which, in turn, powers the #2 ESF bus through its normal feeder breaker.]~~ 1

s their 6.9 kV shutdown board board

The DG s must be capable of starting, accelerating to rated speed and voltage, and connecting to ~~its~~ their respective ~~ESF bus~~ 6.9 kV shutdown board on detection of ~~bus~~ board undervoltage. This sequence must be accomplished within ~~[~~10~~]~~ seconds. The DG must be capable of accepting required loads within the assumed loading sequence intervals, and continue to operate until offsite power can be restored to the ~~ESF buses~~ 6.9 kV shutdown boards. These capabilities are required to be met from a variety of initial conditions such as DG in standby with the engine hot and DG in standby at ambient conditions. 3 1 2 1

Proper sequencing of loads, including tripping of nonessential loads, is a required function for DG OPERABILITY.

~~[In addition, proper sequencer operation is an integral part of offsite circuit OPERABILITY since its inoperability impacts on the ability to start and maintain energized loads required OPERABLE by LCO 3.8.10.]~~ 4

~~It is acceptable for trains to be cross tied during shutdown conditions, allowing a single offsite power circuit to supply all required trains.~~ 1

APPLICABILITY

The AC sources required to be OPERABLE in MODES 5 and 6 and during movement of ~~[recently]~~ irradiated fuel assemblies provide assurance that: 2

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel assemblies in the core,

b. Systems needed to mitigate a fuel handling accident ~~[involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~ are available, 2

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available, and

BASES

LCO (continued)

INSERT 1

~~[Offsite circuit #1 consists of Safeguards Transformer B, which is supplied from Switchyard Bus B, and is fed through breaker 52-3 powering the ESF transformer XNB01, which, in turn, powers the #1 ESF bus through its normal feeder breaker. The second offsite circuit consists of the Startup Transformer, which is normally fed from the Switchyard Bus A, and is fed through breaker PA 0201 powering the ESF transformer, which, in turn, powers the #2 ESF bus through its normal feeder breaker.]~~ 1

s

their

6.9 kV shutdown board

board

The DG must be capable of starting, accelerating to rated speed and voltage, and connecting to ~~its~~ respective ~~ESF bus~~ on detection of ~~bus~~ undervoltage. This sequence must be accomplished within ~~[~~10~~]~~ seconds. The DG must be capable of accepting required loads within the assumed loading sequence intervals, and continue to operate until offsite power can be restored to the ~~ESF~~ ~~buses~~. These capabilities are required to be met from a variety of initial conditions such as DG in standby with the engine hot and DG in standby at ambient conditions. 3 1 2 1

6.9 kV shutdown boards

Proper sequencing of loads, including tripping of nonessential loads, is a required function for DG OPERABILITY.

~~[In addition, proper sequencer operation is an integral part of offsite circuit OPERABILITY since its inoperability impacts on the ability to start and maintain energized loads required OPERABLE by LCO 3.8.10.]~~ 4

~~It is acceptable for trains to be cross tied during shutdown conditions, allowing a single offsite power circuit to supply all required trains.~~ 1

APPLICABILITY

The AC sources required to be OPERABLE in MODES 5 and 6 and during movement of ~~[recently]~~ irradiated fuel assemblies provide assurance that: 2

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel assemblies in the core,

b. Systems needed to mitigate a fuel handling accident ~~[involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~ are available, 2

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available, and

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.4 DC Sources - Operating

BASES INSERT 1

BACKGROUND

The ~~station~~ 125 V Vital DC electrical power sub system provides the AC emergency power system with control power. It also provides both motive and control power to selected safety related equipment and preferred AC vital ~~bus~~ instrument power board power (via inverters). INSERT 2 As required by 10 CFR 50, Appendix A, GDC 17 (Ref. 1), the DC electrical power system is designed to have sufficient independence, redundancy, and testability to perform its safety functions, assuming a single failure. The DC electrical power system also conforms to the recommendations of Regulatory Guide 1.6 (Ref. 2) and IEEE-308 (Ref. 3). 1 1

The [125~~/250~~] Vital VDC electrical power sub system consists of two independent and redundant safety related Class 1E DC electrical power ~~subsystems~~ trains (INSERT 3 ~~[Train A and Train B]~~). Each ~~subsystem~~ train consists of [two] 125 VDC batteries ~~[(each battery [50]% capacity)]~~, the associated battery charger(s) for each battery, and all the associated control equipment and interconnecting cabling. 2 1 1

INSERT 4 [~~The 250 VDC source is obtained by use of the two 125 VDC batteries connected in series.~~ Additionally there is [one] spare battery charger ~~per subsystem~~ INSERT 5, which provides backup service in the event that the preferred battery charger is out of service. If the spare battery charger is substituted for one of the preferred battery chargers, then the requirements of independence and redundancy between ~~subsystems~~ trains are maintained.] 2

During normal operation, the [125~~/250~~] Vital VDC load is powered from the battery chargers with the batteries floating on the system. In case of loss of normal power to the battery charger, the DC load is automatically powered from the station batteries. 2 1

The ~~[Train A and Train B]~~ Vital DC electrical power ~~subsystems~~ trains provide the control power for its associated Class 1E AC power load group, ~~[4.16]~~ 6.9 kV ~~switchgear,~~ Shutdown Boards and [480] V load centers. The DC electrical power ~~subsystems~~ trains also provide DC electrical power to the inverters, which in turn power the AC vital ~~buses~~ instrument power boards. 2 1 2 1 1 1

The DC power distribution system is described in more detail in Bases for LCO 3.8.9, "Distribution System - Operating," and LCO 3.8.10, "Distribution Systems - Shutdown."

BASES

BACKGROUND (continued)

each Vital battery

When desired, ~~the~~ charger can be placed in the equalize mode. The equalize mode is at a higher voltage than the float mode and charging current is correspondingly higher. The battery charger is operated in the equalize mode after a battery discharge or for routine maintenance. Following a battery discharge, the battery recharge characteristic accepts current at the current limit of the battery charger (if the discharge was significant, e.g., following a battery service test) until the battery terminal voltage approaches the charger voltage setpoint. Charging current then reduces exponentially during the remainder of the recharge cycle. Lead-calcium batteries have recharge efficiencies of greater than 95%, so once at least 105% of the ampere-hours discharged have been returned, the battery capacity would be restored to the same condition as it was prior to the discharge. This can be monitored by direct observation of the exponentially decaying charging current or by evaluating the amp-hours discharged from the battery and amp-hours returned to the battery. 1 1

INSERT 7

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the U FSAR, Chapter ~~[~~6~~]~~ (Ref. 5) and Chapter ~~[~~15~~]~~ (Ref. 6), assume that Engineered Safety Feature (ESF) systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the DGs, emergency auxiliaries, and control and switching during all MODES of operation. 1 2 1

The OPERABILITY of the DC sources is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining the DC sources OPERABLE during accident conditions in the event of:

a. An assumed loss of all offsite AC power or all onsite AC power and

b. A worst-case single failure.

The DC sources satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The Vital DC electrical power ~~subsystems~~ trains, each ~~subsystem~~ train consisting of ~~[~~two~~]~~ batteries, battery charger ~~[~~for each battery~~]~~ and the corresponding control equipment and interconnecting cabling supplying power to the associated ~~bus~~ board within the ~~subsystem~~ train are required to be OPERABLE to ensure the availability of the required power to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. Loss of any DC electrical power ~~subsystem~~ train does not prevent the minimum safety function from being performed (Ref. 4). 1 2 1 2 1 1

INSERT 8 1

BASES

LCO (continued)

Vital train

An OPERABLE DC electrical power ~~subsystem~~ requires all required batteries and respective chargers to be operating and connected to the associated DC board ~~bus~~(~~e~~s). 1 1

APPLICABILITY

The DC electrical power sources are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure safe unit operation and to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients and

b. Adequate core cooling is provided, and containment integrity and other vital functions are maintained in the event of a postulated DBA.

The DC electrical power requirements for MODES 5 and 6 are addressed in the Bases for LCO 3.8.5, "DC Sources - Shutdown."

ACTIONS

<u>A.1, A.2, and A.3</u>

train vital

Condition A represents one ~~subsystem~~ with one ~~[~~or two~~]~~ battery chargers inoperable (e.g., the voltage limit of SR 3.8.4.1 is not maintained). The ACTIONS provide a tiered response that focuses on returning the battery to the fully charged state and restoring a fully qualified charger to OPERABLE status in a reasonable time period. Required Action A.1 requires that the battery terminal voltage be restored to greater than or equal to the minimum established float voltage within 2 hours. This time provides for returning the inoperable charger to OPERABLE status or providing an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage. Restoring the battery terminal voltage to greater than or equal to the minimum established float voltage provides good assurance that, within ~~[~~12~~]~~ hours, the battery will be restored to its fully charged condition (Required Action A.2) from any discharge that might have occurred due to the charger inoperability. 1 2 2

~~-----REVIEWER'S NOTE-----~~
~~A plant that cannot meet the 12 hour Completion Time due to an inherent battery charging characteristic can propose an alternate time equal to 2 hours plus the time experienced to accomplish the exponential charging current portion of the battery charge profile following the service test (SR 3.8.4.3).~~
~~----------~~ 4

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.4 DC Sources - Operating

BASES

INSERT 1 sub

BACKGROUND

The ~~station~~ 125 V Vital DC electrical power sub system provides the AC emergency power system with control power. It also provides both motive and control power to selected safety related equipment and preferred AC vital ~~bus~~ instrument power board power (via inverters). INSERT 2 As required by 10 CFR 50, Appendix A, GDC 17 (Ref. 1), the DC electrical power system is designed to have sufficient independence, redundancy, and testability to perform its safety functions, assuming a single failure. The DC electrical power system also conforms to the recommendations of Regulatory Guide 1.6 (Ref. 2) and IEEE-308 (Ref. 3). 1 1

Vital sub

The ~~[~~125~~/250]~~ Vital VDC electrical power sub system consists of two independent and redundant safety related Class 1E DC electrical power ~~subsystems~~ trains (~~[Train A and Train B]~~ INSERT 3). Each ~~subsystem~~ train consists of ~~[~~two~~]~~ 125 VDC batteries ~~[(each battery [50]% capacity)]~~, the associated battery charger(s) for each battery, and all the associated control equipment and interconnecting cabling. 2 1 1

INSERT 4 ~~[The 250 VDC source is obtained by use of the two 125 VDC batteries connected in series.~~ Additionally there is ~~[~~one~~]~~ spare battery charger ~~per subsystem~~ INSERT 5, which provides backup service in the event that the preferred battery charger is out of service. If the spare battery charger is substituted for one of the preferred battery chargers, then the requirements of independence and redundancy between ~~subsystems~~ trains are maintained. ~~]~~ 2

Vital

During normal operation, the ~~[~~125~~/250]~~ Vital VDC load is powered from the battery chargers with the batteries floating on the system. In case of loss of normal power to the battery charger, the DC load is automatically powered from the station batteries. 2 1

Vital trains

The ~~[Train A and Train B]~~ Vital DC electrical power ~~subsystems~~ trains provide the control power for its associated Class 1E AC power load group, ~~[4.16]~~ 6.9 kV ~~switchgear,~~ Shutdown Boards and ~~[~~480~~]~~ V load centers. The DC electrical power ~~subsystems~~ trains also provide DC electrical power to the inverters, which in turn power the AC vital ~~buses~~ instrument power boards. 2 1 2 1 1 1

The DC power distribution system is described in more detail in Bases for LCO 3.8.9, "Distribution System - Operating," and LCO 3.8.10, "Distribution Systems - Shutdown."

BASES

BACKGROUND (continued)

each Vital battery

When desired, ~~the~~ charger can be placed in the equalize mode. The equalize mode is at a higher voltage than the float mode and charging current is correspondingly higher. The battery charger is operated in the equalize mode after a battery discharge or for routine maintenance. Following a battery discharge, the battery recharge characteristic accepts current at the current limit of the battery charger (if the discharge was significant, e.g., following a battery service test) until the battery terminal voltage approaches the charger voltage setpoint. Charging current then reduces exponentially during the remainder of the recharge cycle. Lead-calcium batteries have recharge efficiencies of greater than 95%, so once at least 105% of the ampere-hours discharged have been returned, the battery capacity would be restored to the same condition as it was prior to the discharge. This can be monitored by direct observation of the exponentially decaying charging current or by evaluating the amp-hours discharged from the battery and amp-hours returned to the battery. 1

INSERT 7 1

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the U FSAR, Chapter ~~[~~6~~]~~ (Ref. 5) and Chapter ~~[~~15~~]~~ (Ref. 6), assume that Engineered Safety Feature (ESF) systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the DGs, emergency auxiliaries, and control and switching during all MODES of operation. 1 2 1

The OPERABILITY of the DC sources is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining the DC sources OPERABLE during accident conditions in the event of:

a. An assumed loss of all offsite AC power or all onsite AC power and

b. A worst-case single failure.

The DC sources satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The Vital DC electrical power trains ~~subsystems~~, each train ~~subsystem~~ consisting of ~~[~~two~~]~~ batteries, battery charger ~~[~~for each battery~~]~~ and the corresponding control equipment and interconnecting cabling supplying power to the associated board ~~bus~~ within the train ~~subsystem~~ are required to be OPERABLE to ensure the availability of the required power to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. Loss of any DC electrical power train ~~subsystem~~ does not prevent the minimum safety function from being performed (Ref. 4). 1 2 1 2 1 1

INSERT 8 1

BASES

LCO (continued)

An OPERABLE Vital DC electrical power ~~subsystem~~ train requires all required batteries and respective chargers to be operating and connected to the associated DC ~~bus~~ board(~~e~~s). 1 1

APPLICABILITY

The DC electrical power sources are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure safe unit operation and to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients and

b. Adequate core cooling is provided, and containment integrity and other vital functions are maintained in the event of a postulated DBA.

The DC electrical power requirements for MODES 5 and 6 are addressed in the Bases for LCO 3.8.5, "DC Sources - Shutdown."

ACTIONS

<u>A.1, A.2, and A.3</u>

Condition A represents one ~~subsystem~~ train with one ~~[~~or two~~]~~ vital battery chargers inoperable (e.g., the voltage limit of SR 3.8.4.1 is not maintained). The ACTIONS provide a tiered response that focuses on returning the battery to the fully charged state and restoring a fully qualified charger to OPERABLE status in a reasonable time period. Required Action A.1 requires that the battery terminal voltage be restored to greater than or equal to the minimum established float voltage within 2 hours. This time provides for returning the inoperable charger to OPERABLE status or providing an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage. Restoring the battery terminal voltage to greater than or equal to the minimum established float voltage provides good assurance that, within ~~[~~12~~]~~ hours, the battery will be restored to its fully charged condition (Required Action A.2) from any discharge that might have occurred due to the charger inoperability. 1 2 2

~~-----REVIEWER'S NOTE-----~~
~~A plant that cannot meet the 12 hour Completion Time due to an inherent battery charging characteristic can propose an alternate time equal to 2 hours plus the time experienced to accomplish the exponential charging current portion of the battery charge profile following the service test (SR 3.8.4.3).~~
~~-----~~ 4

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3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Inverters - Operating

3.8.2.1

LCO 3.8.7 The required Train A and Train B inverters shall be OPERABLE.

3.8.2.1 Note *

T

---NOTE---

~~[[One/t~~wo~~]~~ inverter~~[s]~~ may be disconnected from ~~[its/~~their~~]~~ associated DC ~~bus~~ source for ≤ 24 hours to perform an equalizing charge on ~~[its/~~their~~]~~ associated ~~[~~common~~]~~ battery, provided:

a. The associated AC vital ~~bus~~(~~es~~) instrument power board ~~[is/~~are~~]~~ energized from ~~[its/~~their~~]~~ ~~[Class 1E constant voltage source transformers]~~ ~~[~~inverter using internal AC source~~]~~, and

b. All other AC vital ~~buses~~ instrument power boards are energized from their associated OPERABLE inverters connected to their DC source. ~~]~~

----

2 1

Applicability

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
ACTION b	A. One ~~[~~required~~]~~ inverter inoperable.	A.1	--------------NOTE-------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating" with any AC vital ~~bus~~ instrument power board de-energized. ------------------------------------- Restore inverter to OPERABLE status.	24 hours	2 1
ACTION b	B. Required Action and associated Completion Time not met.	B.1 AND	Be in MODE 3.	6 hours	

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.8.2.1	SR 3.8.7.1 Verify correct inverter voltage, ~~[~~frequency~~]~~, and alignment to required AC vital ~~buses~~ instrument power boards.	~~[7 days~~ 1 ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	2 3

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3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Inverters - Operating

3.8.2.1 LCO 3.8.7 The required Train A and Train B inverters shall be OPERABLE.

3.8.2.1 Note *

T

-----NOTE-----

~~[[One/t~~wo~~]~~ inverter~~[s]~~ may be disconnected from ~~[its/~~their~~]~~ associated DC ~~bus~~ source for ≤ 24 hours to perform an equalizing charge on ~~[its/~~their~~]~~ associated ~~[~~common~~]~~ battery, provided:

a. The associated AC vital ~~bus~~(~~es~~) instrument power board ~~[is/~~are~~]~~ energized from ~~[its/~~their~~]~~ ~~[Class 1E constant voltage source transformers]~~ ~~[~~inverter using internal AC source~~]~~, and

b. All other AC vital ~~buses~~ instrument power boards are energized from their associated OPERABLE inverters connected to their DC source. ~~]~~

----

2 1

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION b	A. One ~~[~~required~~]~~ inverter inoperable.	A.1 -----NOTE----- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating" with any AC vital ~~bus~~ instrument power board de-energized. ---------- Restore inverter to OPERABLE status.	24 hours
ACTION b	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND	6 hours

2 1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.8.2.1	SR 3.8.7.1 Verify correct inverter voltage, ~~[~~frequency~~]~~, and alignment to required AC vital ~~buses~~ instrument power boards.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 1	2 3

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B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.7 Inverters - Operating

instrument power boards

BASES

BACKGROUND

The inverters are the preferred source of power for the AC vital ~~buses~~ instrument power boards because of the stability and reliability they achieve. INSERT 1 The function of the inverter is to provide AC electrical power to the vital ~~buses~~ instrument power boards. The inverters can be powered from an internal AC source/rectifier or from the station battery. The station batter~~y~~ies provide~~s~~ an uninterruptible power source for the instrumentation and controls for the Reactor Protective System (RPS) and the Engineered Safety Feature Actuation System (ESFAS). Specific details on inverters and their operating characteristics are found in the U FSAR, Chapter ~~[~~8~~]~~ (Ref. 1). 1 1 1 1 2

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the U FSAR, Chapter ~~[~~6~~]~~ (Ref. 2) and Chapter ~~[~~15~~]~~ (Ref. 3), assume Engineered Safety Feature systems are OPERABLE. The inverters are designed to provide the required capacity, capability, redundancy, and reliability to ensure the availability of necessary power to the RPS and ESFAS instrumentation and controls so that the fuel, Reactor Coolant System, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems. 1 2

The OPERABILITY of the inverters is consistent with the initial assumptions of the accident analyses and is based on meeting the design basis of the unit. This includes maintaining required AC vital ~~buses~~ instrument power boards OPERABLE during accident conditions in the event of: 1

a. An assumed loss of all offsite AC electrical power or all onsite AC electrical power and

b. A worst case single failure.

Inverters are a part of the distribution system and, as such, satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The inverters ensure the availability of AC electrical power for the systems instrumentation required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA.

1

INSERT 1

instrument power boards

There are two unit inverters and one spare inverter per channel, each capable of supplying its associated AC vital ~~buses~~, making a total of twelve inverters. Inverters 1-I and 2-I are connected to DC Channel I, inverters 1-II and 2-II are connected to DC Channel II, inverters 1-III and 2-III are connected to DC Channel III, and inverters 1-IV and 2-IV are connected to DC Channel IV. The spare inverter for a specified channel may be substituted for one of the two inverters of the same channel.

BASES

LCO (continued)

eight inverters (two per channel)

Maintaining the required inverters OPERABLE ensures that the redundancy incorporated into the design of the RPS and ESFAS instrumentation and controls is maintained. The ~~four inverters [(two per train)]~~ ensure an uninterruptible supply of AC electrical power to the AC vital ~~buses~~ instrument power boards even if the ~~4.16 kV~~ 480 volt safety ~~buses~~ boards are de-energized. 1 2 1

OPERABLE inverters require the associated vital ~~bus~~ board to be powered by the inverter with output voltage and frequency within tolerances, and power input to the inverter from a [125 VDC] station battery. Alternatively, power supply may be from an internal AC source via rectifier as long as the station battery is available as the uninterruptible power supply. 1

This LCO is modified by a Note that allows ~~[one/~~two] inverters to be disconnected from a [common] battery for ≤ 24 hours, if the vital ~~bus(es)~~ instrument power board is powered from a n ~~[Class 1E constant voltage transformer or~~ inverter using internal AC source] during the period and ~~all other~~ the remaining required inverters are operable. This allows an equalizing charge to be placed on one battery. If the inverters were not disconnected, the resulting voltage condition might damage the inverter[s]. These provisions minimize the loss of equipment that would occur in the event of a loss of offsite power. The 24 hour time period for the allowance minimizes the time during which a loss of offsite power could result in the loss of equipment energized from the affected AC vital ~~bus~~ instrument power board while taking into consideration the time required to perform an equalizing charge on the battery bank. 2 1 1 3 1

The intent of this Note is to limit the number of inverters that may be disconnected. Only those inverters associated with the single battery undergoing an equalizing charge may be disconnected. All ~~other~~ remaining required inverters must be aligned to their associated batteries, regardless of the number of inverters or unit design. 1

APPLICABILITY

The inverters are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients and

b. Adequate core cooling is provided, and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

Inverter requirements for MODES 5 and 6 are covered in the Bases for LCO 3.8.8, "Inverters - Shutdown."

BASES

ACTIONS

A.1

instrument power board

With a required inverter inoperable, its associated AC vital ~~bus~~ becomes inoperable until it is [manually] re-energized from its ~~[Class 1E constant voltage source transformer or~~ inverter using internal AC source]. 1 2

For this reason a Note has been included in Condition A requiring the entry into the Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating." This ensures that the vital ~~bus~~ is re-energized within ~~2~~ hours. 1 1

8 board

Required Action A.1 allows 24 hours to fix the inoperable inverter and return it to service. The 24 hour limit is based upon engineering judgment, taking into consideration the time required to repair an inverter and the additional risk to which the unit is exposed because of the inverter inoperability. This has to be balanced against the risk of an immediate shutdown, along with the potential challenges to safety systems such a shutdown might entail. When the AC vital ~~bus~~ is powered from its constant voltage source, it is relying upon interruptible AC electrical power sources (offsite and onsite). The uninterruptible inverter source to the AC vital ~~buses~~ is the preferred source for powering instrumentation trip setpoint devices. 1 1

instrument power board

instrument power board

B.1 and B.2

If the inoperable devices or components cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.8.7.1

This Surveillance verifies that the inverters are functioning properly with all required circuit breakers closed and AC vital ~~buses~~ energized from the inverter. The verification of proper voltage and frequency output ensures that the required power is readily available for the instrumentation of the RPS and ESFAS connected to the AC vital ~~buses~~. ~~[The 7 day Frequency takes into account the redundant capability of the inverters and other indications available in the control room that alert the operator to inverter malfunctions.~~ 1 1 4

instrument power boards

instrument power boards

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.7 Inverters - Operating

BASES

BACKGROUND

instrument power boards

INSERT 1

instrument power boards

ies

The inverters are the preferred source of power for the AC vital ~~buses~~ because of the stability and reliability they achieve. The function of the inverter is to provide AC electrical power to the vital ~~buses~~. The inverters can be powered from an internal AC source/rectifier or from the station battery. The station batter~~y~~ provide~~s~~ an uninterruptible power source for the instrumentation and controls for the Reactor Protective System (RPS) and the Engineered Safety Feature Actuation System (ESFAS). Specific details on inverters and their operating characteristics are found in the U FSAR, Chapter ~~[~~8~~]~~ (Ref. 1).

1 1 1 1 1 2

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the U FSAR, Chapter ~~[~~6~~]~~ (Ref. 2) and Chapter ~~[~~15~~]~~ (Ref. 3), assume Engineered Safety Feature systems are OPERABLE. The inverters are designed to provide the required capacity, capability, redundancy, and reliability to ensure the availability of necessary power to the RPS and ESFAS instrumentation and controls so that the fuel, Reactor Coolant System, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

1 2

The OPERABILITY of the inverters is consistent with the initial assumptions of the accident analyses and is based on meeting the design basis of the unit. This includes maintaining required AC vital ~~buses~~ OPERABLE during accident conditions in the event of:

instrument power boards

1

a. An assumed loss of all offsite AC electrical power or all onsite AC electrical power and

b. A worst case single failure.

Inverters are a part of the distribution system and, as such, satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The inverters ensure the availability of AC electrical power for the systems instrumentation required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA.

1

INSERT 1

instrument power boards

There are two unit inverters and one spare inverter per channel, each capable of supplying its associated AC vital ~~buses~~, making a total of twelve inverters. Inverters 1-I and 2-I are connected to DC Channel I, inverters 1-II and 2-II are connected to DC Channel II, inverters 1-III and 2-III are connected to DC Channel III, and inverters 1-IV and 2-IV are connected to DC Channel IV. The spare inverter for a specified channel may be substituted for one of the two inverters of the same channel.

BASES

LCO (continued)

eight inverters (two per channel)

Maintaining the required inverters OPERABLE ensures that the redundancy incorporated into the design of the RPS and ESFAS instrumentation and controls is maintained. The ~~four inverters [(two per train)]~~ ensure an uninterruptible supply of AC electrical power to the AC vital ~~buses~~ even if the ~~4.16 kV~~ safety ~~buses~~ are de-energized. 1 2 1

instrument power boards 480 volt boards board

OPERABLE inverters require the associated vital ~~bus~~ to be powered by the inverter with output voltage and frequency within tolerances, and power input to the inverter from a ~~[~~125 VDC~~]~~ station battery. Alternatively, power supply may be from an internal AC source via rectifier as long as the station battery is available as the uninterruptible power supply. 1

instrument power board n the remaining required

This LCO is modified by a Note that allows ~~[one/~~two~~]~~ inverters to be disconnected from a ~~[~~common~~]~~ battery for ≤ 24 hours, if the vital ~~bus~~(es) is powered from a ~~[Class 1E constant voltage transformer or~~ inverter using internal AC source~~]~~ during the period and ~~all other~~ inverters are ~~operable~~. This allows an equalizing charge to be placed on one battery. If the inverters were not disconnected, the resulting voltage condition might damage the inverter~~[s]~~. These provisions minimize the loss of equipment that would occur in the event of a loss of offsite power. The 24 hour time period for the allowance minimizes the time during which a loss of offsite power could result in the loss of equipment energized from the affected AC vital ~~bus~~ while taking into consideration the time required to perform an equalizing charge on the battery bank. 2 1 1 3 1

instrument power board

remaining required

The intent of this Note is to limit the number of inverters that may be disconnected. Only those inverters associated with the single battery undergoing an equalizing charge may be disconnected. All ~~other~~ inverters must be aligned to their associated batteries, regardless of the number of inverters or unit design. 1

APPLICABILITY

The inverters are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients and

b. Adequate core cooling is provided, and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

Inverter requirements for MODES 5 and 6 are covered in the Bases for LCO 3.8.8, "Inverters - Shutdown."

BASES

ACTIONS

A.1

instrument power board

With a required inverter inoperable, its associated AC vital ~~bus~~ becomes inoperable until it is ~~[~~manually~~]~~ re-energized from its ~~[Class 1E constant voltage source transformer or~~ inverter using internal AC source~~]~~. 1 2

For this reason a Note has been included in Condition A requiring the entry into the Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating." This ensures that the vital ~~bus~~ is re-energized within ~~2~~ hours. 1 1

instrument power board

8

Required Action A.1 allows 24 hours to fix the inoperable inverter and return it to service. The 24 hour limit is based upon engineering judgment, taking into consideration the time required to repair an inverter and the additional risk to which the unit is exposed because of the inverter inoperability. This has to be balanced against the risk of an immediate shutdown, along with the potential challenges to safety systems such a shutdown might entail. When the AC vital ~~bus~~ is powered from its constant voltage source, it is relying upon interruptible AC electrical power sources (offsite and onsite). The uninterruptible inverter source to the AC vital ~~buses~~ is the preferred source for powering instrumentation trip setpoint devices. 1 1

instrument power board

instrument power boards

B.1 and B.2

If the inoperable devices or components cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.8.7.1

This Surveillance verifies that the inverters are functioning properly with all required circuit breakers closed and AC vital ~~buses~~ energized from the inverter. The verification of proper voltage and frequency output ensures that the required power is readily available for the instrumentation of the RPS and ESFAS connected to the AC vital ~~buses~~. ~~[The 7 day Frequency takes into account the redundant capability of the inverters and other indications available in the control room that alert the operator to inverter malfunctions.~~ 1 1 4

instrument power boards

instrument power boards

CTS

3.8 ELECTRICAL POWER SYSTEMS

3.8.8 Inverters - Shutdown

instrument power

3.8.2.2 LCO 3.8.8 ~~[Inverters shall be OPERABLE to support the onsite Class 1E AC vital bus electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems - Shutdown."]~~

Two

~~[One]~~ inverter~~[s]~~ shall be OPERABLE~~.]~~ to support one train of the 120 V AC vital board electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems – Shutdown." 1

~~REVIEWER'S NOTE~~
~~This second option above applies for plants having a pre-ITS licensing basis (CTS) for electrical power requirements during shutdown conditions that required only [one] inverter to be OPERABLE. The "[or more]" optional wording in Condition A is also eliminated for this case. The first option above is adopted for plants that have a CTS requiring the same level of DC electrical power subsystem/inverter support as is required for power operating conditions.~~ 2

Applicability
DOC M01

APPLICABILITY: MODES 5 and 6,
During movement of ~~[recently]~~ irradiated fuel assemblies. 1

ACTIONS

DOC M01

-----NOTE-----
LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC M03 A. One ~~[or more]~~ ~~[required]~~ inverter~~[s]~~ inoperable. DOC L02	~~A.1 Declare affected required feature(s) inoperable.~~ ~~OR~~ ~~A.2.1~~ A.1 Suspend movement of ~~[recently]~~ irradiated fuel assemblies. AND	~~Immediately~~ 3 1 Immediately 3

SEQUOYAH UNIT 1

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC L02		~~A.2.2~~ A.2 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration. AND ~~A.2.3~~ A.3 Initiate action to restore required inverters to OPERABLE status.	Immediately Immediately	3 3

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.8.2.2 DOC M02	SR 3.8.8.1	Verify correct inverter voltage, ~~[~~frequency,~~]~~ and alignments to required AC vital ~~buses~~ ~~boards~~ instrument power boards.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	1 2 5

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CTS

Inverters - Shutdown
3.8.8

3.8 ELECTRICAL POWER SYSTEMS

3.8.8 Inverters - Shutdown

3.8.2.2 LCO 3.8.8 ~~[Inverters shall be OPERABLE to support the onsite Class 1E AC vital bus electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems - Shutdown."]~~ instrument power

Two ~~[One]~~ inverter~~[~~s~~]~~ shall be OPERABLE ~~.]~~ to support one train of the 120 V AC vital board electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems – Shutdown." (1)

~~REVIEWER'S NOTE~~
~~This second option above applies for plants having a pre-ITS licensing basis (CTS) for electrical power requirements during shutdown conditions that required only [one] inverter to be OPERABLE. The "[or more]" optional wording in Condition A is also eliminated for this case. The first option above is adopted for plants that have a CTS requiring the same level of DC electrical power subsystem/inverter support as is required for power operating conditions.~~ (2)

Applicability
DOC M01 APPLICABILITY: MODES 5 and 6,
During movement of ~~[recently]~~ irradiated fuel assemblies. (1)

ACTIONS

NOTE

DOC M01 LCO 3.0.3 is not applicable.

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC M03 DOC L02	A. One ~~[or more]~~ ~~[required]~~ inverter~~[~~s~~]~~ inoperable.	~~A.1 Declare affected required feature(s) inoperable.~~ ~~OR~~ A.1 ~~A.2.1~~ Suspend movement of ~~[recently]~~ irradiated fuel assemblies. AND	~~Immediately~~ Immediately	(3) (1) (3)

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC L02		~~A.2.2~~ A.2 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.	Immediately	3
		AND		
		~~A.2.3~~ A.3 Initiate action to restore required inverters to OPERABLE status.	Immediately	3

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.8.2.2 DOC M02	SR 3.8.8.1	Verify correct inverter voltage, ~~[~~frequency,~~]~~ and alignments to required AC vital ~~buses~~ ~~boards~~ instrument power boards.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	1 2 5

Licensee Response/NRC Response/NRC Question Closure

Id	**387**
NRC Question Number	**VKG024**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**12/1/2014**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**12/1/2014 8:20 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**185**
NRC Question Number	**VKG025**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.9**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number (s)	
NRC Reviewer Supervisor	**Jake Zimmerman**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

ITS 3.8.9, Condition A states: "One or more Unit 1 AC electrical power distribution subsystems inoperable." ITS 3.8.9, Condition B states: "One or more AC vital subsystems inoperable."

The ITS Bases Table B 3.8.9-1 provides a list of the AC electrical power distribution boards and AC vital boards of Train A and Train B, for Units 1 and 2.

The footnote of Table B 3.8.9-1 (*Each train of the AC and DC electrical power distribution systems is a subsystem) is not clear. The intent of Condition A and Condition B is that distribution subsystems or boards of only one train is inoperable.

Please revise as necessary the following:

1. **Revise the footnote of Table B 3.8.9-1 to redefine/clarify distribution subsystems.**
2. **Revise Bases and ITS, as necessary, based on redefinition of distribution subsystems**
3. **Ensure Bases Table 3.8.9-1 reflects *appropriate* subsystems**

Attach File 1	
Attach File 2	
Issue Date	**8/13/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	

Date Added	**8/13/2014 9:37 AM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**383**
NRC Question Number	**VKG025**
Select Application	**Licensee Response**
Attachment 1	**RAI VKG025 Attachment 1 R1.pdf** (4MB)
Attachment 2	
Response Statement	**In response to VKG025, the ITS 3.8.9 Specifications and Bases, on pages 561-566 and 569–590 of Enclosure 2, Volume 13, will be revised. Specifically, ITS 3.8.9 LCO will be revised to state, "Two electrical power distribution trains shall be OPERABLE." ITS 3.8.9 Condition A will be revised to state, "One or more AC electrical power distribution subsystems inoperable due to one or more Unit 1 [Unit 2 for the Unit 2 technical specifications] AC shutdown boards inoperable." ITS 3.8.9 Condition C will be revised to state, "One or more vital DC electrical power distribution subsystems inoperable." ITS 3.8.9 Condition D will be revised to state, "One or more AC electrical power distribution subsystems inoperable due to one or more Unit 2 [Unit 1 for the Unit 2 technical specifications] AC shutdown boards inoperable." ITS 3.8.9 Condition E will be revised to state, "One or more DG DC electrical power distribution panels inoperable." ITS 3.8.9 Condition F will be revised to state, "Required Action and associated Completion Time not met." As a result of the revision to ISTS LCO 3.8.9, a new Justification for Deviation (JFD) 5 will be added to the ITS 3.8.9 Justification for Deviations Section, on page 567. Additionally, JFD 5 indicators will be added to the ISTS markups. Additional changes to the ITS 3.8.9 Specification are associated with changes in nomenclature (i.e., changing AC vital subsystems to AC vital instrument power distribution subsystems). JFD indicators will be added, as needed, to the right hand margin of the ISTS markups to align with the Justification for Deviations**

associated with each change.

The ITS 3.8.9 Bases Background Section will be revised to clarify what constitutes an electrical power distribution subsystem and explain the relationship between electrical power distribution subsystems and trains. An insert (Insert 6) will be added to explain the relationship and actions required if a board or motor control center (MCC) not reflected on ITS Table B 3.8.9-1 is out of service. A redundant paragraph following the description of the AC electrical power distribution subsystem will be deleted. As a result of the deletion, a new JFD 8 will be added to the ITS 3.8.9 Bases Justification for Deviations Section, on page 591 of Enclosure 2, Volume 13. JFD 8 indicators will be added, as well. The ITS 3.8.9 Bases LCO and Actions Section will be revised to align with changes made to ITS 3.8.9 Specifications. An insert (Insert 7) will be added to the LCO Section to clarify the electrical power distribution subsystems required to meet the LCO statement, Two electrical power distribution trains shall be OPERABLE." Additionally, the ITS 3.8.9 Bases Action Section for Action A.1 will be revised to remove the phrase "in one train" so that the first sentence reads, "With one or more Unit [Unit 2 for the Unit 2 technical specifications] required AC boards (except AC vital boards), inoperable and a loss of function has not occurred, the remaining AC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe condition, assuming no single failure." As a result of the revision, a new JFD 9 will be added to the ITS 3.8.9 Bases Justification for Deviations Section, on page 591 of Enclosure 2, Volume 13. JFD 9 indicators will be added, as well. ITS Table B 3.8.9-1 will be revised (Revised Insert 5) to remove the footnote at the bottom of the table; reflect the appropriate electrical power distribution boards as required in CTS 3.8.1.1, CTS 3.8.2.1, and CTS 3.8.2.3; and reorder the subsystems to align with the order of their descriptions in the Bases

Background Section. Additional changes to the ITS 3.8.9 Bases are associated with changes in nomenclature (i.e., changing AC vital subsystems to AC vital instrument power distribution subsystems). JFD indicators will be added, as needed, to the right hand margin of the ISTS Bases markups to align with the Justification for Deviations associated with each change.

The ITS 3.8.9 Discussion of Changes, on pages 553-559 of Enclosure 2, Volume 13, were reviewed and revisions will be made to align with changes made to the Specification.

The ITS 3.8.10 Specifications and Bases, on pages 618-623 and 626-635 of Enclosure 2, Volume 13, will be revised to align with changes made to ITS 3.8.9 Specifications and Bases. Specifically, ITS 3.8.10 Condition B will be revised to state, "One or more required DG DC electrical power distribution panels inoperable," (similar to the change to ITS 3.8.9 Condition E). Additionally, the phrase "AC vital" will be revised to "AC vital instrument."

The ITS 3.8.10 Discussion of Changes, on pages 612-616 of Enclosure 2, Volume 13, were reviewed and revisions will be made to align with changes made to the Specification.

During review for RAI VKG025, it was discovered that the previously submitted ITS 3.8.9 Condition C allows more than one 125-volt DC board to be inoperable. CTS 3.8.2.3 Action a states, in part, "With one 125-volt D.C. board inoperable or not energized, restore the inoperable board to OPERABLE and energized status within 2 hours or be in at least HOT STANDBY within the next 6 hours." This is a less restrictive change and is not justified in a corresponding DOC. As a result, the CTS markups, on pages 547 and 552 of Enclosure 2, Volume 13, will be revised to indicate that CTS 3.8.2.3 Action a is being changed in ITS 3.8.9 Condition C to

allow 2 hours to restore one or more inoperable 125-volt DC boards to OPERABLE status. Additionally, a new DOC L02 will be added to the ITS 3.8.9 Discussion of Changes Section, on page 559 of Enclosure 2, Volume 13, to justify the change to CTS 3.8.2.3 Action a. DOC L02 indicators will be added to the CTS markups.

Also during review, it was discovered that DOC LA04 stated that information contained in CTS 3.8.2.1 Footnote # would be relocated to the ITS 3.8.9 Bases. The Bases does not contain this information. Therefore, the paragraph describing a vital DC electrical power distribution subsystem in the ITS 3.8.9 Bases Background Section, on pages 569 and 580 of Enclosure 2, Volume 13, will be revised to include this information.

Additionally, RAI VKG025 states that, "The intent of Condition A and Condition B is that distribution subsystems or boards of only one train is inoperable." The following information is provided concerning this statement. ISTS 3.8.9 Condition A states, "One or more AC electrical power distribution subsystems inoperable." Condition A does not state that the inoperable subsystems are only in one train of the AC electrical power distribution subsystem. ISTS 3.8.9 Condition E states, "Two or more electrical power distribution subsystems inoperable that result in a loss of safety function." Both Condition A and Condition E address a situation with more than one electrical power distribution subsystem inoperable. According to ITS Chapter 1.0, Use and Application, all applicable Conditions are required to be entered for an LCO. If it is discovered that the inoperability of more than one electrical power distribution subsystem results in a loss of safety function, then entry into Conditions A and E would be required. If it is discovered that the inoperability does not result in a loss of safety function, then entry into Condition A is all that is required regardless of the number of inoperable trains.

Therefore, ISTS Condition A provides Required Actions if one or more AC electrical power distribution subsystems are inoperable and a loss of safety function has not occurred. It is not the intent of ISTS Condition A to be applicable to only one inoperable train of AC electrical power distribution subsystems. The same logic is applicable to ISTS 3.8.9 Condition B.

See Attachment 1 for the draft revised CTS 3.8.2.3 markups, ITS 3.8.9 DOC L02, ISTS Specifications and Bases markups, ITS 3.8.9 Bases Inserts 6 and 7, and ITS 3.8.9 JFD 8. The changes to the ITS submittal have been annotated with red text for inserted letters or words and where deletions have occurred, the text has been lined through and highlighted.

Response Date/Time	**11/24/2014 1:05 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**11/24/2014 12:05 PM**
Date Modified	
Modified By	

ITS   A01   ITS 3.8.9

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTI0N - OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.8.9   3.8.2.3 The following D.C. vital battery channels shall be energized and OPERABLE: LA01

~~CHANNEL I — Consisting of 125 - volt D.C. board No. I~~, 125 - volt D.C. battery bank No. I* and a full capacity charger.

~~CHANNEL II — Consisting of 125 - volt D.C. board No. II~~, 125 - volt D.C. battery bank No. II*, and a full capacity charger.

~~CHANNEL III — Consisting of 125 - volt D.C. board No. III~~, 125 - volt D.C. battery bank No. III*, and a full capacity charger.

~~CHANNEL IV — Consisting of 125 - volt D.C. board No. IV~~, 125 - volt D.C. battery bank No. IV*, and a full capacity charger.   See ITS 3.8.4

Applicability   APPLICABILITY: MODES 1, 2, 3 and 4.

ACTIONS   ACTION: or more   L02

ACTION C   a. With one or more 125-volt D.C. board inoperable, restore the inoperable board to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD

ACTION F   SHUTDOWN within the following 30 hours.

b. With one 125-volt D.C. battery bank and/or its charger inoperable, restore the inoperable battery bank and/or charger to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.   See ITS 3.8.4

*D.C. Battery Bank V may be substituted for any other Battery Bank as needed.   See ITS 3.8.4

ITS A01 ITS 3.8.9

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.8.9 3.8.2.3 The following D.C. vital battery channels shall be OPERABLE and energized: LA01

~~CHANNEL I~~ ~~Consisting of 125 -volt D.C. board No. I~~, 125 - volt D.C. battery bank No. I* and a full capacity charger.

~~CHANNEL II~~ ~~Consisting of 125 - volt D.C. board No. II~~, 125 - volt D.C. battery bank No. II*, and a full capacity charger.

~~CHANNEL III~~ ~~Consisting of 125 - volt D.C. board No. III~~, 125 - volt D.C. battery bank No. III*, and a full capacity charger.

~~CHANNEL IV~~ ~~Consisting of 125 - volt D.C. board No. IV~~, 125 - volt D. C. battery bank No. IV*, and a full capacity charger. See ITS 3.8.4

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTIONS ACTION: or more L02

ACTION C a. With one 125-volt D.C. board inoperable or not energized, restore the inoperable board to OPERABLE and energized status within 2 hours or be in at least HOT STANDBY within the

ACTION F next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With one 125-volt D.C. battery bank and/or its charger inoperable or not energized, restore the inoperable battery bank and/or charger to OPERABLE and energized status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. See ITS 3.8.4

SURVEILLANCE REQUIREMENTS

In accordance with the Surveillance Frequency Control Program LA02

SR 3.8.9.1 4.8.2.3.1 Each D.C. bus train shall be determined OPERABLE and energized ~~with tie breakers open between redundant busses~~ ~~at least once per 7 days~~ by verifying correct breaker alignment, indicated power availability from the charger and battery, and voltage on the bus ~~of greater than or equal to 125 volts.~~ LA03 See ITS 3.8.4 LA05

4.8.2.3.2** Each 125-volt battery bank and charger shall be demonstrated OPERABLE: See ITS 3.8.4 and 3.8.6

a. At least once per 7 days by:

1. Verifying that the parameters in Table 4.8-2 meet the Category A limits, and

* D.C. Battery Bank V may be substituted for any other Battery Bank as needed.
** This surveillance includes Battery Bank V, but not Charger V. See ITS 3.8.4

DISCUSSION OF CHANGES
ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications - Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS does not contain specific ACTIONS for the condition where a diesel generator (DG) DC distribution subsystem is inoperable. However, the CTS definition of OPERABLE-OPERABILITY, CTS 1.19, states, in part, that a system, subsystem, train, or component or device shall be OPERABLE or have OPERABILITY when all necessary auxiliary equipment that are required for the system, subsystem, train, component or device to perform its function(s) are also capable of performing their related support function(s). ITS 3.8.9, ACTION E specifically states that when a DG DC ~~distribution subsystem~~ is inoperable to declare the associated DG inoperable immediately. This changes the CTS by specifically stating the CTS 1.19 requirement in ITS LCO 3.8.9.

electrical power distribution panel

instrument

The purpose of ITS 3.8.9 is to ensure the necessary AC, vital DC, DG DC, and AC vital electrical power distribution subsystems are available to provide emergency electrical power to ensure the fuel, Reactor Coolant System (RCS), and containment design limits are not exceeded and to mitigate postulated events. The change is acceptable since it is consistent with the requirements in CTS 1.19 that all attendant equipment must be capable of performing its related support function to support a required feature. Although not explicitly stated in CTS, this action is always applied due to the application of CTS 1.19. This change is designated as administrative because it does not result in technical changes to the CTS.

A03 CTS 3.8.2.1 ACTION a states, in part, that with less than the above complement of AC boards OPERABLE and energized, to restore the inoperable boards to OPERABLE status within 8 hours. ITS 3.8.9 Required Action A.1 allows 8 hours to restore ~~the associated unit's~~ AC electrical power distribution subsystem(s) to OPERABLE status. In addition, Required Action A.1 includes a Note that requires entry into applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources – Operating," for vital DC ~~Sources~~ made inoperable by inoperable power

AC electrical

distribution subsystems. This changes the CTS by explicitly requiring the

electrical power trains

AC electrical

compensatory actions for DC ~~Sources~~ to be taken if made inoperable by inoperable power distribution subsystems. The discussion for limiting the Required Actions to the associated unit's AC boards is contained in DOC L01.

shutdown

This change is acceptable because no changes are made to CTS requirements. The change in format from the CTS to the ITS maintains the technical requirements. The addition of the Note only acts as a reminder to enter the appropriate actions if the emergency bus which supplies the Train A or Train B

Enclosure 2, Volume 13, Rev. 0, Page 553 of 638

battery charger becomes de-energized. In the event an emergency board is inoperable such that a Train A or Train B battery charger were inoperable, ITS LCO 3.0.6 would allow taking only the Distribution System - Operating ACTIONS; taking exception to complying with the DC Sources - Operating ACTIONS. Since the Distribution System - Operating ACTIONS may not be sufficiently conservative in this event (i.e., a battery charger may be without power), specific direction to take appropriate ACTIONS for the DC Sources - Operating is added (ITS 3.8.9, Note to ACTION A) when there is no power to support the associated required battery charger. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 4.8.1.1.3 requires, in part, that the 125 volt DC distribution panel for each DG be demonstrated OPERABLE. ITS SR 3.8.9.1 requires, in part, verifying correct breaker alignments and voltage to the 125 volt DC distribution subsystem ~~for each DG~~. This changes the CTS by requiring correct breaker alignment verification and correct voltage for the DG DC ~~bus~~ electrical power distribution subsystem.

The purpose of CTS 4.8.1.1.3 is to provide assurance that necessary power to required supported systems is available with sufficient capacity, capability, redundancy, and reliability to ensure the fuel, RCS, and containment design limits are not exceeded and postulated accidents are mitigated. This change is acceptable because it provides additional assurance that the panels associated with the DG DC bus electrical power distribution subsystem are OPERABLE. This change is designated as more restrictive because it adds a new Surveillance Requirement to the CTS for verification of correct breaker alignment and voltage.

M02 CTS 3.8.2.1 ACTION a states that with less than the above complement of AC boards OPERABLE and energized, to restore the inoperable boards to OPERABLE status within 8 hours. CTS 3.8.2.3 ACTION a states that with one 125 volt DC board inoperable, to restore the inoperable boards to OPERABLE status within 2 hours. However, there are no limitations to preclude a loss of function due to numerous concurrently inoperable AC and DC boards. ITS 3.8.9 ACTION G has been added, requiring entry into ITS 3.0.3 if the loss of two or more required electrical power distribution subsystems result in a loss of safety function. This changes CTS by adding an explicit Action to enter LCO 3.0.3 for a loss of two or more electrical power distribution subsystems that result in a loss of safety function.

The purpose of the CTS ACTIONS is to limit the time the unit can operate under these conditions. CTS 3.8.2.3 ACTION a specifies the compensatory actions for one inoperable DC board. With two inoperable DC boards, CTS 3.8.2.3 does not provide any actions and entry into LCO 3.0.3 would be required. CTS 3.8.2.1 ACTION a is applicable to all inoperable AC boards even if there is a loss of safety function. Certain combinations of inoperable AC and DC electrical power distribution subsystems result in a loss of safety function (e.g., an inoperable Train A AC electrical power distribution subsystem in combination with an

DISCUSSION OF CHANGES
ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

inoperable Train B vital DC electrical power distribution subsystem). ITS 3.8.9 includes ACTION G, which requires immediate entry into LCO 3.0.3 if the loss of one or more required electrical power distribution subsystems boards results in a loss of safety function. ITS 3.8.9 Required Action G.1 preserves the intent of ITS LCO 3.0.3 and reflects an additional restriction on plant operation. This change is designated as more restrictive because an explicit action has been added which requires entry into LCO 3.0.3 with any combination of required AC and/or DC boards inoperable that results in a loss of safety function.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.8.1.1.3.b.5 requires, in part, a separate 125 volt DC distribution panel to be OPERABLE for each DG. CTS 3.8.2.1 requires, in part, the AC electrical boards to be OPERABLE and lists the specific AC shutdown boards and AC vital instrument power board channels, including the applicable nominal voltage. CTS 3.8.2.3 requires, in part, vital DC boards to be OPERABLE and lists the specific boards and includes the nominal voltage. ITS LCO 3.8.9 requires the applicable electrical power distribution subsystems to be OPERABLE. This changes the CTS by moving the specific names of the buses and the associated nominal bus voltages (i.e., 6900 V, 480 V, 125 V, and 120 V) from the CTS to the ITS Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. ITS 3.8.9 retains the requirement for the required distribution subsystems to be OPERABLE. In addition, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. The Technical Specification Bases Control Program in Chapter 5 controls changes to the Bases, requiring an evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA02 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.8.1.1.3 requires, in part, verification that the 125 volt DC distribution panel for each diesel generator is demonstrated OPERABLE. CTS 4.8.2.1 requires, in part, the specified AC boards to be determined OPERABLE and energized at least once per 7 days by verifying correct breaker alignment and indicated voltage on the busses. CTS 4.8.2.3.1 requires, in part, each DC bus train to be determined OPERABLE and energized at least once per 7 days by verifying correct breaker alignment, indicated power availability from the charger and battery, and voltage on the bus. DOC M01 discusses addition of a surveillance requirement to verify correct alignments and voltage for the DG

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DISCUSSION OF CHANGES
ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

DC distribution subsystem with a frequency of 7 days. ITS SR 3.8.9.1 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for these SRs and associated Bases to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LA03 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 3.8.2.1 requires the AC electrical boards to be OPERABLE and energized "with tie breakers open between redundant boards." CTS 4.8.2.1 also requires the AC boards to be determined OPERABLE and energized from AC sources "with tie breakers open between redundant busses" by verifying correct breaker alignment and indicated voltage on the buses. CTS 4.8.2.3.1 requires, in part, the DC bus trains to be determined OPERABLE and energized "with tie breakers open between redundant buses". ITS LCO 3.8.9 requires the applicable electrical power distribution subsystems to be OPERABLE and ITS SR 3.8.9.1 requires the verification of correct breaker alignments and voltage to required AC, vital DC, DG DC, and AC vital instrument electrical power distribution subsystems. This changes the CTS by moving the procedural detail that the boards must have their tie breakers open between redundant boards from the CTS to the ITS Bases.

The removal of these details for meeting Technical Specification requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the electrical power distribution subsystems to be OPERABLE and requires the verification of correct breaker alignments and voltage to required AC, vital DC, DG DC, and AC vital instrument electrical power distribution subsystems. In addition, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. The Technical Specification Bases Control Program in Chapter 5 controls changes to the Bases. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal

of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LA04 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.8.2.1 states, in part, that the specified A.C. boards shall be determined OPERABLE by verifying correct breaker alignment. CTS 3.8.2.1 includes Note # that allows D.C. Channel V to be substituted for any one channel of channels I-IV, thus verification of correct breaker alignment is required when Channel V is substituted. ITS SR 3.8.9.1 does not contain this design information. This changes the CTS by moving the details that DC channel V can be substituted for any one of channels I-IV from the CTS to the ITS Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. ITS 3.8.9 retains the requirement for the required distribution subsystems to be OPERABLE. In addition, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. The Technical Specification Bases Control Program in Chapter 5 controls changes to the Bases, requiring an evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA05 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.8.2.3.1 requires, in part, each DC bus to be determined OPERABLE by verifying voltage of greater than or equal to 125 volt DC on the bus. ITS SR 3.8.9.1 requires, in part, verification of correct breaker alignment and voltage to the DG DC electrical power distribution subsystems. This changes the CTS by removing the specified voltage limit from the surveillance and placing it in the Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to verify the correct voltage to each diesel generator 125 volt DC distribution panel and to each vital DC board. In addition, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. The Technical Specification Bases Control Program in Chapter 5 controls changes to the Bases. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

<u>LESS RESTRICTIVE CHANGES</u>

L01 CTS 3.8.2.1 ACTION a requires that with less than the listed AC electrical boards OPERABLE and energized to restore the inoperable boards to OPERABLE status within 8 hours. ITS LCO 3.8.9 ACTION A requires that with one or more

DISCUSSION OF CHANGES
ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

~~associated unit's~~ AC electrical power distribution subsystems ~~boards(s)~~ inoperable due to one or more of the associated unit's AC shutdown boards inoperable to restore AC electrical power distribution subsystem(s) to OPERABLE status within 8 hours. ITS 3.8.9 ACTION D requires that when one or more ~~opposite unit's~~ AC electrical power distribution subsystems ~~boards~~ are inoperable due to one or more of the opposite unit's AC shutdown boards inoperable to declare the associated supported required feature(s) inoperable immediately. This changes the CTS by providing a separate ACTION to declare the required supported feature(s) inoperable and follow the applicable ACTIONS for the affected shared system LCOs when the opposite unit's required AC boards are inoperable.

The safety function of the Standby AC Power System is to supply power to support the functioning of components and systems required to assure that (1) fuel design limits and reactor coolant pressure boundary design conditions are not exceeded due to anticipated operational occurrences, and (2) the core is cooled and vital functions are maintained in the event of postulated accidents, subject to loss of the Preferred Power System and subject to any single failure in the Standby Power System. To accomplish its safety function, the onsite Class 1E AC distribution system supplies electrical power to two power trains for each unit. Each power train includes two Class 1E 6.9 kV shutdown boards powered from one of two separate and independent offsite power lines or a dedicated onsite DG. Two DGs in one train can provide the safety related functions to mitigate a loss-of-coolant accident (LOCA) in one unit and safely shut down the other unit. The core cooling and containment cooling system loads are unitized to the respective unit's 6.9 kV shutdown boards. Although the core cooling systems and containment systems credited in the mitigation of an anticipated operational occurrence (AOO) or postulated Design Basis Accident (DBA) are unitized (not shared with the opposite unit) and powered from the associated unit's shutdown boards, some safety-related systems (e.g., Essential Raw Cooling Water (ERCW), Component Cooling (CCS), Emergency Gas Treatment (EGTS), Auxiliary Building Gas Treatment, (ABGTS), Control Room Emergency Ventilation (CREVS), and Control Room HVAC (CRACS)) are shared between the units. The AC sources for these loads are distributed across both unit's shutdown boards. Therefore, in addition to requiring the associated unit's boards to be OPERABLE; the opposite unit's boards supplying power to a required shared system component is also required to be OPERABLE. The purpose of CTS 3.8.2.1 ACTION a is to limit the time AC boards can be inoperable. The proposed change maintains the CTS ACTIONS and allowed outage time for the associated unit's AC shutdown boards, and proposes a new ACTION that changes the allowed outage time for the opposite unit's AC shutdown boards. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. These changes are acceptable because the Required Actions associated with the required features are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation, while providing time to repair the inoperable features. If the necessary repairs cannot be made within the established Completion Time, the applicable Conditions for the affected shared system LCOs establish the Required Actions to exit the MODE of Applicability for that inoperable required feature. This change is acceptable because the provided ACTIONS effect restoration of the opposite unit's AC shutdown boards

DISCUSSION OF CHANGES
ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

shutdown

commensurate with the importance of maintaining these AC boards capable of supporting the associated unit's required feature(s). This change is designated as less restrictive, because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L02 (*Category 4 - Relaxation of Required Action*) CTS 3.8.2.3 ACTION a. states, “With one 125-volt D.C. board inoperable, restore the inoperable board to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.” For more than one 125-volt DC board inoperable, CTS 3.8.2.3 does not contain a specific requirement; therefore, entry into LCO 3.0.3 is required. ITS 3.8.9 CONDITION C provides Required Actions for one or more vital DC electrical power distribution subsystems inoperable. ITS 3.8.9 Required Action C.1 requires restoration of vital DC electrical power distribution subsystem(s) to OPERABLE status within 2 hours. Additionally, ITS 3.8.9 ACTION G requires entry into LCO 3.0.3, immediately, if two or more inoperable electrical power distribution subsystems result in a loss of safety function. This changes the CTS by allowing more than one 125-volt DC board to be inoperable, provides an additional hour to restore inoperable 125-volt DC boards to OPERABLE status, and eliminates the requirement to enter LCO 3.0.3 if more than one 125-volt DC board is inoperable and a loss of safety function has not occurred.

The purpose of CTS 3.8.2.3 is to ensure that two trains (subsystems) of the vital DC electrical power distribution system (four 125-volt DC boards, two per train) are capable of supplying the associated loads during a design bases accident (DBA). This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering that only a small amount of time is provided to restore the required features, and the low probability of a DBA occurring during the repair period. Allowing an additional hour to restore one or more inoperable vital DC electrical power distribution subsystems (or more than one 125-volt DC board) is appropriate as it may avoid a shutdown, a unit transient, while the vital DC electrical power distribution subsystem is not in full working order. The ITS requires immediate entry into LCO 3.0.3 if the loss of more than one vital DC electrical power distribution system results in a loss of safety function, therefore, all safety analysis assumptions are being met. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems - Operating

3.8.1.1
3.8.2.1
3.8.2.3

LCO 3.8.9 Two ~~Train A and Train B AC, DC,~~ vital ~~and AC vital~~ ~~, and diesel generator (DG) DC~~ ~~bus~~ electrical power distribution ~~subsystems~~ trains shall be OPERABLE. ~~1~~ 5

Applicability
3.8.1.1
3.8.2.1
3.8.2.3

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more ~~Unit 1~~ AC electrical power distribution subsystems inoperable due to one or more Unit 1 AC shutdown boards inoperable.	A.1 --------------NOTE-------------- Enter applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources - Operating," for vital DC electrical power trains made inoperable by inoperable AC electrical power distribution subsystems. -------------------------------------	
	Restore ~~Unit 1~~ AC electrical power distribution subsystem(s) to OPERABLE status.	8 hours
B. One or more AC vital ~~buses~~ instrument power distribution subsystems inoperable.	B.1 Restore AC vital ~~bus~~ instrument power distribution subsystem(s) to OPERABLE status.	~~2~~ 8 hours
C. One ~~or more~~ vital DC electrical power distribution subsystems inoperable.	C.1 Restore vital DC electrical power distribution subsystem~~(s)~~ to OPERABLE status.	2 hours

Margin references: 3.8.2.1 ACTION a. / DOC A03 (Condition A); 3.8.2.1 ACTION a. (A.1 restore); 3.8.2.1 ACTION a. (Condition B); 3.8.2.3 ACTION a. / DOC L02 (Condition C). Right margin: ~~2~~, 2, 1, 1, ~~2~~, 1, 1.

STET

INSERT 1 2

2 **INSERT 1**

DOC L01	D. One or more ~~Unit 2~~ AC electrical power distribution subsystems inoperable due to one or more Unit 2 AC shutdown boards inoperable.	D.1	Declare associated required feature(s) inoperable.	Immediately
DOC A02	E. One or more ~~required~~ DG DC ~~subsystems~~ electrical power distribution panels inoperable.	E.1	Declare associated supported DG inoperable.	Immediately

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ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
3.8.2.1 ACTION a. 3.8.2.3 ACTION a.	F ~~D~~. Required Action and associated Completion Time ~~for Condition A, B, or C~~ not met.	F ~~D~~.1	Be in MODE 3.	6 hours	2
		AND			
		F ~~D~~.2	Be in MODE 5.	36 hours	
DOC M02	G ~~E~~. Two or more electrical power distribution subsystems inoperable that result in a loss of safety function.	G ~~E~~.1	Enter LCO 3.0.3.	Immediately	2

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.8.2.1 4.8.2.3.1 DOC M01	SR 3.8.9.1	Verify correct breaker alignments and voltage to ~~[required]~~ AC, vital DC, DG DC, and AC vital ~~bus~~ instrument electrical power distribution subsystems.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	3 1 4

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems - Operating

Two

~~vital~~ | ~~, and diesel generator (DG) DC~~

3.8.1.1
3.8.2.1
3.8.2.3

LCO 3.8.9 ~~Train A and Train B AC, DC,~~ ~~and~~ ~~AC vital~~ ~~bus~~ electrical power distribution ~~subsystems~~ shall be OPERABLE. ~~4~~ 5

trains

Applicability
3.8.1.1
3.8.2.1
3.8.2.3

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
3.8.2.1 ACTION a. DOC A03	A. One or more ~~Unit 2~~ AC electrical power distribution subsystems inoperable. due to one or more Unit 2 AC shutdown boards inoperable	A.1 --------------NOTE-------------- Enter applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources - Operating," for vital DC electrical power trains made inoperable by inoperable AC electrical power distribution subsystems. -------------------------------------		~~2~~ 2 1 1
3.8.2.1 ACTION a.		Restore ~~Unit 2~~ AC electrical power distribution subsystem(s) to OPERABLE status.	8 hours	~~2~~
3.8.2.1 ACTION a.	B. One or more AC vital ~~buses~~ instrument power distribution subsystems inoperable.	B.1 Restore AC vital ~~bus~~ instrument power distribution subsystem(s) to OPERABLE status.	~~2~~ 8 hours	1
3.8.2.3 ACTION a. DOC L02	C. One ~~or more~~ vital DC electrical power distribution subsystem~~s~~ inoperable. STET	C.1 Restore vital DC electrical power distribution subsystem~~(s)~~ to OPERABLE status. STET	2 hours	1

INSERT 1 2

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2 **INSERT 1**

DOC L01	D. One or more ~~Unit 1~~ AC electrical power distribution subsystems inoperable due to one or more Unit 1 AC shutdown boards inoperable.	D.1 Declare associated required feature(s) inoperable.	Immediately
DOC A02	E. One or more ~~required~~ DG DC ~~subsystems~~ electrical power distribution panels inoperable.	E.1 Declare associated supported DG inoperable.	Immediately

CTS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
3.8.2.1 ACTION a. 3.8.2.3 ACTION a.	F ~~D~~. Required Action and associated Completion Time ~~for Condition A, B, or C~~ not met.	F ~~D~~.1	Be in MODE 3.	6 hours	2
		AND			
		F ~~D~~.2	Be in MODE 5.	36 hours	
DOC M02	G ~~E~~. Two or more electrical power distribution subsystems inoperable that result in a loss of safety function.	G ~~E~~.1	Enter LCO 3.0.3.	Immediately	2

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.8.2.1 4.8.2.3.1 DOC M01	SR 3.8.9.1	Verify correct breaker alignments and voltage to ~~[~~required~~]~~ AC, vital DC, DG DC, and AC vital ~~bus~~ instrument electrical power distribution subsystems.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	3 1 4

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

1. Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. Changes are made to the ISTS to reflect the interaction between an operating unit's electrical distribution subsystem and those credited features needing support from the opposite unit's associated electrical distribution subsystem.

3. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

4. ISTS SR 3.8.9.1 provides two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Therefore, the Frequency for ITS SR 3.8.9.1 is "In accordance with the Surveillance Frequency Control Program."

5. ISTS LCO 3.8.9 is modified to: "Two electrical power distribution trains shall be OPERABLE." This change is made to simplify and clarify what is required to meet the LCO. As described in the ISTS Bases, each train consists of specific AC and DC electrical power distribution subsystems. Therefore, it is unnecessary to state in ISTS LCO 3.8.9 the specific electrical power distribution subsystems of Train A and B that are required to meet the LCO.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.9 Distribution Systems - Operating

BASES

DG DC, instrument INSERT 1 vital 1

BACKGROUND

The onsite Class 1E AC, DC, and AC vital ~~bus~~ electrical power distribution systems are divided ~~by train~~ into ~~[~~two~~]~~ redundant and independent ~~AC, DC, and AC vital bus electrical power distribution subsystems.~~ ~~vital~~ trains INSERT 2 1 2 1 1 1

Each ~~The~~ AC electrical power subsystem ~~for each train~~ consists of ~~a primary Engineered Safety Feature (ESF) 4.16 kV bus~~ two 6.9 kV Shutdown Boards and ~~secondary~~ four ~~[~~480 ~~and 120]~~ V ~~buses, distribution panels, motor control centers and load centers~~ Shutdown Boards. Each ~~[4.16 kV ESF bus]~~ train of 6.9 kV Shutdown Boards has ~~at least~~ ~~[~~one separate and independent offsite source of power~~]~~ as well as a dedicated onsite diesel generator (DG) source for each 6.9 kV Shutdown Board. Each ~~[4.16 kV ESF bus]~~ 6.9 kV Shutdown Board is normally connected to a preferred offsite source. ~~After a loss of the preferred offsite power source to a 4.16 kV ESF bus, a transfer to the alternate offsite source is accomplished by utilizing a time delayed bus undervoltage relay.~~ If ~~all~~ an offsite source~~s~~ is ~~are~~ unavailable, the onsite emergency DGs suppl~~ies~~y power to the ~~4.16 kV ESF bus~~ affected 6.9 kV Shutdown Boards. Control power for the ~~4.16 kV~~ 6.9 kV Shutdown Board breakers is supplied from the Class 1E batteries. Additional description of this system may be found in the Bases for LCO 3.8.1, "AC Sources - Operating," and the Bases for LCO 3.8.4, "DC Sources - Operating." 1 2 1 1 2 1 2 1 2 1 2 1 1 1

~~The secondary AC electrical power distribution subsystem for each train includes the safety related buses, load centers, motor control centers, and distribution panels shown in Table B 3.8.9-1.~~ ~~boards~~ 8 ~~4~~

~~The~~ Each 120 VAC vital instrument power distribution subsystem~~s~~ ~~buses~~ ~~are arranged in two load groups per train~~ consists of two Unit 1 120 V AC vital instrument power boards and two Unit 2 120 V AC vital instrument power boards and are ~~normally~~ powered from the inverters. ~~The alternate power supply for the vital buses are Class 1E constant voltage source transformers powered from the same train as the associated inverter, and its use is governed by LCO 3.8.7, "Inverters - Operating." Each constant voltage source transformer is powered from a Class 1E AC bus.~~ 1

~~The~~ Each 125 V vital DC electrical power distribution subsystem consists of ~~[~~125~~]~~ two V ~~bus(es) and distribution panel(s)~~ boards. The 125 V vital DC electrical power distribution subsystem has manual access to a fifth vital battery. The fifth vital battery is intended to serve as a replacement for any one of the four 125 V DC vital batteries with no loss of system reliabilty under any mode of operation. 1 2 1

INSERT 3 1

The list of ~~all required~~ electrical power boards and distribution panels required for the DG DC, AC, vital DC and ~~vital~~ AC vital instrument electrical power distribution ~~buses [and panels]~~ subsystems is presented in Table B 3.8.9-1. 1 2 4

INSERT 6 1

1

INSERT 1

The two units share several structures and systems including the preferred and emergency (standby) electric power systems (UFSAR Chapter 8.0). The vital DC Power System is shared to the extent that a few loads (e.g., the vital inverters) in one nuclear unit are energized by the DC power channels assigned primarily to power loads of the other unit. In no case does the sharing inhibit the safe shutdown of one unit while the other unit is experiencing an accident. The Standby Power System serving each unit is divided into two redundant load groups (power trains). These power trains (Train A and Train B for each unit) supply power to safety-related equipment. Generally, the Engineered Safety Feature (ESF) loads assigned to a unit are supplied by the unit designated trains. For example, Safety Injection (SI) pump 1A-A (associated with Unit 1) is supplied by Shutdown Board 1A-A (also associated with Unit 1) while SI pump 2A-A (associated with Unit 2) is supplied by Shutdown Board 2A-A (also associated with Unit 2).

Separate and similar systems and equipment are provided for each unit when required. In certain instances, both units share systems or some components of a system. Shared systems are the exception to the unit/power system association. Because both units share the power system, one unit's power system(s) supports certain components required by the other unit (e.g., emergency gas treatment system). ~~To show the unit, train, board, and panel association, Table B 3.8.9-1 lists these power system components by train and unit designation.~~

Each electrical power distribution train consists of:
a. an AC electrical power distribution subsystem,
b. an AC vital instrument power distribution subsystem,
c. a vital DC electrical power distribution subsystem, and
d. a diesel generator (DG) DC electrical power distribution subsystem.

1

INSERT 2

~~In addition, each diesel generator (DG) has an associated DC electrical power distribution panel.~~

1

INSERT 3

Each | electrical power | consists of two | DC | s that supply power to the respective DG's auxiliary loads | dedicated

~~The~~ DG ~~125 Volt~~ DC distribution subsystem ~~includes a~~ 125 V distribution panel ~~for each DG~~. During normal operation, power is supplied to the distribution panel by a 480 VAC board through a battery charger. During emergency operation of the DG (loss of offsite power source), the distribution panel is supplied power from a ~~58 cell~~ battery. This panel supplies power for DG control, protection, and the engine DC lube oil circulating pump.

1 **INSERT 6**

[illegible]

BASES

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the U FSAR, Chapter ~~[~~6~~]~~ (Ref. 1), and in the U FSAR, Chapter ~~[~~15~~]~~ (Ref. 2), assume ESF systems are OPERABLE. The AC, vital DC, DG DC, and AC vital ~~bus~~ instrument electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems. 1 2 2 1 4

The OPERABILITY of the AC, vital DC, and DG DC, AC vital ~~bus~~ instrument electrical power distribution systems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining electrical power distribution systems OPERABLE during accident conditions in the event of: 1 4 1

a. An assumed loss of all offsite power or all onsite AC electrical power; and 3

b. A worst case single failure.

The electrical power distribution systems satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii). 1

LCO

The required electrical power distribution subsystems listed in Table B 3.8.9-1 ensure the availability of AC, vital DC, DG DC, and AC vital ~~bus~~ instrument electrical power for the systems required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. Insert 7 ~~The AC, vital DC, DG DC, and AC vital bus electrical power distribution subsystems are required to be OPERABLE.~~ 1 1 4 1 4

Maintaining ~~the Train A and Train B AC, vital DC, DG DC, and AC vital~~ two ~~bus~~ electrical power distribution ~~subsystems~~ trains OPERABLE ensures that the redundancy incorporated into the design of ESF is not defeated. Therefore, a single failure within any system or within the electrical power distribution ~~subsystems~~ trains will not prevent safe shutdown of the reactor. 1 4 4 1

OPERABLE AC electrical power distribution subsystems require the associated ~~buses, load centers, motor control centers, and distribution panels~~ boards to be energized to their proper voltages. OPERABLE vital DC and DG DC electrical power distribution subsystems require the associated ~~buses and distribution panels~~ boards and distribution panels, as applicable, to be energized to their proper voltage from either the associated battery or charger. OPERABLE AC vital ~~bus electrical~~ instrument power distribution subsystems require the associated ~~buses~~ boards to be energized to their proper voltage from the associated ~~[~~inverter via inverted DC voltage, or inverter using internal 120 volt regulated AC source~~, or Class 1E constant voltage transformer]~~. 1 2

1 4 **INSERT 7**

[illegible]

1. [illegible]
2. [illegible] instrument [illegible] instrument [illegible] instrument [illegible]
3. [illegible]
4. [illegible] 125 V [illegible]

BASES

LCO (continued)

vital DG DC,

In addition, tie breakers between redundant safety related AC, DC, and 1 4
instrument electrical
AC vital ~~bus~~ power distribution subsystems, if they exist, must be open. 1
This prevents any electrical malfunction in any power distribution subsystem from propagating to the redundant subsystem, that could cause the failure of a redundant subsystem and a loss of essential safety function(s). If any tie breakers are closed, the affected redundant electrical power distribution subsystems are considered inoperable. This applies to the onsite, safety related redundant electrical power distribution subsystems. It does not, however, preclude redundant Class 1E ~~4.16 kV buses~~ from being powered from the same offsite circuit. 1
6.9 kV Shutdown Boards

APPLICABILITY

The electrical power distribution subsystems are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and 3

b. Adequate core cooling is provided, and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

Electrical power distribution subsystem requirements for MODES 5 and 6 are covered in the Bases for LCO 3.8.10, "Distribution Systems - Shutdown."

ACTIONS

A.1

~~Unit 1~~ ~~boards~~ portions of the
instrument
electrical power distribution subsystems
due to one or more inoperable Unit 1 AC shutdown boards,

With one or more ~~Train A and B~~ ~~required~~ AC ~~buses, load centers, motor control centers, or distribution panels~~ (except AC vital ~~buses~~), ~~in one train~~ inoperable and a loss of function has not occurred, the remaining AC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining power distribution subsystems could result in the minimum required ESF functions not being supported. Therefore, the ~~required~~ AC ~~buses, load centers, motor control centers, and distribution panels~~ must be restored to OPERABLE status within 8 hours. 4 1 9 4 1 1 4 1 1

boards
portions of the
~~Unit 1~~
~~boards~~
electrical distribution subsystems

case of Unit 1 boards

Condition A worst scenario is one train without AC power (i.e., no offsite power to the train and the associated DG inoperable). In this Condition, the unit is more vulnerable to a complete loss of AC power. It is, therefore, imperative that the unit operator's attention be focused on minimizing the potential for loss of power to the remaining train by 4 4
Unit 1

BASES

ACTIONS (continued)

stabilizing the unit, and on restoring power to the affected train. The 8 hour time limit before requiring a unit shutdown in this Condition is acceptable because of:

a. The potential for decreased safety if the unit operator's attention is diverted from the evaluations and actions necessary to restore power to the affected train, to the actions associated with taking the unit to shutdown within this time limit ; and 3

b. The potential for an event in conjunction with a single failure of a redundant component in the train with AC power.

Required Action A.1 is modified by a Note that requires the applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources - Operating," to be entered for vital DC trains made inoperable by inoperable AC electrical power distribution subsystems electrical power. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for these components. Inoperability of ~~a~~ one or more AC electrical power distribution ~~system~~ subsystems can result in loss of charging power to batteries and eventual loss of DC power. This Note ensures that the appropriate attention is given to restoring charging power to batteries, if necessary, after loss of distribution subsystems. 1 1 4 1 1

B.1

With one or more AC vital ~~buses~~ subsystems instrument power distribution inoperable, and a loss of function has not yet occurred, the remaining OPERABLE AC vital ~~buses~~ subsystems portions of the instrument power distribution are capable of supporting the minimum safety functions necessary to shut down the unit and maintain it in the safe shutdown condition. Overall reliability is reduced, however, since an additional single failure could result in the minimum ~~[~~required~~]~~ ESF functions not being supported. Therefore, the ~~required~~ affected AC vital ~~bus~~ instrument power distribution subsystem(s) must be restored to OPERABLE status within ~~2~~ 8 hours by powering the ~~bus~~ subsystems from the associated ~~[~~inverter via inverted DC~~,~~ or inverter using internal 120 volt regulated AC source~~, or Class 1E constant voltage transformer]~~. 1 2 1 1 2

Condition B represents one or more AC vital ~~buses~~ subsystems instrument power distribution without power; potentially both the DC source and the associated AC source are nonfunctioning. In this situation, the unit is significantly more vulnerable to a complete loss of all noninterruptible power. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for loss of power to the remaining vital ~~buses~~ ~~subsystems~~ instrument power boards and restoring power to the affected vital ~~bus~~ ~~subsystem~~ instrument power boards. 1 1 1

BASES

ACTIONS (continued)

This ~~2~~ 8 hour limit is more conservative than Completion Times allowed for the vast majority of components that are without adequate vital AC power. Taking exception to LCO 3.0.2 for components without adequate vital AC power, that would have the Required Action Completion Times shorter than ~~2~~ 8 hours if declared inoperable, is acceptable because of: 1

a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) and not allowing stable operations to continue~~,~~; 3

b. The potential for decreased safety by requiring entry into numerous Applicable Conditions and Required Actions for components without adequate vital AC power and not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected train~~,~~; and 3

c. The potential for an event in conjunction with a single failure of a redundant component.

The ~~2~~ 8 hour Completion Time takes into account the importance to safety of restoring the AC vital ~~bus~~ subsystems instrument power distribution to OPERABLE status, the redundant capability afforded by the ~~other~~ remaining OPERABLE AC vital ~~buses~~ ~~subsystems~~ instrument power boards, and the low probability of a DBA occurring during this period. 1

C.1

STET

With one ~~or more~~ vital DC ~~buses or distribution panels~~ electrical power distribution subsystems inoperable, and a loss of function has not yet occurred, the remaining portions of the vital DC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining portions of the vital DC electrical power distribution subsystem s could result in the minimum required ESF functions not being supported. Therefore, the ~~[required]~~ vital DC ~~buses and distribution panels~~ subsystems must be restored to OPERABLE status within 2 hours by powering the ~~bus~~ subsystem from the associated battery or charger. 4 1 2

STET

Condition C represents one ~~or more~~ vital DC ~~buses or distribution panels~~ electrical power distribution subsystems without adequate DC power; potentially both with the battery significantly degraded and the associated charger nonfunctioning. In this situation, the unit is significantly more vulnerable to a complete loss of all DC power. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for loss of power to the remaining ~~trains~~ panels and restoring power to the affected ~~train.~~ panels 1

BASES

ACTIONS (continued)

This 2 hour limit is more conservative than Completion Times allowed for the vast majority of components that would be without power. Taking exception to LCO 3.0.2 for components without adequate DC power, which would have Required Action Completion Times shorter than 2 hours, is acceptable because of:

a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) while not allowing stable operations to continue~~,~~; 5 3

b. The potential for decreased safety by requiring entry into numerous applicable Conditions and Required Actions for components without DC power and not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected train~~,~~; and 3

c. The potential for an event in conjunction with a single failure of a redundant component.

The 2 hour Completion Time for vital DC electrical power distribution ~~buses~~ subsystems is consistent with Regulatory Guide 1.93 (Ref. 3). 1

INSERT 4

~~D~~F.1 and ~~D~~F.2 4

If ~~the~~ an inoperable electrical power distribution subsystem cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems. 1

~~E~~G.1 4

Condition ~~E~~G corresponds to a level of degradation in the electrical power distribution system that ~~causes~~ results in a loss of ~~required~~ safety function ~~to be lost~~. When more than one inoperable electrical power distribution subsystem results in the loss of a ~~required~~ safety function, the plant is in a condition outside the accident analysis. Therefore, no additional time is justified for continued operation. LCO 3.0.3 must be entered immediately to commence a controlled shutdown. 4 1 1

1 4

INSERT 4

due to one or more inoperable Unit 2 AC shutdown boards

D.1

instrument boards

(s)

With one or more ~~Unit 2~~ AC electrical power distribution subsystems (except AC vital) inoperable, the associated required feature(s) must be declared inoperable immediately and the ~~appropriate~~ Condition(s) entered. The Required Action~~s~~ of these ~~appropriate~~ Condition~~s~~ will determine the impact of the inoperable Unit 2 AC ~~electrical power distribution subsystem~~.

corresponding

shutdown board(s)

electrical power distribution panels

E.1

With one or more ~~required~~ DG DC ~~subsystems~~ inoperable there is no longer assurance the supported DG is able to start and perform its necessary safety function. The DG must therefore be declared inoperable immediately and the ~~appropriate~~ Condition(s) entered.

(s)

corresponding

affected

(s)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.9.1

instrument DG DC, vital sub

This Surveillance verifies that the [required] AC, DC, and AC vital ~~bus~~ electrical power distribution systems are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures the appropriate separation and independence of the electrical ~~divisions~~ is maintained, and the appropriate voltage is available to each required ~~bus~~. The verification of proper voltage availability on the ~~buses~~ ensures that the required voltage is readily available for motive as well as control functions for critical system loads connected to these ~~buses~~. ~~[The 7 day Frequency takes into account the redundant capability of the AC, DC, and AC vital bus electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.~~

~~OR~~

power distribution trains board boards

2 1 4 1 6

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~

7

REFERENCES

1. U FSAR, Chapter [6].
2. U FSAR, Chapter [15].
3. Regulatory Guide 1.93, December 1974.

1 2

Safety Related Onsite

Table B 3.8.9-1 (page 1 of 1)
AC and DC Electrical Power Distribution Systems

INSERT 5

~~TYPE~~	~~VOLTAGE~~	~~TRAIN A*~~	~~TRAIN B*~~
~~AC safety buses~~	~~[4160 V]~~	~~[ESF Bus] [NB01]~~	~~[ESF Bus] [NB02]~~
	~~[480 V]~~	~~Load Centers [NG01, NG03]~~	~~Load Centers [NG02, NG04]~~
	~~[480 V]~~	~~Motor Control Centers [NG01A, NG01I, NG01B, NG03C, NG03I, NG03D]~~	~~Motor Control Centers [NG02A, NG02I, NG02B, NG04C, NG04I, NG04D]~~
	~~[120 V]~~	~~Distribution Panels [NP01, NP03]~~	~~Distribution Panels [NP02, NP04]~~
~~DC buses~~	~~[125 V]~~	~~Bus [NK01]~~	~~Bus [NK02]~~
		~~Bus [NK03]~~	~~Bus [NK04]~~
		~~Distribution Panels [NK41, NK43, NK51]~~	~~Distribution Panels [NK42, NK44, NK52]~~
~~AC vital buses~~	~~[120 V]~~	~~Bus [NN01]~~	~~Bus [NN02]~~
		~~Bus [NN03]~~	~~Bus [NN04]~~

1

~~* Each train of the AC and DC electrical power distribution systems is a subsystem.~~ 1

1

INSERT 5

TYPE	VOLTAGE (nominal)	SR 3.8.9.1 Voltage Range	TRAIN A~~*~~ SUBSYSTEMS		TRAIN B~~*~~ SUBSYSTEMS	
Vital DC ~~battery boards~~ electrical power	125 V	≥ 129 V and ≤ 140 V	Board I	Board III	Board II	Board IV
AC ~~safety boards~~ electrical power			Unit 1	Unit 2	Unit 1	Unit 2
	6900 V	≥ 6560 V and ≤ 7260 V	SD BD 1A-A	SD BD 2A-A	SD BD 1B-B	SD BD 2B-B
	480 V	≥ 440 V and ≤ 508 V	SD BD 1A1-A 1A2-A ~~Rx MOV Bd~~ ~~1A1-A~~ ~~1A2-A~~ ~~C & A Vent Bd~~ ~~1A1-A~~ ~~Diesel Aux Bd~~ ~~1A1-A~~ ~~1A2-A~~ ~~ERCW MCC~~ ~~1A-A~~	SD BD 2A1-A 2A2-A ~~Rx MOV Bd~~ ~~2A1-A~~ ~~2A2-A~~ ~~C & A Vent Bd~~ ~~2A1-A~~ ~~Diesel Aux Bd~~ ~~2A1-A~~ ~~2A2-A~~ ~~ERCW MCC~~ ~~2A-A~~	SD BD 1B1-B 1B2-B ~~Rx MOV Bd~~ ~~1B1-B~~ ~~1B2-B~~ ~~C & A Vent Bd~~ ~~1B1-B~~ ~~Diesel Aux Bd~~ ~~1B1-B~~ ~~1B2-B~~ ~~ERCW MCC~~ ~~1B-B~~	SD BD 2B1-B 2B2-B ~~Rx MOV Bd~~ ~~2B1-B~~ ~~2B2-B~~ ~~C & A Vent Bd~~ ~~2B1-B~~ ~~Diesel Aux Bd~~ ~~2B1-B~~ ~~2B2-B~~ ~~ERCW MCC~~ ~~2B-B~~
AC vital instrument power ~~boards~~ electrical	120 V	≥ 120.6 V and ≤ 126.6 V	Unit 1 Board 1-I Board 1-III	Unit 2 Board 2-I Board 2-III	Unit 1 Board 1-II Board 1-IV	Unit 2 Board 2-II Board 2-IV
DG DC ~~boards~~ electrical power	125 V	≥ 124 V and ≤ 135 V	DG 1A-A Dist. Pnl.	DG 2A-A Dist. Pnl.	DG 1B-B Dist. Pnl.	DG 2B-B Dist. Pnl.

This page is replaced by Revised Insert 5. Changes made to INSERT 5 are illustrated on this page. Insertions are indicated by a text box with an arrow. Deletions are indicated with lines drawn through deleted text and highlighting. The subsystems in ITS Table B 3.8.9-1 have been reordered to align with the order of their description in the Bases Background Section.

1 REVISED INSERT 5

[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] instrument [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
			[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	≥ 124 V and ≤ 135 V	[illegible]	[illegible]	[illegible]	[illegible]

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.9 Distribution Systems - Operating

INSERT 1

DG DC, instrument

BASES

vital

BACKGROUND

The onsite Class 1E AC, DC, and AC vital ~~bus~~ electrical power distribution systems are divided ~~by train~~ into [two] redundant and independent ~~AC, DC, and AC vital bus electrical power distribution subsystems.~~ ~~vital~~

trains

Each

INSERT 2

four

two

~~The~~ AC electrical power subsystem ~~for each train~~ consists of ~~a primary Engineered Safety Feature (ESF) 4.16 kV bus~~ and ~~secondary~~ [480 ~~and 120~~] V ~~buses, distribution panels, motor control centers and load centers~~. Each ~~[4.16 kV ESF bus]~~ has ~~at least~~ [one separate and independent offsite source of power] as well as a dedicated onsite diesel generator (DG) source. Each ~~[4.16 kV ESF bus]~~ is normally connected to a preferred offsite source. ~~After a loss of the preferred offsite power source to a 4.16 kV ESF bus, a transfer to the alternate offsite source is accomplished by utilizing a time delayed bus undervoltage relay.~~ If ~~all~~ offsite source~~s~~ ~~are~~ unavailable, the onsite emergency DG suppl~~ies~~ power to the ~~4.16 kV ESF bus~~. Control power for the ~~4.16 kV~~ breakers is supplied from the Class 1E batteries. Additional description of this system may be found in the Bases for LCO 3.8.1, "AC Sources - Operating," and the Bases for LCO 3.8.4, "DC Sources - Operating."

6.9 kV Shutdown Boards

Shutdown Boards

train of 6.9 kV Shutdown Boards

6.9 kV Shutdown Board

for each 6.9 kV Shutdown Board

an

is

s

y

affected 6.9 kV Shutdown Boards

6.9 kV Shutdown Board

~~The secondary AC electrical power distribution subsystem for each train includes the safety related buses, load centers, motor control centers, and distribution panels~~ shown in Table B 3.8.9-1.

~~boards~~

consists of two Unit 1 120 V AC vital instrument power boards and two Unit 2 120 V AC vital instrument power boards

instrument power distribution

subsystem~~s~~

Each

~~The~~ 120 VAC vital ~~buses~~ ~~are arranged in two load groups per train~~ and are ~~normally~~ powered from the inverters. ~~The alternate power supply for the vital buses are Class 1E constant voltage source transformers powered from the same train as the associated inverter, and its use is governed by LCO 3.8.7, "Inverters - Operating." Each constant voltage source transformer is powered from a Class 1E AC bus.~~

two

vital

Each 125 V

boards

The 125 V vital DC electrical power distribution subsystem has manual access to a fifth vital battery. The fifth vital battery is intended to serve as a replacement for any one of the four 125 V DC vital batteries with no loss of system reliabilty under any mode of operation.

~~The~~ DC electrical power distribution subsystem consists of [125] V ~~bus(es) and distribution panel(s)~~.

INSERT 3

AC, vital

The list of ~~all required~~ DC and ~~vital~~ AC distribution ~~buses [and panels]~~ is presented in Table B 3.8.9-1.

subsystems

DG DC,

vital instrument electrical power

electrical power boards and distribution panels required for the

INSERT 6

1

INSERT 1

The two units share several structures and systems including the preferred and emergency (standby) electric power systems (UFSAR Chapter 8.0). The vital DC Power System is shared to the extent that a few loads (e.g., the vital inverters) in one nuclear unit are energized by the DC power channels assigned primarily to power loads of the other unit. In no case does the sharing inhibit the safe shutdown of one unit while the other unit is experiencing an accident. The Standby Power System serving each unit is divided into two redundant load groups (power trains). These power trains (Train A and Train B for each unit) supply power to safety-related equipment. Generally, the Engineered Safety Feature (ESF) loads assigned to a unit are supplied by the unit designated trains. For example, Safety Injection (SI) pump 1A-A (associated with Unit 1) is supplied by Shutdown Board 1A-A (also associated with Unit 1) while SI pump 2A-A (associated with Unit 2) is supplied by Shutdown Board 2A-A (also associated with Unit 2).

Separate and similar systems and equipment are provided for each unit when required. In certain instances, both units share systems or some components of a system. Shared systems are the exception to the unit/power system association. Because both units share the power system, one unit's power system(s) supports certain components required by the other unit (e.g., emergency gas treatment system). ~~To show the unit, train, board, and panel association, Table B 3.8.9-1 lists these power system components by train and unit designation.~~

Each electrical power distribution train consists of:
a. an AC electrical power distribution subsystem,
b. an AC vital instrument power distribution subsystem,
c. a vital DC electrical power distribution subsystem, and
d. a diesel generator (DG) DC electrical power distribution subsystem.

1

INSERT 2

~~In addition, each diesel generator (DG) has an associated DC electrical power distribution panel.~~

1

INSERT 3

Each

electrical power

consists of two

DC

s that supply power to the respective DG's auxiliary loads

~~The~~ DG ~~125 Volt~~ DC distribution subsystem ~~includes a~~ 125 V distribution panel ~~for each DG~~. During normal operation, power is supplied to the distribution panel by a 480 VAC board through a battery charger. During emergency operation of the DG (loss of offsite power source), the distribution panel is supplied power from a ~~58 cell~~ battery. This panel supplies power for DG control, protection, and the engine DC lube oil circulating pump.

dedicated

Insert Page B 3.8.9-1

1 **INSERT 6**

[illegible]

BASES

APPLICABLE SAFETY ANALYSES

U vital instrument

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter ~~[~~6~~]~~ (Ref. 1), and in the FSAR, Chapter ~~[~~15~~]~~ (Ref. 2), assume ESF systems are OPERABLE. The AC, DC, and AC vital ~~bus~~ electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems. 1 2 2 DG DC, 1 4

vital DG DC, instrument electrical

The OPERABILITY of the AC, DC, and AC vital ~~bus~~ electrical power distribution systems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining power distribution systems OPERABLE during accident conditions in the event of: 1 4 1

a. An assumed loss of all offsite power or all onsite AC electrical power, and ; 3

b. A worst case single failure.

electrical power

The distribution systems satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii). 1

LCO

electrical vital instrument DG DC,

The required power distribution subsystems listed in Table B 3.8.9-1 ensure the availability of AC, DC, and AC vital ~~bus~~ electrical power for the systems required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. ~~The AC, DC, and AC vital bus electrical power distribution subsystems are required to be OPERABLE.~~ 1 1 4

Insert 7 ~~vital~~ ~~DG DC,~~ 1 4

~~vital~~ ~~DG DC,~~ two trains

Maintaining ~~the Train A and Train B AC, DC, and AC vital~~ bus electrical power distribution ~~subsystems~~ OPERABLE ensures that the redundancy incorporated into the design of ESF is not defeated. Therefore, a single failure within any system or within the electrical power distribution ~~subsystems~~ will not prevent safe shutdown of the reactor. 1 4 4 1

trains

boards vital and DG DC and distribution panels, as applicable, instrument

OPERABLE AC electrical power distribution subsystems require the associated ~~buses, load centers, motor control centers, and distribution panels~~ to be energized to their proper voltages. OPERABLE DC electrical power distribution subsystems require the associated ~~buses and distribution panels~~ to be energized to their proper voltage from either the associated battery or charger. OPERABLE vital ~~bus electrical~~ power distribution subsystems require the associated ~~buses~~ to be energized to their proper voltage from the associated ~~[~~inverter via inverted DC voltage, inverter using internal AC source~~, or Class 1E constant voltage transformer]~~. 1 2

boards AC boards or 120 volt regulated

1 4 **INSERT 7**□

□□□e□e□tri□□□□□□er□istri□uti□n tr□ins □re re□uire□ t□ □e□□ □□□□□□□□ □□□□tr□in in□u□es□□

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□□ □□it□□ □□e□e□tri□□□□□□er□istri□uti□n su□s□stem □i□e□t□□□□□□□□ □□□□r□s□□n□

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BASES

LCO (continued)

vital DG DC, 1 4

instrument electrical

In addition, tie breakers between redundant safety related AC, DC, and AC vital ~~bus~~ power distribution subsystems, if they exist, must be open. This prevents any electrical malfunction in any power distribution subsystem from propagating to the redundant subsystem, that could cause the failure of a redundant subsystem and a loss of essential safety function(s). If any tie breakers are closed, the affected redundant electrical power distribution subsystems are considered inoperable. This applies to the onsite, safety related redundant electrical power distribution subsystems. It does not, however, preclude redundant Class 1E ~~4.16 kV buses~~ from being powered from the same offsite circuit. 1 1

6.9 kV Shutdown Boards

APPLICABILITY

The electrical power distribution subsystems are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients, and 3

;

b. Adequate core cooling is provided, and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

Electrical power distribution subsystem requirements for MODES 5 and 6 are covered in the Bases for LCO 3.8.10, "Distribution Systems - Shutdown."

ACTIONS

A.1

~~Unit 2~~ ~~boards~~ portions of the

instrument

electrical power distribution subsystems

due to one or more inoperable Unit 2 AC shutdown boards,

With one or more ~~Train A and B~~ ~~required~~ AC ~~buses, load centers, motor control centers, or distribution panels~~ (except AC vital ~~buses~~), ~~in one train~~ inoperable and a loss of function has not occurred, the remaining AC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining power distribution subsystems could result in the minimum required ESF functions not being supported. Therefore, the ~~required~~ AC ~~buses, load centers, motor control centers, and distribution panels~~ must be restored to OPERABLE status within 8 hours. 4 1 9 4 1 1 1 4 1

boards

portions of the

~~Unit 2~~

~~boards~~

electrical distribution subsystems

case

of Unit 2 boards

Condition A worst scenario is one train without AC power (i.e., no offsite power to the train and the associated DG inoperable). In this Condition, the unit is more vulnerable to a complete loss of AC power. It is, therefore, imperative that the unit operator's attention be focused on minimizing the potential for loss of power to the remaining train by 4 4

Unit 2

BASES

ACTIONS (continued)

stabilizing the unit, and on restoring power to the affected train. The 8 hour time limit before requiring a unit shutdown in this Condition is acceptable because of:

a. The potential for decreased safety if the unit operator's attention is diverted from the evaluations and actions necessary to restore power to the affected train, to the actions associated with taking the unit to shutdown within this time limit ; and 3

b. The potential for an event in conjunction with a single failure of a redundant component in the train with AC power.

Required Action A.1 is modified by a Note that requires the applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources - Operating," to be entered for vital DC electrical power trains made inoperable by inoperable AC electrical power distribution subsystems. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for these components. Inoperability of ~~a~~ one or more AC electrical power distribution subsystems ~~system~~ can result in loss of charging power to batteries and eventual loss of DC power. This Note ensures that the appropriate attention is given to restoring charging power to batteries, if necessary, after loss of distribution subsystems. 1 4 1 1 1

B.1

With one or more AC vital instrument power distribution subsystems ~~buses~~ inoperable, and a loss of function has not yet occurred, the remaining OPERABLE portions of the AC vital instrument power distribution subsystems ~~buses~~ are capable of supporting the minimum safety functions necessary to shut down the unit and maintain it in the safe shutdown condition. Overall reliability is reduced, however, since an additional single failure could result in the minimum ~~[~~required~~]~~ ESF functions not being supported. Therefore, the ~~required~~ AC vital instrument power distribution subsystem(s) ~~bus~~ must be restored to OPERABLE status within ~~2~~ 8 hours by powering the affected subsystems ~~bus~~ from the associated ~~[~~inverter via inverted DC~~,~~ or inverter using internal 120 volt regulated AC source~~, or Class 1E constant voltage transformer]~~. 1 2 1 1 2

Condition B represents one or more AC vital instrument power distribution subsystems ~~buses~~ without power; potentially both the DC source and the associated AC source are nonfunctioning. In this situation, the unit is significantly more vulnerable to a complete loss of all noninterruptible power. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for loss of power to the remaining vital instrument power boards ~~subsystems~~ ~~buses~~ and restoring power to the affected vital instrument power boards ~~subsystem~~ ~~bus~~. 1 1 1

BASES

ACTIONS (continued)

This ~~2~~ 8 hour limit is more conservative than Completion Times allowed for the vast majority of components that are without adequate vital AC power. Taking exception to LCO 3.0.2 for components without adequate vital AC power, that would have the Required Action Completion Times shorter than ~~2~~ 8 hours if declared inoperable, is acceptable because of: 1 1

a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) and not allowing stable operations to continue~~,~~; 3

b. The potential for decreased safety by requiring entry into numerous Applicable Conditions and Required Actions for components without adequate vital AC power and not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected train~~,~~; and 3

c. The potential for an event in conjunction with a single failure of a redundant component.

The ~~2~~ 8 hour Completion Time takes into account the importance to safety of restoring the AC vital ~~bus~~ subsystems instrument power distribution to OPERABLE status, the redundant capability afforded by the ~~other~~ remaining OPERABLE vital ~~buses~~ AC ~~subsystems~~ instrument power boards, and the low probability of a DBA occurring during this period. 1

C.1

STET

With one ~~or more~~ vital DC ~~buses or distribution panels~~ electrical power distribution subsystems inoperable, and a loss of function has not yet occurred, the remaining portions of the vital DC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining portions of the vital DC electrical power distribution subsystems could result in the minimum required ESF functions not being supported. Therefore, the ~~[required]~~ vital DC ~~buses and distribution panels~~ subsystems must be restored to OPERABLE status within 2 hours by powering the ~~bus~~ subsystem from the associated battery or charger. 4 1 2

STET

Condition C represents one ~~or more~~ vital DC ~~buses or distribution panels~~ electrical power distribution subsystems without adequate DC power; potentially both with the battery significantly degraded and the associated charger nonfunctioning. In this situation, the unit is significantly more vulnerable to a complete loss of all DC power. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for loss of power to the remaining ~~trains~~ panels and restoring power to the affected ~~train~~ panels. 1 1

BASES

ACTIONS (continued)

This 2 hour limit is more conservative than Completion Times allowed for the vast majority of components that would be without power. Taking exception to LCO 3.0.2 for components without adequate DC power, which would have Required Action Completion Times shorter than 2 hours, is acceptable because of:

a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) while not allowing stable operations to continue~~.~~; 5 3

b. The potential for decreased safety by requiring entry into numerous applicable Conditions and Required Actions for components without DC power and not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected train~~,~~; and 3

c. The potential for an event in conjunction with a single failure of a redundant component.

The 2 hour Completion Time for vital DC ~~buses~~ electrical power distribution subsystems is consistent with Regulatory Guide 1.93 (Ref. 3). 1

INSERT 4

~~D~~F.1 and ~~D~~F.2 4

If ~~the~~ an inoperable electrical power distribution subsystem cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems. 1

~~E~~G.1 4

Condition ~~E~~ G corresponds to a level of degradation in the electrical power distribution system that ~~causes~~ results in a ~~required~~ loss of safety function ~~to be lost~~. When more than one inoperable electrical power distribution subsystem results in the loss of a ~~required~~ safety function, the plant is in a condition outside the accident analysis. Therefore, no additional time is justified for continued operation. LCO 3.0.3 must be entered immediately to commence a controlled shutdown. 4 1 1

1 4

INSERT 4

due to one or more inoperable Unit 1 AC shutdown boards

instrument boards

D.1

(s)

With one or more ~~Unit 1~~ AC electrical power distribution subsystems (except AC vital) inoperable, the associated required feature(s) must be declared inoperable immediately and the ~~appropriate~~ Condition(s) entered. The Required Actions of these ~~appropriate~~ Conditions will determine the impact of the inoperable Unit 1 AC ~~electrical power distribution subsystem~~.

corresponding

electrical power distribution panels

shutdown board(s)

E.1

With one or more ~~required~~ DG DC ~~subsystems~~ inoperable there is no longer assurance the supported DG is able to start and perform its necessary safety function. The DG must therefore be declared inoperable immediately and the ~~appropriate~~ Condition(s) entered.

(s)

corresponding

affected

(s)

Insert Page B 3.8.9-6

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.9.1

instrument

vital DG DC,

This Surveillance verifies that the ~~[~~required~~]~~ AC, DC, and AC vital ~~bus~~ electrical power distribution sub systems are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures the appropriate separation and independence of the electrical ~~divisions~~ power distribution trains is maintained, and the appropriate voltage is available to each required ~~bus~~ board. The verification of proper voltage availability on the ~~buses~~ boards ensures that the required voltage is readily available for motive as well as control functions for critical system loads connected to these ~~buses~~ boards. ~~[The 7 day Frequency takes into account the redundant capability of the AC, DC, and AC vital bus electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.~~

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--~~ ~~]~~

2 1 4 1 6 7

REFERENCES

1. U FSAR, Chapter ~~[~~6~~]~~.
2. U FSAR, Chapter ~~[~~15~~]~~.
3. Regulatory Guide 1.93, December 1974.

1 2

~~Safety Related Onsite~~

Table B 3.8.9-1 (page 1 of 1)
AC and DC Electrical Power Distribution Systems

INSERT 5

~~TYPE~~	~~VOLTAGE~~	~~TRAIN A*~~	~~TRAIN B*~~
~~AC safety buses~~	~~[4160 V]~~	~~[ESF Bus] [NB01]~~	~~[ESF Bus] [NB02]~~
	~~[480 V]~~	~~Load Centers [NG01, NG03]~~	~~Load Centers [NG02, NG04]~~
	~~[480 V]~~	~~Motor Control Centers [NG01A, NG01I, NG01B, NG03C, NG03I, NG03D]~~	~~Motor Control Centers [NG02A, NG02I, NG02B, NG04C, NG04I, NG04D]~~
	~~[120 V]~~	~~Distribution Panels [NP01, NP03]~~	~~Distribution Panels [NP02, NP04]~~
~~DC buses~~	~~[125 V]~~	~~Bus [NK01]~~	~~Bus [NK02]~~
		~~Bus [NK03]~~	~~Bus [NK04]~~
		~~Distribution Panels [NK41, NK43, NK51]~~	~~Distribution Panels [NK42, NK44, NK52]~~
~~AC vital buses~~	~~[120 V]~~	~~Bus [NN01]~~	~~Bus [NN02]~~
		~~Bus [NN03]~~	~~Bus [NN04]~~

1

~~* Each train of the AC and DC electrical power distribution systems is a subsystem.~~ 1

1 **INSERT 5**

TYPE	VOLTAGE (nominal)	SR 3.8.9.1 Voltage Range	TRAIN A~~*~~ SUBSYSTEMS		TRAIN B~~*~~ SUBSYSTEMS	
Vital DC ~~battery boards~~ electrical power	125 V	≥ 129 V and ≤ 140 V	Board I	Board III	Board II	Board IV
AC ~~safety boards~~ electrical power			Unit 1	Unit 2	Unit 1	Unit 2
	6900 V	≥ 6560 V and ≤ 7260 V	SD BD 1A-A	SD BD 2A-A	SD BD 1B-B	SD BD 2B-B
	480 V	≥ 440 V and ≤ 508 V	SD BD 1A1-A 1A2-A	SD BD 2A1-A 2A2-A	SD BD 1B1-B 1B2-B	SD BD 2B1-B 2B2-B
			~~Rx MOV Bd 1A1-A 1A2-A~~	~~Rx MOV Bd 2A1-A 2A2-A~~	~~Rx MOV Bd 1B1-B 1B2-B~~	~~Rx MOV Bd 2B1-B 2B2-B~~
			~~C & A Vent Bd 1A1-A~~	~~C & A Vent Bd 2A1-A~~	~~C & A Vent Bd 1B1-B~~	~~C & A Vent Bd 2B1-B~~
			~~Diesel Aux Bd 1A1-A 1A2-A~~	~~Diesel Aux Bd 2A1-A 2A2-A~~	~~Diesel Aux Bd 1B1-B 1B2-B~~	~~Diesel Aux Bd 2B1-B 2B2-B~~
			~~ERCW MCC 1A-A~~	~~ERCW MCC 2A-A~~	~~ERCW MCC 1B-B~~	~~ERCW MCC 2B-B~~
AC vital instrument electrical power ~~boards~~			Unit 1	Unit 2	Unit 1	Unit 2
	120 V	≥ 120.6 V and ≤ 126.6 V	Board 1-I Board 1-III	Board 2-I Board 2-III	Board 1-II Board 1-IV	Board 2-II Board 2-IV
DG DC ~~boards~~ electrical power	125 V	≥ 124 V and ≤ 135 V	DG 1A-A Dist. Pnl.	DG 2A-A Dist. Pnl.	DG 1B-B Dist. Pnl.	DG 2B-B Dist. Pnl.

This page is replaced by Revised Insert 5. Changes made to INSERT 5 are illustrated on this page. Insertions are indicated by a text box with an arrow. Deletions are indicated with lines drawn through deleted text and highlighting. The subsystems in ITS Table B 3.8.9-1 have been reordered to align with the order of their description in the Bases Background Section.

Insert Page B 3.8.9-8

1 REVISED INSERT 5

[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] instrument [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	≥ 124 V and ≤ 135 V	[illegible]	[illegible]	[illegible]	[illegible]

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.9 BASES, DISTRIBUTION SYSTEMS - OPERATING

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

3. The punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

4. Changes are made to be consistent with changes made to the Specification.

5. Editorial changes made for enhanced clarity.

6. ISTS SR 3.8.9.1 provides two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Therefore, the Frequency for ITS SR 3.8.9.1 is "In accordance with the Surveillance Frequency Control Program."

7. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

8. This redundant information has been deleted. Following the description of the electrical power distribution subsystems is a statement that a list of all boards and distribution panels is found in Table B 3.8.9-1.

9. Changes are made to ISTS 3.8.9 Bases Action A.1 to resolve a conflict within the first sentence. The first sentence states that, "With <u>one or more</u> Train A <u>and</u> B required AC buses, load centers, motor control centers, or distribution panels (except AC vital buses), <u>in one train</u> inoperable and a loss of function has not occurred, the remaining AC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure." ISTS 3.8.9 Condition A states, "One or more AC electrical power distribution subsystems inoperable." ISTS 3.8.9 Condition E states, "Two or more electrical power distribution subsystems inoperable that result in a loss of safety function." Both Condition A and Condition E address a situation with more than one electrical power distribution subsystem inoperable. According to ITS Chapter 1.0, Use and Application, all applicable Conditions are required to be entered for an LCO. If it is discovered that the inoperability of more than one electrical power distribution subsystem results in a loss of safety function, then entry into ISTS 3.8.9 Conditions A and E would be required. If it is discovered that the inoperability does not result in a loss of safety function, then entry into ISTS 3.8.9 Condition A is all that is required regardless of the number of inoperable trains. ISTS 3.8.9 Condition A provides Required Actions if one or more AC electrical power distribution subsystems are inoperable and a loss of safety function has not occurred. It is not the intent of ISTS 3.8.9 Condition A to be applicable to only one inoperable train of AC electrical power distribution subsystems. Therefore, the phrase, "in one train," has been deleted.

DISCUSSION OF CHANGES
ITS 3.8.10, DISTRIBUTION SYSTEMS - SHUTDOWN

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications - Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.8.1.2.b.5 requires, in part, a separate and independent 125 volt DC distribution panel for diesel generator (DG) OPERABILITY. ITS 3.8.10 ACTION B requires for one or more inoperable DG DC electrical power distribution panels ~~subsystems~~ to immediately declare the associated DG inoperable. This changes the CTS by specifying an Action to declare a DG inoperable if its associated DC electrical power distribution panel ~~subsystem~~ is inoperable.

The purpose of CTS 3.8.1.2.b.5 is to specify the requirements for DG OPERABILITY. ITS 3.8.10 ACTION B preserves the intent of CTS 3.8.1.2.b.5 by declaring the DG inoperable if the associated DG DC distribution panel ~~subsystem~~ is inoperable. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.8.1.2.b.5 requires, in part, a separate ~~sparate~~ 125 volt DC distribution panel for each DG set to be OPERABLE. CTS 3.8.2.2 states, in part, that as a minimum the following AC electrical boards shall be OPERABLE and energized, and then lists the applicable boards. CTS 3.8.2.4 requires, in part, that as a minimum the following 125 volt DC boards shall be energized and OPERABLE as listed. ITS 3.8.10 states that the necessary portion of AC, vital DC, DG DC, and AC vital instrument electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE. In addition, an optional Required Action (ITS 3.8.10 Required Action A.1) has been added which allows the associated supported required feature(s) to be declared inoperable. This changes the CTS by requiring those necessary portions of electrical power distribution subsystems to be OPERABLE to support equipment required to be OPERABLE, which could require more distribution boards or panels to be OPERABLE than is currently required. In addition, an action has been added to allow an option to the existing actions.

The purpose of CTS 3.8.1.2.b.5, CTS 3.8.2.2 and CTS 3.8.2.4 is to ensure that at least one train of AC, vital DC, DG DC, and 120 volt AC vital instrument electrical power distribution systems are OPERABLE. This change adds a requirement that the applicable portions of AC, vital DC, DG DC, and 120 volt AC vital instrument electrical power distribution subsystems must be OPERABLE when required to support equipment required to be OPERABLE by the Technical Specifications. This

DISCUSSION OF CHANGES
ITS 3.8.10, DISTRIBUTION SYSTEMS - SHUTDOWN

added restriction conservatively assures the needed electrical power distribution boards and panels are OPERABLE, even if this results in both trains of one or more of the electrical power distribution systems being required. Because the ITS 3.8.10 electrical power distribution subsystem OPERABILITY requirements require the necessary portions of the distribution subsystems to be OPERABLE to support equipment required to be OPERABLE, if a portion of the electrical power distribution subsystem cannot supply any required equipment, that electrical power distribution subsystem is inoperable. In this event, it may not be necessary to suspend, irradiated fuel handling, and positive reactivity additions. Conservative actions can be assured if all required equipment without the necessary power is declared inoperable, and the associated ACTIONS of the individual equipment is taken (ITS 3.8.10 Required Action A.1). Therefore, along with the conservative additional requirements placed on the electrical power distribution subsystems, Required Action A.1, which requires the associated supported equipment to be declared inoperable, is also added. These changes are acceptable since the additions represent restrictions consistent with implicit assumptions for operation in shutdown conditions (required equipment receiving the necessary required power), and these restrictions are not currently imposed by the Technical Specifications. This change is designated as more restrictive because it adds a new requirement to the CTS and more boards may be required to be OPERABLE in ITS than in the CTS.

M02 CTS 3.8.1.2, CTS 3.8.2.2 and CTS 3.8.2.4 are applicable in MODES 5 and 6. ITS 3.8.10 is applicable in MODES 5 and 6 and during movement of irradiated fuel assemblies and contains an ACTIONS Note stating that LCO 3.0.3 is not applicable. This changes the CTS by adding the Applicability of "During movement of irradiated fuel assemblies," and adds a Note to the ACTIONS stating that LCO 3.0.3 is not applicable.

This change is acceptable because the proposed requirements are necessary to ensure the electrical power subsystems are OPERABLE to support equipment required to be OPERABLE during movement of irradiated fuel assemblies. Movement of fuel normally occurs during MODES 5 and 6; however, it can also occur outside of containment in other plant MODES (MODES 1, 2, 3, and 4) or other conditions (i.e., reactor defueled). This addition to the applicability is needed to ensure the appropriate electrical distribution system requirements are specified during fuel handling and to ensure the appropriate actions are taken (i.e., stop fuel movement) when the minimum electrical supply is not available. In addition, this change adds a clarification Note stating that LCO 3.0.3 is not applicable because LCO 3.0.3 has no Required Actions that restore safety. If moving irradiated fuel assemblies while in MODES 5 or 6, LCO 3.0.3 is not applicable because LCO 3.0.3 applicability is limited to MODES 1, 2, 3, and 4 only with a designated endpoint of MODE 5. In addition, if moving irradiated fuel assemblies while in MODES 1, 2, 3, or 4, the fuel movement is independent of reactor operations and the inability to suspend movement in accordance with ITS 3.8.10 Required Actions would not be sufficient reason to require a reactor shutdown. This Note has been added for clarification and is necessary since defaulting to LCO 3.0.3 would require the reactor to be shutdown, but would not require suspension of the activities with a potential for releasing radioactive materials. This change is designated as more restrictive because the ITS requires equipment to be OPERABLE during movement of irradiated fuel

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DISCUSSION OF CHANGES
ITS 3.8.10, DISTRIBUTION SYSTEMS - SHUTDOWN

assemblies both inside and outside of the containment, not only when in MODES 5 and 6.

M03 CTS 4.8.1.2 requires, in part, the performance of CTS 4.8.1.1.3, which includes a requirement that the 125 volt DC distribution panel for each DG be demonstrated OPERABLE. ITS SR 3.8.10.1 requires, in part, verification of the correct breaker alignments and voltage to the 125 volt DC distribution panel for each DG. This changes the CTS by adding a specific surveillance requiring verification of correct breaker alignment and correct voltage to the DG DC distribution subsystem.

The purpose of CTS 4.8.1.2 is to provide assurance that necessary power to required supported systems is available with sufficient capacity, capability, redundancy, and reliability to ensure the fuel, Reactor Coolant System, and containment design limits are not exceeded and postulated accidents are mitigated. This change is acceptable because it provides additional assurance that the distribution panels associated with the DG DC electrical power distribution subsystem are OPERABLE. This change is designated as more restrictive because it add a Surveillance Requirement to the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.8.1.2 requires AC electrical power sources to be OPERABLE, listing the sources and subsystems. CTS LCO 3.8.2.2 requires AC electrical boards to be OPERABLE, listing the boards. CTS LCO 3.8.2.4 requires DC electrical equipment and boards to be energized and OPERABLE and CTS 4.8.2.4.1 requires the overall battery voltage to be greater than or equal to 125 volts. ITS LCO 3.8.10 requires necessary portions of the AC, vital DC, DG DC, and AC vital instrument electrical power distribution subsystems to be OPERABLE to support equipment required to be OPERABLE. ITS SR 3.8.10.1 requires the verification of correct breaker alignment and voltage to each required AC, vital DC, and ~~vital~~ AC ital instrument electrical power distribution subsystem. The details of the boards are contained in the ITS Bases. This changes the CTS by moving description of the boards and panels (including the nominal voltages and any specified limits) from the CTS to the ITS Bases.

The removal of these details relating to system design from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the electrical power distribution subsystems to be OPERABLE and requires the verification of correct breaker alignment and voltage to required AC and DC electrical power distribution subsystems. This change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the

DISCUSSION OF CHANGES
ITS 3.8.10, DISTRIBUTION SYSTEMS - SHUTDOWN

Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA02 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.8.2.2 requires, in part, that the specified AC boards be determined OPERABLE and energized at least once per 7 days by verifying correct breaker alignment and indicated voltage on the buses. CTS 4.8.2.4.1 requires, in part, that each required DC battery board be determined OPERABLE and energized at least once per 7 days by verifying correct breaker alignment and indicated power availability with an overall battery voltage of greater than or equal to 125 volts. ITS SR 3.8.10.1 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for this SR and associated Bases to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

<u>LESS RESTRICTIVE CHANGES</u>

L01 *(Category 4 – Relaxation of Required Action)* With less than the minimum complement of AC boards OPERABLE and energized, CTS 3.8.2.2 requires the establishment of containment integrity within 8 hours. With less than the minimum complement of DC boards OPERABLE and energized, CTS 3.8.2.4 also requires the establishment of containment integrity within 8 hours. ITS 3.8.10 ACTION A requires, in part, suspending movement of irradiated fuel assemblies, suspension of operations involving positive reactivity additions that could result in the loss of required SDM or boron concentration, the initiation of
instrument
actions to restore required AC, vital DC, and AC vital board electrical power distribution subsystems to OPERABLE status, and the declaration of the associated required residual heat removal subsystems(s) inoperable and not in

DISCUSSION OF CHANGES
ITS 3.8.10, DISTRIBUTION SYSTEMS - SHUTDOWN

operation. This changes the CTS by replacing the existing Required Action to restore containment integrity.

The purpose of the CTS 3.8.2.2 Action and CTS 3.8.2.4 Action is to isolate the containment to minimize any release from the plant if an event were to occur during shutdown conditions. This change is acceptable because the Required Actions establish remedial measures taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features including the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. The proposed Required Actions require the suspension of movement of irradiated fuel assemblies, the suspension of operations involving positive reactivity additions that could result in the loss of required SDM or boron concentration, the initiation
instrument
of actions to restore required AC, vital DC, and AC vital electrical power distribution subsystems to OPERABLE status, and the declaration of the associated required residual heat removal subsystems(s) inoperable and not in operation. Suspending the movement of irradiated fuel assemblies will prevent a fuel handling accident from occurring. Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. The actions to restore required AC, vital DC, and AC vital electrical power distribution subsystems to OPERABLE status will place the plant in compliance with the LCO. Declaration of the associated required decay heat removal subsystems(s) inoperable and not in operation will require the plant to enter the applicable LCOs to apply additional Required Actions. The proposed actions will immediately minimize the potential for any accident releases outside of containment and are considered acceptable instead of the current action to restore containment integrity within 8 hours. The actions may be considered somewhat more restrictive since immediate action is required, however, is classified as less restrictive since the current actions to restore containment integrity have been deleted. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

CTS

3.8 ELECTRICAL POWER SYSTEMS

3.8.10 Distribution Systems - Shutdown

3.8.1.2, 3.8.2.2, 3.8.2.4

LCO 3.8.10 The necessary portion of AC, vital DC, ~~and~~ AC vital instrument ~~bus~~, and diesel generator (DG) DC electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE. 1

Applicability 3.8.1.2, 3.8.2.2, 3.8.2.4 DOC M02

APPLICABILITY: MODES 5 and 6,
During movement of ~~[recently]~~ irradiated fuel assemblies. 2

ACTIONS

---NOTE---

DOC M02 LCO 3.0.3 is not applicable.

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION 3.8.2.2 3.8.2.4 DOC M01	A. One or more required AC, vital DC, or AC vital instrument ~~bus~~ electrical power distribution subsystems inoperable.	A.1 Declare associated supported required feature(s) inoperable.	Immediately	1
		<u>OR</u>		
DOC L01		A.2.1 Suspend movement of ~~[recently]~~ irradiated fuel assemblies.	Immediately	2
		<u>AND</u>		
DOC L01		A.2.2 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.	Immediately	
		<u>AND</u>		

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC L01	A.2.3 Initiate actions to restore required AC, vital DC, and AC vital ~~bus~~ instrument electrical power distribution subsystems to OPERABLE status. 1 1	Immediately
	AND	
DOC L01 INSERT 1	A.2.4 Declare associated required residual heat removal subsystem(s) inoperable and not in operation. 1	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
4.8.1.2, 4.8.2.2, 4.8.2.4.1 SR 3.8.10.1 Verify correct breaker alignments and voltage to required AC, vital DC, ~~and~~ AC vital ~~bus~~ instrument, and DG DC electrical power distribution subsystems.	~~[7 days~~ ~~OR~~ 1 In accordance with the Surveillance Frequency Control Program ~~]~~ 3

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1

INSERT 1

DOC A02

B. One or more required DG DC electrical power distribution ~~subsystems~~ panels inoperable.	B.1 Declare associated DG(s) inoperable.	Immediately

CTS

3.8 ELECTRICAL POWER SYSTEMS

3.8.10 Distribution Systems - Shutdown

instrument

vital , and diesel generator (DG) DC

3.8.1.2, 3.8.2.2, 3.8.2.4 LCO 3.8.10 The necessary portion of AC, DC, ~~and~~ AC vital ~~bus~~ electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE. 1

Applicability 3.8.1.2, 3.8.2.2, 3.8.2.4 DOC M02 APPLICABILITY: MODES 5 and 6,
During movement of ~~[recently]~~ irradiated fuel assemblies. 2

ACTIONS

--NOTE--

DOC M02 LCO 3.0.3 is not applicable.

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION 3.8.2.2 3.8.2.4 DOC M01	A. One or more required AC, vital DC, or AC vital ~~bus~~ instrument electrical power distribution subsystems inoperable.	A.1 Declare associated supported required feature(s) inoperable.	Immediately	1
		OR		
DOC L01		A.2.1 Suspend movement of ~~[recently]~~ irradiated fuel assemblies.	Immediately	2
		AND		
DOC L01		A.2.2 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.	Immediately	
		AND		

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC L01	A.2.3 Initiate actions to restore required AC, vital DC, and AC vital ~~bus~~ instrument electrical power distribution subsystems to OPERABLE status. AND	Immediately 1 1
DOC L01	A.2.4 Declare associated required residual heat removal subsystem(s) inoperable and not in operation.	Immediately
INSERT 1		1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
4.8.1.2, 4.8.2.2, 4.8.2.4.1 SR 3.8.10.1 Verify correct breaker alignments and voltage to required AC, vital DC, ~~and~~ AC vital ~~bus~~ instrument, and DG DC electrical power distribution subsystems.	~~[7 days~~ ~~OR~~ 1 In accordance with the Surveillance Frequency Control Program ~~]~~ 3

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1

INSERT 1

DOC A02

B.	One or more required DG DC electrical power distribution ~~subsystems~~ panels inoperable.	B.1	Declare associated DG(s) inoperable.	Immediately

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.10 Distribution Systems - Shutdown

BASES

vital ,diesel generator (DG) DC,

BACKGROUND

A description of the AC, DC, and AC vital ~~bus~~ electrical power distribution systems is provided in the Bases for LCO 3.8.9, "Distribution Systems - Operating." instrument 1

DG DC,

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident and transient analyses in the U FSAR, Chapter ~~[~~6~~]~~ (Ref. 1) and Chapter ~~[~~15~~]~~ (Ref. 2), assume Engineered Safety Feature (ESF) systems are OPERABLE. The AC, vital DC, and AC vital ~~bus~~ instrument electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System, and containment design limits are not exceeded. 1 2 1 1

vital DG DC,

The OPERABILITY of the AC, DC, and AC vital ~~bus~~ instrument electrical power distribution system is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY. 1

vital DG DC,

The OPERABILITY of the minimum AC, DC, and AC vital ~~bus~~ instrument electrical power distribution subsystems during MODES 5 and 6, and during movement of ~~[recently]~~ irradiated fuel assemblies ensures that: 1 2

a. The unit can be maintained in the shutdown or refueling condition for extended periods,

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status, and

c. Adequate power is provided to mitigate events postulated during shutdown, such as a fuel handling accident ~~[involving handling recently irradiated fuel. Due to radioactive decay, AC and DC electrical power is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~. 2

The AC and DC electrical power distribution systems satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

BASES

LCO

Various combinations of subsystems, equipment, and components are required OPERABLE by other LCOs, depending on the specific plant condition. Implicit in those requirements is the required OPERABILITY of necessary support required features. This LCO explicitly requires energization of the portions of the electrical distribution system necessary to support OPERABILITY of required systems, equipment, and components - all specifically addressed in each LCO and implicitly required via the definition of OPERABILITY.

Maintaining these portions of the distribution system energized ensures the availability of sufficient power to operate the unit in a safe manner to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents ~~[involving handling recently irradiated fuel]~~). 2

APPLICABILITY

The AC and DC electrical power distribution subsystems required to be OPERABLE in MODES 5 and 6, and during movement of ~~[recently]~~ 2
irradiated fuel assemblies, provide assurance that:

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel in the core,

b. Systems needed to mitigate a fuel handling accident ~~[involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~ are available, 2

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available, and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition and refueling condition.

The AC, vital DC, DG DC, and AC vital instrument ~~bus~~ electrical power distribution subsystems 1
requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.9.

ACTIONS

LCO 3.0.3 is not applicable while in MODE 5 or 6. However, since irradiated fuel assembly movement can occur in MODE 1, 2, 3, or 4, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operations. Entering LCO 3.0.3, while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

BASES

ACTIONS (continued)

A.1, A.2.1, A.2.2, A.2.3, and A.2.4

Although redundant required features may require redundant trains of electrical power distribution subsystems to be OPERABLE, one OPERABLE distribution subsystem train may be capable of supporting sufficient required features to allow continuation of ~~[recently]~~ irradiated fuel movement. By allowing the option to declare required features associated with an inoperable distribution subsystem inoperable, appropriate restrictions are implemented in accordance with the affected distribution subsystem LCO's Required Actions. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend movement of ~~[recently]~~ irradiated fuel assemblies, and operations involving positive reactivity additions that could result in loss of required SDM (MODE 5) or boron concentration (MODE 6). Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes including temperature increases when operating with a positive MTC must also be evaluated to ensure they do not result in a loss of required SDM. 2 2

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC and DC electrical power distribution subsystems and to continue this action until restoration is accomplished in order to provide the necessary power to the unit safety systems.

Notwithstanding performance of the above conservative Required Actions, a required residual heat removal (RHR) subsystem may be inoperable. In this case, Required Actions A.2.1 through A.2.~~4~~ 3 do not adequately address the concerns relating to coolant circulation and heat removal. Pursuant to LCO 3.0.6, the RHR ACTIONS would not be entered. Therefore, Required Action A.2.~~5~~ 4 is provided to direct declaring RHR inoperable and not in operation, which results in taking the appropriate RHR actions. 3 3

BASES

ACTIONS (continued)

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required distribution subsystems should be completed as quickly as possible in order to minimize the time the unit safety systems may be without power.

INSERT 1

1

SURVEILLANCE REQUIREMENTS

SR 3.8.10.1

vital DG DC, boards

instrument

This Surveillance verifies that the AC, DC, and AC vital ~~bus~~ electrical power distribution subsystems are functioning properly, with all the ~~buses~~ energized. The verification of proper voltage availability on the ~~buses~~ ensures that the required power is readily available for motive as well as control functions for critical system loads connected to these ~~buses~~.

1

~~[The 7 day Frequency takes into account the capability of the electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.~~

~~OR~~

4

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~----------]~~

5

REFERENCES

U

1. FSAR, Chapter ~~[~~6~~]~~.

2. FSAR, Chapter ~~[~~15~~]~~.

1 2

1

INSERT 1

B.1

panels

If one or more required DG DC electrical power distribution ~~subsystems~~ are inoperable, the associated DGs may be incapable of performing their intended function and must be immediately declared inoperable. This declaration also requires entry into the applicable Conditions and Required Actions for inoperable DGs, LCO 3.8.2, "AC Sources – Shutdown."

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.10 Distribution Systems - Shutdown

BASES

vital ,diesel generator (DG) DC,

BACKGROUND

A description of the AC, DC, and AC vital ~~bus~~ electrical power distribution systems is provided in the Bases for LCO 3.8.9, "Distribution Systems - Operating." 1

instrument

DG DC,

APPLICABLE SAFETY ANALYSES

U

The initial conditions of Design Basis Accident and transient analyses in the FSAR, Chapter ~~[~~6~~]~~ (Ref. 1) and Chapter ~~[~~15~~]~~ (Ref. 2), assume Engineered Safety Feature (ESF) systems are OPERABLE. The AC, DC, and AC vital ~~bus~~ electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System, and containment design limits are not exceeded. 1 2 1 1

vital

instrument

vital DG DC,

The OPERABILITY of the AC, DC, and AC vital ~~bus~~ electrical power distribution system is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY. 1

instrument

vital DG DC,

The OPERABILITY of the minimum AC, DC, and AC vital ~~bus~~ electrical power distribution subsystems during MODES 5 and 6, and during movement of ~~[recently]~~ irradiated fuel assemblies ensures that: 1 2

instrument

a. The unit can be maintained in the shutdown or refueling condition for extended periods,

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status, and

c. Adequate power is provided to mitigate events postulated during shutdown, such as a fuel handling accident ~~[involving handling recently irradiated fuel. Due to radioactive decay, AC and DC electrical power is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~. 2

The AC and DC electrical power distribution systems satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

BASES

LCO

Various combinations of subsystems, equipment, and components are required OPERABLE by other LCOs, depending on the specific plant condition. Implicit in those requirements is the required OPERABILITY of necessary support required features. This LCO explicitly requires energization of the portions of the electrical distribution system necessary to support OPERABILITY of required systems, equipment, and components - all specifically addressed in each LCO and implicitly required via the definition of OPERABILITY.

Maintaining these portions of the distribution system energized ensures the availability of sufficient power to operate the unit in a safe manner to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents ~~[involving handling recently irradiated fuel]~~). 2

APPLICABILITY

The AC and DC electrical power distribution subsystems required to be OPERABLE in MODES 5 and 6, and during movement of ~~[recently]~~ irradiated fuel assemblies, provide assurance that: 2

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel in the core,

b. Systems needed to mitigate a fuel handling accident ~~[involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~ are available, 2

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available, and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition and refueling condition.

The AC, vital DC, DG DC, and AC vital instrument ~~bus~~ electrical power distribution subsystems requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.9. 1

ACTIONS

LCO 3.0.3 is not applicable while in MODE 5 or 6. However, since irradiated fuel assembly movement can occur in MODE 1, 2, 3, or 4, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operations. Entering LCO 3.0.3, while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

BASES

ACTIONS (continued)

A.1, A.2.1, A.2.2, A.2.3, and A.2.4

Although redundant required features may require redundant trains of electrical power distribution subsystems to be OPERABLE, one OPERABLE distribution subsystem train may be capable of supporting sufficient required features to allow continuation of ~~[recently]~~ irradiated 2
fuel movement. By allowing the option to declare required features associated with an inoperable distribution subsystem inoperable, appropriate restrictions are implemented in accordance with the affected distribution subsystem LCO's Required Actions. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend movement of ~~[recently]~~ irradiated fuel assemblies, and operations 2
involving positive reactivity additions that could result in loss of required SDM (MODE 5) or boron concentration (MODE 6). Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes including temperature increases when operating with a positive MTC must also be evaluated to ensure they do not result in a loss of required SDM.

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC and DC electrical power distribution subsystems and to continue this action until restoration is accomplished in order to provide the necessary power to the unit safety systems.

Notwithstanding performance of the above conservative Required Actions, a required residual heat removal (RHR) subsystem may be inoperable. In this case, Required Actions A.2.1 through A.2.~~4~~ 3 do not 3
adequately address the concerns relating to coolant circulation and heat removal. Pursuant to LCO 3.0.6, the RHR ACTIONS would not be entered. Therefore, Required Action A.2.~~5~~ 4 is provided to direct declaring 3
RHR inoperable and not in operation, which results in taking the appropriate RHR actions.

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BASES

ACTIONS (continued)

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required distribution subsystems should be completed as quickly as possible in order to minimize the time the unit safety systems may be without power. INSERT 1 1

SURVEILLANCE REQUIREMENTS

SR 3.8.10.1

This Surveillance verifies that the AC, vital DC, DG DC, and AC vital instrument ~~bus~~ electrical power distribution subsystems are functioning properly, with all the boards ~~buses~~ energized. The verification of proper voltage availability on the boards ~~buses~~ ensures that the required power is readily available for motive as well as control functions for critical system loads connected to these boards ~~buses~~. 1

~~[The 7 day Frequency takes into account the capability of the electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.~~ 4

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----~~ ~~]~~ 5

REFERENCES

1. U FSAR, Chapter ~~[~~6~~]~~. 1 2
2. U FSAR, Chapter ~~[~~15~~]~~.

1

INSERT 1

B.1

panels

If one or more required DG DC electrical power distribution ~~subsystems~~ are inoperable, the associated DGs may be incapable of performing their intended function and must be immediately declared inoperable. This declaration also requires entry into the applicable Conditions and Required Actions for inoperable DGs, LCO 3.8.2, "AC Sources – Shutdown."

Licensee Response/NRC Response/NRC Question Closure

Id **407**

NRC Question Number **VKG025**

Select Application **NRC Response**

Attachment 1

Attachment 2

Response Statement

NRC staff has a 2-part follow-up RAI to the licensee's response to RAI# VKG025.

Part 1

In the licensee's response a term was changed. ITS and bases for 3.8.9 and 3.8.10 now contain both "AC vital instrument power" and "AC vital instrument electrical power." The terms need to be consistent as to not imply reference to a different component. Please revise ITS and Bases so that one term is used. Keep in mind that any changes to the license should also be reflected in the UFSAR per 10 CFR 50.71(e). A comprehensive search of ITS, ITS bases, and UFSAR for varying usage is recommended.

Part 2

In response to RAI # VKG025, the licensee provided an updated markup of ITS 3.8.9 and the corresponding Bases. The revised Unit 1 ITS 3.8.9.D states:

CONDITION D: One or more AC electrical power distribution subsystems inoperable due to one or more Unit 2 AC shutdown boards inoperable.

REQUIRED ACTION D1: Declare associated required feature(s) inoperable.

COMPLETION TIME: Immediately

The staff has the following concerns with ITS 3.8.9.D:

(1) One or more power distribution subsystems of Unit 2 should be limited to one train. Therefore, either the Condition D statement or the Bases D.1 should be revised appropriately to add the

limiting phrase, "a loss of safety function has not yet occurred," similar to Bases of Required Actions A1, B1, and C1.

(2) Required Action D.1 does not require the shutdown board(s) to be recovered in any given time. Required Action D.1 would allow continued operation of Unit 1 for a period of 3 to 7 days depending on the required feature(s) declared inoperable – see discussion in the RAI # VKG026 (ITS 3.8.1, Condition D, one DG of Unit 2 inoperable) and RAI # VKG027 (ITS 3.8.1, Condition C, one offsite circuit to 6.9 kV shutdown board of Unit 2 inoperable). Current TS only allows 8 hours to restore one or more shutdown boards to operable status before requiring shutdown of both Units. Thus the incremental risk for safe continued operation of Unit 1 will increase by 9 to 21 times (based upon allowed outage time) the current risk assessed in CTS. The licensee has not provided enough technical justification in Discussion of Change L01 regarding the increase in risk.

In ITS 3.8.9.D, both onsite and offsite power sources to Unit 2 6.9 kV shutdown board will be inoperable compared to the ITS 3.8.1 Conditions C and D in which only either the offsite or the onsite power becomes inoperable. Therefore, the continued operation of Unit 1 should be more restrictive than allowed in ITS 3.8.1 Conditions C or D.

Please provide additional technical justification to extend the completion time from 8 hours to 3 to 7 days in ITS 3.8.9.D, or revise ITS 3.8.9.D appropriately. This applies to both Units' ITS.

Response Date/Time	**12/19/2014 6:00 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**12/19/2014 9:12 AM**
Date	

Modified

Modified By

Licensee Response/NRC Response/NRC Question Closure

Id	**446**
NRC Question Number	**VKG025**
Select Application	**Licensee Response**
Attachment 1	**RAI VKG025 Attachment 1 Final Response May 1.pdf** (6MB)
Attachment 2	
Response Statement	

In response to the NRC staff's 2-part follow-up dated December 19, 2014, SQN provides the following responses:

In response to Part 1
In RAI VKG025, dated August 13, 2014, SQN was asked to "redefine/clarify distribution subsystems" as used in both the ITS 3.8 Specifications and ITS 3.8 Bases. In response to RAI VKG025 dated November 24, 2014, SQN provided markups of the ITS and ITS Bases for 3.8.9 and 3.8.10 to show consistency in the defined terms as they relate to similar descriptions in the SQN design and Licensing Basis for distribution subsystems. SQN performed a comprehensive search of ITS, ITS Bases, and the UFSAR for variations on nomenclature associated with the distribution subsystems. SQN has determined that no change is required.

In response to Part 2 (1)
In response to RAI VKG025, dated November 24, 2014, SQN provided an updated markup of ITS 3.8.9 ACTION D. In the VKG025 follow-up dated December 19, 2014, the staff expressed a concern that ITS 3.8.9 Condition D should be limited to only one opposite unit train and recommended a change to the TS Bases similar to the ITS 3.8.9 Bases discussion of Required Actions A.1, B.1 and C.1, requiring a limiting phrase, "a loss of safety function has not yet occurred." SQN will modify the ITS Bases for ITS 3.8.9 Required Action D.1 and E.1 to include a statement similar to Required Actions A.1, B.1 and C.1. See Attachment 1 for changes to ITS 3.8.9 Bases Required Action D.1 and E.1, Insert 4 (Enclosure 2, Volume 13 - page 576 and 587).

In response to Part 2: (2)
The safety function of the Standby AC Power System is to supply power to support the functioning of components and systems required to assure that (1) fuel design limits and reactor coolant pressure boundary design conditions are not exceeded due to anticipated operational occurrences, and (2) the core is cooled and vital functions are maintained in the event of postulated accidents, subject to the loss of the Preferred Power System and subject to any single failure in the Standby Power System.

To accomplish its safety function, the onsite Class 1E AC distribution system supplies electrical power to two power trains

for each unit. Each power train includes two Class 1E 6.9 kV shutdown boards powered from one of two separate and independent offsite power circuits or a dedicated onsite diesel generator (DG). Two DGs in one train can provide the safety related functions to mitigate a loss-of-coolant accident (LOCA) in one unit and safely shut down the other unit. The core cooling systems and containment systems credited in the mitigation of an anticipated operational occurrence (AOO) or postulated Design Basis Accident (DBA) are powered from the associated unit's shutdown boards.

The major features that are shared by Unit 1 and Unit 2 and powered from Unit 1 AC shutdown boards include the emergency gas treatment system (EGTS), essential raw cooling water (ERCW) system, component cooling water system (CCS), control room emergency ventilation system (CREVS), control room air conditioning system (CRACS), and the 125 V vital DC system. The shared features powered from Unit 2 AC shutdown boards include the auxiliary building gas treatment system (ABGTS), essential raw cooling water (ERCW) system, component cooling water system (CCS), and the 125 V vital DC system. Additionally, the auxiliary control air system (ACAS) is a technical specification support feature and is powered from Unit 2. Therefore, the SQN Technical Specifications requires both the associated unit's boards and the opposite unit's boards supplying power to required shared safety-related features to be OPERABLE.

The loss of an associated unit's AC shutdown board(s), covered by ITS 3.8.9 Condition A, is significant in that, although safety function is being maintained, a single failure in the remaining associated unit's shutdown board(s) could result in the minimum required engineered safety feature(s) (ESF) not being maintained. It is important that the operator's attention be focused on minimizing the potential for a loss of power to the remaining train by (1) stabilizing the unit, and (2) restoring power to the affected train. The ITS 3.8.9 Bases for Required Action A.1 states, "the 8 hour time limit before requiring a unit shutdown in this Condition is acceptable because of (1) the potential for decreased safety if the unit operator's attention is diverted from the evaluations and actions necessary to restore power to the affected train, to the actions associated with taking the unit to shutdown within this time limit, and (2) The potential for an event in conjunction with a single failure of a redundant component in the train with AC Power." Therefore, the completion time of 8 hours to restore an associated unit's inoperable shutdown board(s) reflects SQN current licensing basis (CTS 3.8.2.1 ACTION a).

Based on multiple discussions with the NRC staff regarding their concerns with ITS 3.8.9 ACTION D, SQN has agreed to revise ITS 3.8.9 to include two actions (ACTION D and ACTION E) pertaining to the inoperability of the opposite unit's AC shutdown board(s). ACTION D will provide a Condition when planned maintenance is being performed on the opposite unit's AC shutdown board(s). ACTION E will provide a Condition when an opposite unit's AC shutdown board is inoperable for reasons other than planned

maintenance.

During planned maintenance with the opposite unit in either a defueled condition or in MODE 6 flooded up following being defueled, the de-energization of the opposite unit's shutdown boards is covered by ITS 3.8.9 ACTION D. The Required Action for Condition D requires that with one or more opposite unit's shutdown boards inoperable to declare the associated supported required features inoperable immediately. The associated supported required features are limited to the shared safety-related features previously discussed. The Technical Specification ACTIONS associated with these inoperable shared safety-related features have Completion Times that range from 72 hours to 7 days to restore OPERABILITY. Therefore, as compared to the ITS 3.8.9 ACTION A Completion Time of 8 hours established for loss of an associated unit's shutdown board(s), the ITS 3.8.9 ACTION D Completion Time established for the loss of an opposite unit's shutdown board(s), immediately addresses the multiple, concurrent Completion Times associated with the inoperability of shared safety-related features. The ACTION D Notes restrict the use of this Condition to during planned maintenance and when the opposite unit is defueled or in MODE 6 following defueled with refueling water cavity level ≥ 23 ft. above top of the reactor vessel flange. ITS 3.8.9 Condition D Note 1, addressing planned maintenance, limits the use of ACTION D to a time when the operators have sufficient time to evaluate system alignments and the associated impact prior to making the opposite unit's AC shutdown board(s) inoperable. ITS 3.8.9 Condition D Note 2 addresses the NRC staff's concern of the shared system risks for the opposite unit in refueling as it relates to availability of power in support of shutdown cooling. Management and assessment of risk during the performance of on-line and outage maintenance is ensured by SQN's compliance with 10 CFR 50.65 "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." In SQN's response to RAI GMW-006, TVA proposed license conditions be added to Facility Operating License DPR-77 and Facility Operating License DPR-79, for Sequoyah Nuclear Plants, Unit 1 and 2, respectively. With the addition of ITS 3.8.9 Condition D Note 2, TVA is proposing that the availability of power in support of shutdown cooling has been addressed and the license conditions proposed in RAI GMW-006 are not necessary.

ITS 3.8.9. ACTION D requires immediately declaring the associated supported required features inoperable. The restoration time of the opposite unit's shutdown board(s) is commensurate with the restoration time of the associated unit's shared required features. Specifically, the opposite unit's shutdown board must be returned to OPERABLE status prior to declaring the shared required features with the shortest Completion Time OPERABLE.

ITS 3.8.9 ACTION E requires that with one or more AC electrical power distribution subsystem(s) inoperable due to one or more opposite unit AC shutdown boards inoperable for reasons other than Condition D, to restore the opposite unit's AC electrical power distribution subsystem(s) to OPERABLE status in 24 hours. CTS

3.8.2.1 ACTION a has a completion time to restore any AC shutdown board to OPERABLE status in 8 hours. ITS 3.8.9 ACTION E is acceptable because the opposite unit's AC shutdown boards are not as critical to the operating unit (fewer operating unit loads) as the operating unit's AC shutdown boards. The ITS 3.8.9 ACTION E Completion Time of 24 hours is more conservative than any of the Completion Times allowed for the components that would be without power. Additional consideration for the 24 hour Completion Time is the potential for an event in conjunction with a single failure of a redundant component (e.g. ABGTS, EGTS, CCS, etc.)

While in ITS 3.8.9 ACTION D or E, if a subsequent failure results in a "loss of safety function," the Technical Specification ACTIONS associated with the inoperable shared feature will direct the unit operator to place the plant in the appropriate "end state" associated with the current condition of the plant (i.e., LCO 3.0.3).

Attachment 1 contains the changes associated with this response to the second NRC RAI VKG025 and the response to the original NRC VKG025. Attachment 1 supersedes the previous response to VKG025.

Response Date/Time	**5/6/2015 11:10 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Lynn Mynatt**
Date Added	**5/6/2015 10:08 AM**
Date Modified	
Modified By	

ELECTRICAL POWER SYSTEMS

3/4.8.2 ONSITE POWER DISTRIBUTION SYSTEMS

A.C. DISTRIBUTION - OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.8.9 3.8.2.1 The following A.C. electrical boards shall be OPERABLE and energized ~~with tie breakers open between redundant boards~~: LA03

~~6900 Volt Shutdown Board 1A-A~~
~~6900 Volt Shutdown Board 1B-B~~
~~6900 Volt Shutdown Board 2A-A~~
~~6900 Volt Shutdown Board 2B-B~~
~~480 Volt Shutdown Board 1A1-A~~
~~480 Volt Shutdown Board 1A2-A~~
~~480 Volt Shutdown Board 1B1-B~~ LA01
~~480 Volt Shutdown Board 1B2-B~~
~~480 Volt Shutdown Board 2A1-A~~
~~480 Volt Shutdown Board 2A2-A~~
~~480 Volt Shutdown Board 2B1-B~~
~~480 Volt Shutdown Board 2B2-B~~
~~120 Volt A.C. Vital Instrument Power Board Channels 1-I and 2-I~~ energized from inverters 1-I and 2-I connected to D.C. Channel I*#@. See ITS 3.8.7
~~120 Volt A.C. Vital Instrument Power Board Channels 1-II and 2-II~~ energized from inverters 1-II and 2-II connected to D.C. Channel II*#@.
~~120 Volt A.C. Vital Instrument Power Board Channels 1-III and 2-III~~ energized from inverters 1-III and 2-III connected to D.C. Channel III*#@.
~~120 Volt A.C. Vital Instrument Power Board Channels 1-IV and 2-IV~~ energized from inverters 1-IV and 2-IV connected to D.C. Channel IV*#@.

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

Add proposed Required Action A Note A03

ACTIONS ACTION:

[illegible] L03

Unit 1 L01

ACTION A
ACTION B
ACTION ~~F~~ G

a. With less than the above complement of A.C. boards OPERABLE and energized, restore the inoperable boards to OPERABLE status within 8 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Add proposed ACTION D L01

b. With one inverter inoperable, energize the associated Vital Instrument Power Board within 8 hours; restore the inoperable inverter to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. See ITS 3.8.7

Add proposed ACTION ~~G~~ H M02

SURVEILLANCE REQUIREMENTS

See ITS 3.8.7

SR 3.8.9.1 4.8.2.1 The specified A.C. boards and inverters shall be determined OPERABLE and energized ~~with tie breakers open between redundant boards~~ ~~at least once per 7 days~~ by verifying correct breaker alignment and indicated voltage on the busses. LA03

In accordance with the Surveillance Frequency Control Program LA02

* Two inverters may be disconnected from their D.C. source for up to 24 hours for the purpose of performing an equalizing charge on their associated battery bank provided (1) the vital instrument power board is OPERABLE and energized, and (2) the vital instrument power boards associated with the other battery banks are OPERABLE and energized from their respective inverters connected to their respective D.C. source. See ITS 3.8.7

~~# D.C. Channel V may be substituted for any one channel of channels I-IV.~~ LA04

@ The spare inverter for a specified channel may be substituted for one of the two inverters of the same channel. See ITS 3.8.7

ITS A01 ITS 3.8.9

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTI0N - OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.8.9 3.8.2.3 The following D.C. vital battery channels shall be energized and OPERABLE: LA01

~~CHANNEL I — Consisting of 125 - volt D.C. board No. I~~, 125 - volt D.C. battery bank No. I* and a full capacity charger.

~~CHANNEL II — Consisting of 125 - volt D.C. board No. II~~, 125 - volt D.C. battery bank No. II*, and a full capacity charger.

~~CHANNEL III — Consisting of 125 - volt D.C. board No. III~~, 125 - volt D.C. battery bank No. III*, and a full capacity charger.

~~CHANNEL IV — Consisting of 125 - volt D.C. board No. IV~~, 125 - volt D.C. battery bank No. IV*, and a full capacity charger.

See ITS 3.8.4

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTIONS ACTION:

L02

ACTION C a. With one 125-volt D.C. board inoperable, restore the inoperable board to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD

ACTION ~~F~~ G SHUTDOWN within the following 30 hours.

b. With one 125-volt D.C. battery bank and/or its charger inoperable, restore the inoperable battery bank and/or charger to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. See ITS 3.8.4

*D.C. Battery Bank V may be substituted for any other Battery Bank as needed. See ITS 3.8.4

ITS A01 ITS 3.8.9

ELECTRICAL POWER SYSTEMS
3/4.8.2 ONSITE POWER DISTRIBUTION SYSTEMS

A.C. DISTRIBUTION - OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.8.9 3.8.2.1 The following A.C. electrical boards and inverters shall be OPERABLE and energized ~~with tie breakers open between redundant boards:~~ LA03

~~6900 Volt Shutdown Board 1A-A~~
~~6900 Volt Shutdown Board 1B-B~~
~~6900 Volt Shutdown Board 2A-A~~
~~6900 Volt Shutdown Board 2B-B~~
~~480 Volt Shutdown Board 1A1-A~~
~~480 Volt Shutdown Board 1A2-A~~
~~480 Volt Shutdown Board 1B1-B~~ LA01
~~480 Volt Shutdown Board 1B2-B~~
~~480 Volt Shutdown Board 2A1-A~~
~~480 Volt Shutdown Board 2A2-A~~
~~480 Volt Shutdown Board 2B1-B~~
~~480 Volt Shutdown Board 2B2-B~~
~~120 Volt A.C. Vital Instrument Power Board Channels 1-I and 2-I~~ See ITS 3.8.7
energized from inverters 1-I and 2-I connected to D.C. Channel I*#@.
~~120 Volt A.C. Vital Instrument Power Board Channels 1-II and 2-II~~
energized from inverter 1-II and 2-II connected to D.C. Channel II*#@.
~~120 Volt A.C. Vital Instrument Power Board Channels I-III and 2-III~~
energized from inverter 1-III and 2-III connected to D.C. Channel III*#@.
~~120 Volt A.C. Vital Instrument Power Board Channels I-IV and 2-IV~~
energized from inverter 1-IV and 2-IV connected to D.C. Channel IV*#@.

Applicability APPLICABILITY: MODES 1, 2, 3 and 4. Add proposed Required Action A Note A03

L03

ACTIONS ACTION: Unit 2 L01

ACTION A ACTION B ACTION ~~F~~ G

a. With less than the above complement of A.C. boards OPERABLE and energized, restore the inoperable boards to OPERABLE status within 8 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Add proposed ACTION D L01

b. With one inverter inoperable, energize the associated Vital Instrument Power Board within 8 hours; restore the inoperable inverter to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. See ITS 3.8.7

Add proposed ACTION ~~G~~ H M02

SURVEILLANCE REQUIREMENTS

See ITS 3.8.7

SR 3.8.9.1 4.8.2.1 The specified A.C. boards and inverters shall be determined OPERABLE and energized ~~with tie breakers open between redundant boards~~ ~~at least once per 7 days~~ by verifying correct breaker alignment and indicated voltage on the busses. LA03

In accordance with the Surveillance Frequency Control Program LA02

* Two inverters may be disconnected from their D.C. source for up to 24 hours for the purpose of performing an equalizing charge on their associated battery bank provided (1) the vital instrument power board is OPERABLE and energized, and (2) the vital instrument power boards associated with the other battery banks are OPERABLE and energized from their respective inverters connected to their respective D.C. sources. See ITS 3.8.7

~~# D.C. Channel V may be substituted for any one channel of channels I - IV.~~ LA04

@ The spare inverter for a specified channel may be substituted for one of the two inverters of the same channel. See ITS 3.8.7

ITS A01 ITS 3.8.9

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.8.9 3.8.2.3 The following D.C. vital battery channels shall be OPERABLE and energized: LA01

~~CHANNEL I~~ ~~Consisting of 125 -volt D.C. board No. I~~, 125 - volt D.C. battery bank No. I* and a full capacity charger.

~~CHANNEL II~~ ~~Consisting of 125 - volt D.C. board No. II~~, 125 - volt D.C. battery bank No. II*, and a full capacity charger.

~~CHANNEL III~~ ~~Consisting of 125 - volt D.C. board No. III~~, 125 - volt D.C. battery bank No. III*, and a full capacity charger.

~~CHANNEL IV~~ ~~Consisting of 125 - volt D.C. board No. IV~~, 125 - volt D. C. battery bank No. IV*, and a full capacity charger. See ITS 3.8.4

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTIONS ACTION: or more L02

ACTION C a. With one or more 125-volt D.C. board inoperable or not energized, restore the inoperable board to OPERABLE and energized status within 2 hours or be in at least HOT STANDBY within the

ACTION ~~F~~ G next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With one 125-volt D.C. battery bank and/or its charger inoperable or not energized, restore the inoperable battery bank and/or charger to OPERABLE and energized status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. See ITS 3.8.4

SURVEILLANCE REQUIREMENTS

LA02 In accordance with the Surveillance Frequency Control Program

SR 3.8.9.1 4.8.2.3.1 Each D.C. bus train shall be determined OPERABLE and energized ~~with tie breakers open between redundant busses~~ ~~at least once per 7 days~~ by verifying correct breaker alignment, indicated power availability from the charger and battery, and voltage on the bus ~~of greater than or equal to 125 volts.~~ LA03 See ITS 3.8.4 LA05

4.8.2.3.2** Each 125-volt battery bank and charger shall be demonstrated OPERABLE:

a. At least once per 7 days by:

1. Verifying that the parameters in Table 4.8-2 meet the Category A limits, and

See ITS 3.8.4 and 3.8.6

* D.C. Battery Bank V may be substituted for any other Battery Bank as needed.
** This surveillance includes Battery Bank V, but not Charger V. See ITS 3.8.4

DISCUSSION OF CHANGES
ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications - Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS does not contain specific ACTIONS for the condition where a diesel generator (DG) DC distribution subsystem is inoperable. However, the CTS definition of OPERABLE-OPERABILITY, CTS 1.19, states, in part, that a system, subsystem, train, or component or device shall be OPERABLE or have OPERABILITY when all necessary auxiliary equipment that are required for the system, subsystem, train, component or device to perform its function(s) are also capable of performing their related support function(s). ITS 3.8.9, ACTION ~~E~~ F specifically states that when a DG DC ~~distribution subsystem~~ is inoperable to declare the associated DG inoperable immediately. This changes the CTS by specifically stating the CTS 1.19 requirement in ITS LCO 3.8.9.

The purpose of ITS 3.8.9 is to ensure the necessary AC, vital DC, DG DC, and AC vital electrical power distribution subsystems are available to provide emergency electrical power to ensure the fuel, Reactor Coolant System (RCS), and containment design limits are not exceeded and to mitigate postulated events. The change is acceptable since it is consistent with the requirements in CTS 1.19 that all attendant equipment must be capable of performing its related support function to support a required feature. Although not explicitly stated in CTS, this action is always applied due to the application of CTS 1.19. This change is designated as administrative because it does not result in technical changes to the CTS.

A03 CTS 3.8.2.1 ACTION a states, in part, that with less than the above complement of AC boards OPERABLE and energized, to restore the inoperable boards to OPERABLE status within 8 hours. ITS 3.8.9 Required Action A.1 allows 8 hours to restore ~~the associated unit's~~ AC electrical power distribution subsystem(s) to OPERABLE status. In addition, Required Action A.1 includes a Note that requires entry into applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources – Operating," for vital DC ~~Sources~~ made inoperable by inoperable power distribution subsystems. This changes the CTS by explicitly requiring the compensatory actions for DC ~~Sources~~ to be taken if made inoperable by inoperable power distribution subsystems. The discussion for limiting the Required Actions to the associated unit's AC boards is contained in DOC L01.

This change is acceptable because no changes are made to CTS requirements. The change in format from the CTS to the ITS maintains the technical requirements. The addition of the Note only acts as a reminder to enter the appropriate actions if the emergency bus which supplies the Train A or Train B

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DISCUSSION OF CHANGES
ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

battery charger becomes de-energized. In the event an emergency board is inoperable such that a Train A or Train B battery charger were inoperable, ITS LCO 3.0.6 would allow taking only the Distribution System - Operating ACTIONS; taking exception to complying with the DC Sources - Operating ACTIONS. Since the Distribution System - Operating ACTIONS may not be sufficiently conservative in this event (i.e., a battery charger may be without power), specific direction to take appropriate ACTIONS for the DC Sources - Operating is added (ITS 3.8.9, Note to ACTION A) when there is no power to support the associated required battery charger. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 4.8.1.1.3 requires, in part, that the 125 volt DC distribution panel for each DG be demonstrated OPERABLE. ITS SR 3.8.9.1 requires, in part, verifying correct breaker alignments and voltage to the 125 volt DC distribution subsystem ~~for each DG~~. This changes the CTS by requiring correct breaker alignment verification and correct voltage for the DG DC ~~bus~~ electrical power distribution subsystem.

The purpose of CTS 4.8.1.1.3 is to provide assurance that necessary power to required supported systems is available with sufficient capacity, capability, redundancy, and reliability to ensure the fuel, RCS, and containment design limits are not exceeded and postulated accidents are mitigated. This change is acceptable because it provides additional assurance that the panels associated with the DG DC bus electrical power distribution subsystem are OPERABLE. This change is designated as more restrictive because it adds a new Surveillance Requirement to the CTS for verification of correct breaker alignment and voltage.

M02 CTS 3.8.2.1 ACTION a states that with less than the above complement of AC boards OPERABLE and energized, to restore the inoperable boards to OPERABLE status within 8 hours. CTS 3.8.2.3 ACTION a states that with one 125 volt DC board inoperable, to restore the inoperable boards to OPERABLE status within 2 hours. However, there are no limitations to preclude a loss of function due to numerous concurrently inoperable AC and DC boards. ITS 3.8.9 ACTION H ~~G~~ has been added, requiring entry into ITS 3.0.3 if the loss of two or more required electrical power distribution subsystems result in a loss of safety function. This changes CTS by adding an explicit Action to enter LCO 3.0.3 for a loss of two or more electrical power distribution subsystems that result in a loss of safety function.

The purpose of the CTS ACTIONS is to limit the time the unit can operate under these conditions. CTS 3.8.2.3 ACTION a specifies the compensatory actions for one inoperable DC board. With two inoperable DC boards, CTS 3.8.2.3 does not provide any actions and entry into LCO 3.0.3 would be required. CTS 3.8.2.1 ACTION a is applicable to all inoperable AC boards even if there is a loss of safety function. Certain combinations of inoperable AC and DC electrical power distribution subsystems result in a loss of safety function (e.g., an inoperable Train A AC electrical power distribution subsystem in combination with an

DISCUSSION OF CHANGES
ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

inoperable Train B vital DC electrical power distribution subsystem). ITS 3.8.9 includes ACTION ~~G~~ H, which requires immediate entry into LCO 3.0.3 if the loss of one or more required electrical power distribution subsystems boards results in a loss of safety function. ITS 3.8.9 Required Action ~~G~~ H.1 preserves the intent of ITS LCO 3.0.3 and reflects an additional restriction on plant operation. This change is designated as more restrictive because an explicit action has been added which requires entry into LCO 3.0.3 with any combination of required AC and/or DC boards inoperable that results in a loss of safety function.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.8.1.1.3.b.5 requires, in part, a separate 125 volt DC distribution panel to be OPERABLE for each DG. CTS 3.8.2.1 requires, in part, the AC electrical boards to be OPERABLE and lists the specific AC shutdown boards and AC vital instrument power board channels, including the applicable nominal voltage. CTS 3.8.2.3 requires, in part, vital DC boards to be OPERABLE and lists the specific boards and includes the nominal voltage. ITS LCO 3.8.9 requires the applicable electrical power distribution subsystems to be OPERABLE. This changes the CTS by moving the specific names of the buses and the associated nominal bus voltages (i.e., 6900 V, 480 V, 125 V, and 120 V) from the CTS to the ITS Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. ITS 3.8.9 retains the requirement for the required distribution subsystems to be OPERABLE. In addition, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. The Technical Specification Bases Control Program in Chapter 5 controls changes to the Bases, requiring an evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA02 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.8.1.1.3 requires, in part, verification that the 125 volt DC distribution panel for each diesel generator is demonstrated OPERABLE. CTS 4.8.2.1 requires, in part, the specified AC boards to be determined OPERABLE and energized at least once per 7 days by verifying correct breaker alignment and indicated voltage on the busses. CTS 4.8.2.3.1 requires, in part, each DC bus train to be determined OPERABLE and energized at least once per 7 days by verifying correct breaker alignment, indicated power availability from the charger and battery, and voltage on the bus. DOC M01 discusses addition of a surveillance requirement to verify correct alignments and voltage for the DG

DISCUSSION OF CHANGES
ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

DC distribution subsystem with a frequency of 7 days. ITS SR 3.8.9.1 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for these SRs and associated Bases to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LA03 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 3.8.2.1 requires the AC electrical boards to be OPERABLE and energized "with tie breakers open between redundant boards." CTS 4.8.2.1 also requires the AC boards to be determined OPERABLE and energized from AC sources "with tie breakers open between redundant busses" by verifying correct breaker alignment and indicated voltage on the buses. CTS 4.8.2.3.1 requires, in part, the DC bus trains to be determined OPERABLE and energized "with tie breakers open between redundant buses". ITS LCO 3.8.9 requires the applicable electrical power distribution subsystems to be OPERABLE and ITS SR 3.8.9.1 requires the verification of correct breaker alignments and voltage to required AC, vital DC, DG DC, and AC vital electrical power distribution subsystems. This changes the CTS by moving the procedural detail that the boards must have their tie breakers open between redundant boards from the CTS to the ITS Bases.

The removal of these details for meeting Technical Specification requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the electrical power distribution subsystems to be OPERABLE and requires the verification of correct breaker alignments and voltage to required AC, vital DC, DG DC, and AC vital electrical power distribution subsystems. In addition, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. The Technical Specification Bases Control Program in Chapter 5 controls changes to the Bases. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal

DISCUSSION OF CHANGES
ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LA04 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.8.2.1 states, in part, that the specified A.C. boards shall be determined OPERABLE by verifying correct breaker alignment. CTS 3.8.2.1 includes Note # that allows D.C. Channel V to be substituted for any one channel of channels I-IV, thus verification of correct breaker alignment is required when Channel V is substituted. ITS SR 3.8.9.1 does not contain this design C information. This changes the CTS by moving the details that DC channel V can be substituted for any one of channels I-IV from the CTS to the ITS Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. ITS 3.8.9 retains the requirement for the required distribution subsystems to be OPERABLE. In addition, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. The Technical Specification Bases Control Program in Chapter 5 controls changes to the Bases, requiring an evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA05 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.8.2.3.1 requires, in part, each DC bus to be determined OPERABLE by verifying voltage of greater than or equal to 125 volt DC on the bus. ITS SR 3.8.9.1 requires, in part, verification of correct breaker alignment and voltage to the DG DC electrical power distribution subsystems. This changes the CTS by removing the specified voltage limit from the surveillance and placing it in the Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to verify the correct voltage to each diesel generator 125 volt DC distribution panel and to each vital DC board. In addition, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. The Technical Specification Bases Control Program in Chapter 5 controls changes to the Bases. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

<u>LESS RESTRICTIVE CHANGES</u>

L01 CTS 3.8.2.1 ACTION a requires that with less than the listed AC electrical boards OPERABLE and energized to restore the inoperable boards to OPERABLE status within 8 hours. ITS LCO 3.8.9 ACTION A requires that with one or more

DISCUSSION OF CHANGES
ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

~~associated unit's~~ AC electrical power distribution subsystems ~~boards(s)~~ inoperable to restore AC electrical power distribution subsystem(s) to OPERABLE status within 8 hours. ITS 3.8.9 ACTION D requires that when one or more ~~opposite unit's~~ AC ~~boards~~ are inoperable to declare the associated supported required feature(s) inoperable immediately. This changes the CTS by providing a separate ACTION to declare the required supported feature(s) inoperable and follow the applicable ACTIONS for the affected shared system LCOs when the opposite unit's required AC boards are inoperable.

The safety function of the Standby AC Power System is to supply power to support the functioning of components and systems required to assure that (1) fuel design limits and reactor coolant pressure boundary design conditions are not exceeded due to anticipated operational occurrences, and (2) the core is cooled and vital functions are maintained in the event of postulated accidents, subject to loss of the Preferred Power System and subject to any single failure in the Standby Power System. To accomplish its safety function, the onsite Class 1E AC distribution system supplies electrical power to two power trains for each unit. Each power train includes two Class 1E 6.9 kV shutdown boards powered from one of two separate and independent offsite power lines or a dedicated onsite DG. Two DGs in one train can provide the safety related functions to mitigate a loss-of-coolant accident (LOCA) in one unit and safely shut down the other unit. The core cooling and containment cooling system loads are unitized to the respective unit's 6.9 kV shutdown boards. Although the core cooling systems and containment systems credited in the mitigation of an anticipated operational occurrence (AOO) or postulated Design Basis Accident (DBA) are unitized (not shared with the opposite unit) and powered from the associated unit's shutdown boards, some safety-related systems (e.g., Essential Raw Cooling Water (ERCW), Component Cooling (CCS), Emergency Gas Treatment (EGTS), Auxiliary Building Gas Treatment, (ABGTS), Control Room Emergency Ventilation (CREVS), and Control Room ~~HVAC~~ Air Conditioning (CRACS)) are shared between the units. ~~The AC sources for these loads are distributed across both unit's shutdown boards.~~ The AC sources for these loads are supplied from an A Train and B Train AC shutdown board from a single unit. Therefore, in addition to requiring the associated unit's boards to be OPERABLE; the opposite unit's boards supplying power to a required shared system component is also required to be OPERABLE. The purpose of CTS 3.8.2.1 ACTION a is to limit the time AC boards can be inoperable. The proposed change maintains the CTS ACTIONS and allowed outage time for the associated unit's AC boards, and proposes a new ACTION that changes the allowed outage time for the opposite unit's AC boards. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. These changes are acceptable because the Required Actions associated with the required features are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation, while providing time to repair the inoperable features. If the necessary repairs cannot be made within the established Completion Time, the applicable Conditions for the affected shared system LCOs establish the Required Actions to exit the MODE of Applicability for that inoperable required feature. This change is acceptable because the provided ACTIONS effect restoration of the opposite unit's AC boards

DISCUSSION OF CHANGES
ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

commensurate with the importance of maintaining these AC boards capable of supporting the associated unit's required feature(s). This change is designated as less restrictive, because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L02 *Category 4 - Relaxation of Required Action* [illegible]

[illegible]

Insert L03

L03

[illegible]

[illegible]

subsystems made inoperable due to the [illegible] more [illegible] em(s) [illegible] ems are [illegible]

3.8 ELECTRICAL POWER S□STEMS

3.8.9 Distribution Systems - Operating

□□o

vital

, ~~and diesel generator (DG) DC~~

3.8.1.1
3.8.2.1
3.8.2.3

LCO 3.8.9 ~~Train A and Train B AC, DC,~~ ~~and~~ ~~AC vital~~ ~~bus~~ electrical power distribution ~~subsystems~~ shall be OPERABLE. ~~1~~ □

r□□□

Applicability
3.8.1.1
3.8.2.1
3.8.2.3

APPLICABILIT□□ MODES 1, 2, 3, and □.

ACTIONS

CONDITION	RE□UIRED ACTION	COMPLETION TIME
3.8.2.1 ACTION a. DOC A03 — A. One or more ~~Unit 1~~ AC electrical power distribution subsystems inoperable. □e □o o□e or more □□□□ □□ □□□□o□□ □o□r□□ □o□er□□e	A.1 --------------NOTE-------------- Enter applicable Conditions and Required Actions of LCO 3.8.□, □DC Sources - Operating, □for vital DC trains made inoperable by inoperable power distribution subsystems. e□e□r□□□□o□er □□ e□e□r□□□ ------------------------------------- Unit 1 Restore AC electrical power distribution subsystem(s) to OPERABLE status.	8 hours ~~2~~ □ 1 2
3.8.2.1 ACTION a. — B. One or more AC vital ~~buses~~ subsystems inoperable. □□□r□me□□□o□er □□□r□□□□o□	B.1 Restore AC vital ~~bus~~ subsystem(s) to OPERABLE status. □□□r□me□□□o□er □□□r□□□□o□	8 ~~2~~ hours 1
3.8.2.3 ACTION a. □□□ □□□ — C. One vital ~~or more~~ DC electrical power distribution subsystem~~s~~ inoperable.	C.1 Restore vital DC electrical power distribution subsystem~~(s)~~ to OPERABLE status.	2 hours 1

STET

INSERT 1 2

2 **INSERT 1**

DOC L01	D. One or more ~~Unit 2~~ AC electrical power distribution subsystems inoperable. [illegible] or more [illegible]	D.1	Declare associated required feature(s) inoperable.	Immediately	2
DOC A02	F ~~E~~. One or more ~~required~~ DG DC ~~subsystems~~ [illegible] inoperable.	F ~~E~~.1	Declare associated supported DG inoperable.	Immediately	2

NOTES

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1. Only applicable during planned maintenance.

2. Only applicable when Unit 2 is defueled or in MODE 6 following defueled with Unit 2 refueling water cavity level ≥ 23 ft. above top of reactor vessel flange.

6

DOC L03	E. One or more AC electrical power distribution subsystems inoperable due to one or more Unit 2 AC shutdown boards inoperable for reasons other than Condition D.	E.1 Restore Unit 2 AC electrical power distribution subsystem(s) to OPERABLE status.	24 hours	6

CTS

Distribution Systems - Operating
3.8.9

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
3.8.2.1 ACTION a. 3.8.2.3 ACTION a.	G ~~D~~. Required Action and associated Completion Time ~~for Condition A, B, or C~~ not met.	G ~~D~~.1	Be in MODE 3.	6 hours	2
		AND			
		G ~~D~~.2	Be in MODE 5.	36 hours	
DOC M02	H ~~G~~ ~~E~~. Two or more electrical power distribution subsystems inoperable that result in a loss of safety function.	H ~~G~~ ~~E~~.1	Enter LCO 3.0.3.	Immediately	2

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.8.2.1 4.8.2.3.1 DOC M01	SR 3.8.9.1	Verify correct breaker alignments and voltage to ~~[~~required~~]~~ AC, vital DC, DG DC, and AC vital ~~bus~~ electrical power distribution subsystems.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	3 1

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3.8 ELECTRICAL POWER S□STEMS

3.8.9 Distribution Systems - Operating

□□o

vital

~~, and diesel generator (DG) DC~~

3.8.1.1
3.8.2.1
3.8.2.3

LCO 3.8.9 ~~Train A and Train B AC, DC, and AC vital~~ ~~bus~~ electrical power distribution ~~subsystems~~ shall be OPERABLE. ~~1~~ □

r□□□

Applicability
3.8.1.1
3.8.2.1
3.8.2.3

APPLICABILIT□□ MODES 1, 2, 3, and □.

ACTIONS

CONDITION	RE□UIRED ACTION	COMPLETION TIME
3.8.2.1 ACTION a. DOC A03 — A. One or more ~~Unit 2~~ AC electrical power distribution subsystems inoperable. □□e □o o□e or more □□□□ □□ □□□□o□□ □o□r□□ □o□er□□e	A.1 --------------NOTE-------------- Enter applicable Conditions and Required Actions of LCO 3.8.□, □DC Sources - Operating,□ for vital DC trains made inoperable by inoperable power distribution subsystems. ------------------------------------- e□e□r□□□□□o□er □□ e□e□r□□□□	~~2~~ □ 1 □
3.8.2.1 ACTION a.	Restore Unit 2 AC electrical power distribution subsystem(s) to OPERABLE status. □□r□me□□□o□er □□□r□□□o□	8 hours 2
3.8.2.1 ACTION a. — B. One or more AC vital ~~buses~~ subsystems inoperable. □□r□me□□□o□er □□□r□□□o□	B.1 Restore AC vital ~~bus~~ subsystem(s) to OPERABLE status.	8 ~~2~~ hours 1
3.8.2.3 ACTION a. □□□ □□□ — C. One vital ~~or more~~ DC electrical power distribution subsystem~~s~~ inoperable.	C.1 Restore vital DC electrical power distribution subsystem~~(s)~~ to OPERABLE status.	2 hours 1

STET

INSERT 1 2

3.8.9

2 **INSERT 1**

DOC L01

DOC A02

D. One or more ~~Unit 1~~ AC electrical power distribution subsystems inoperable. [illegible]	D.1 Declare associated required feature(s) inoperable.	Immediately	2
F ~~E.~~ One or more ~~required~~ DG DC ~~subsystems~~ inoperable. [illegible]	F ~~E.~~1 Declare associated supported DG inoperable.	Immediately	2

NOTES

---

1. Only applicable during planned maintenance.

2. Only applicable when Unit 1 is defueled or in MODE 6 following defueled with Unit 1 refueling water cavity level ≥ 23 ft. above top of reactor vessel flange.

6

DOC L03

E. One or more AC electrical power distribution subsystems inoperable due to one or more Unit 1 AC shutdown boards inoperable for reasons other than Condition D.	E.1 Restore AC electrical power distribution subsystem(s) to OPERABLE status.	24 hours

6

CTS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
3.8.2.1 ACTION a. 3.8.2.3 ACTION a.	~~D~~ G. Required Action and associated Completion Time ~~for Condition A, B, or C~~ not met.	~~D~~ G.1	Be in MODE 3.	6 hours	2
		AND			
		~~D~~ G.2	Be in MODE 5.	36 hours	
DOC M02	~~E~~ H. Two or more electrical power distribution subsystems inoperable that result in a loss of safety function.	~~E~~ H.1	Enter LCO 3.0.3.	Immediately	2

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
3.8.2.1 3.8.2.3.1 DOC M01	SR 3.8.9.1	Verify correct breaker alignments and voltage to ~~required~~ AC, vital DC, DG DC, and AC vital ~~bus~~ electrical power distribution subsystems.	~~7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program	3 1

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

1. Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. Changes are made to the ISTS to reflect the interaction between an operating unit's electrical distribution subsystem and those credited features needing support from the opposite unit's associated electrical distribution subsystem.

3. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

4. ISTS SR 3.8.9.1 provides two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Therefore, the Frequency for ITS SR 3.8.9.1 is "In accordance with the Surveillance Frequency Control Program."

5. ISTS LCO 3.8.9 is modified to: "Two electrical power distribution trains shall be OPERABLE." This change is made to simplify and clarify what is required to meet the LCO. As described in the ISTS Bases, each train consists of specific AC and DC electrical power distribution subsystems. Therefore, it is unnecessary to state in ISTS LCO 3.8.9 the specific electrical power distribution subsystems of Train A and B that are required to meet the LCO.

6. ISTS LCO 3.8.9 is modified to specify the Conditions that could be entered when an opposite unit's AC electrical power distribution subsystem is inoperable. During planned maintenance, the Condition entered will allow for an extended Completion Time versus the Condition if the subsystem is inoperable for reasons other than planned maintenance. The Condition that would be entered for planned maintenance also includes specific plant parameters that must be met in order to allow for an extended Completion Time.

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□ 3.8 E□ECTRIC□□ P□WER S□STE□S

□ 3.8.9 □istribution Systems - □perating

DG DC, instrument INSERT 1

□□SES

vital

□□C□□R□UN□

The onsite Class 1E □C, □C, and □C vital ~~bus~~ electrical power distribution systems are divided ~~by train~~ into ~~two~~ redundant and ~~vital~~ independent ~~□C, □C, and □C vital bus electrical power distribution subsystems.~~ INSERT 2

trains

Each ~~The~~ □C electrical power subsystem ~~for each train~~ consists of ~~a primary Engineered Safety Feature (ESF) 4.16 kV bus~~ and ~~secondary~~ 480 ~~and 120~~ V ~~buses, distribution panels, motor control centers and load centers~~. Each ~~4.16 kV ESF bus~~ has ~~at least~~ one separate and independent offsite source of power as well as a dedicated onsite diesel generator (□□) source. Each ~~4.16 kV ESF bus~~ is normally connected to a preferred offsite source. ~~□fter a loss of the preferred offsite power source to a 4.16 kV ESF bus, a transfer to the alternate offsite source is accomplished by utili□ing a time delayed bus undervoltage relay.~~ If ~~all~~ offsite sources ~~are~~ unavailable, the onsite emergency □□ suppl~~ies~~ power to the ~~4.16 kV ESF bus~~. Control power for the ~~4.16 kV~~ breakers is supplied from the Class 1E batteries. □dditional description of this system may be found in the □ases for □C□ 3.8.1, "□C Sources - □perating," and the □ases for □C□ 3.8.4, "□C Sources - □perating."

four; two; 6.9 kV Shutdown □oards; Shutdown Boards; train of 6.9 kV Shutdown □oards; 6.9 kV Shutdown □oard; for each 6.9 kV Shutdown □oard; an; s; y; is; affected 6.9 kV Shutdown □oards; 6.9 kV Shutdown □oard

~~The secondary □C electrical power distribution subsystem for each train includes the safety related buses, load centers, motor control centers, and distribution panels~~ shown in Table □ 3.8.9-1.

boards

consists of two Unit 1 120 V AC vital instrument power boards and two Unit 2 120 V AC vital instrument power boards

instrument power distribution subsystems

Each ~~The~~ 120 V□C vital ~~buses~~ ~~are arranged in two load groups per train~~ and are ~~normally~~ powered from the inverters. ~~The alternate power supply for the vital buses are Class 1E constant voltage source transformers powered from the same train as the associated inverter, and its use is governed by □C□ 3.8.7, "Inverters - □perating." Each constant voltage source transformer is powered from a Class 1E □C bus.~~

two

Each 125 V vital ~~The~~ □C electrical power distribution subsystem consists of two 125 V ~~bus(es) and distribution panel(s)~~ boards.

The 125 V vital DC electrical power distribution subsystem has manual access to a fifth vital battery. The fifth vital battery is intended to serve as a replacement for any one of the four 125 V DC vital batteries with no loss of system reliabilty under any mode of operation.

INSERT 3

The list of ~~all required~~ □C, vital □C and ~~vital~~ □C distribution ~~buses and panels~~ is presented in Table □ 3.8.9-1.

□C, vital; □□ □C,; subsystems; vital instrument electrical power

electrical power boards and distribution panels required for the

INSERT 6

3.8.9

1

INSERT 1

The two units share several structures and systems including the preferred and emergency (standby) electric power systems (UFS□R Chapter 8.0). The vital □C Power System is shared to the e□tent that a few loads (e.g., the vital inverters) in one nuclear unit are energi□ed by the □C power channels assigned primarily to power loads of the other unit. In no case does the sharing inhibit the safe shutdown of one unit while the other unit is e□periencing an accident. The Standby Power System serving each unit is divided into two redundant load groups (power trains). These power trains (Train □ and Train □ for each unit) supply power to safety-related equipment. □enerally, the Engineered Safety Feature (ESF) loads assigned to a unit are supplied by the unit designated trains. For e□ample, Safety In□ection (SI) pump 1□-□ (associated with Unit 1) is supplied by Shutdown □oard 1□-□ (also associated with Unit 1) while SI pump 2□-□ (associated with Unit 2) is supplied by Shutdown □oard 2□-□ (also associated with Unit 2).

Separate and similar systems and equipment are provided for each unit when required. In certain instances, both units share systems or some components of a system. Shared systems are the e□ception to the unit/power system association. □ecause both units share the power system, one unit's power system(s) supports certain components required by the other unit (e.g., emergency gas treatment system). ~~To show the unit, train, board, and panel association, Table □ 3.8.9-1 lists these power system components by train and unit designation.~~

Each electrical power distribution train consists of:
a. an AC electrical power distribution subsystem,
b. an AC vital instrument power distribution subsystem,
c. a vital DC electrical power distribution subsystem, and
d. a diesel generator (DG) DC electrical power distribution subsystem.

1

INSERT 2

~~In addition, each diesel generator (□□) has an associated □C electrical power distribution panel.~~

1

INSERT 3

Each

electrical power

consists of two

DC

s that supply power to the respective DG's auxiliary loads

~~The~~ □□ ~~125 Volt~~ □C distribution subsystem ~~includes a~~ 125 V distribution panel ~~for each □□~~. □uring normal operation, power is supplied to the distribution panel by a 480 V□C board through a battery charger. □uring emergency operation of the □□ (loss of offsite power source), the distribution panel is supplied power from a ~~58 cell~~ battery. This panel supplies power for □□ control, protection, and the engine □C lube oil circulating pump.

dedicated

Insert Page □ 3.8.9-1

1 **INSERT 6**

Associated with each board listed in Table B 3.8.9-1 are a number of safety significant electrical loads. When one or more of the boards specified in Table B 3.8.9-1 becomes inoperable, entry into the appropriate ACTIONS of LCO 3.8.9 is required. Some boards, distribution panels, and motor control centers (MCCs), which help comprise the AC and DC electrical power distribution subsystems, are not listed in Table B 3.8.9-1. The loss of electrical loads associated with these boards, panels, or MCCs may not result in a complete loss of a safety function necessary to shut down the reactor and maintain it in a safe condition. Therefore, should one or more of these boards, panels, or MCCs become inoperable due to a failure not affecting the OPERABILITY of a board listed in Table B 3.8.9-1 (e.g., a breaker supplying a single distribution panel fails open), the individual loads associated with the board, panel, or MCC are declared inoperable, and the appropriate Conditions and Required Actions of the LCOs governing the individual loads are entered.

BASES

APPLICABLE SAFETY ANALYSES

U vital instrument

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter ~~[6]~~ (Ref. 1), and in the FSAR, Chapter ~~[15]~~ (Ref. 2), assume ESF systems are OPERABLE. The AC, DC, and AC vital ~~bus~~ electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems. 1 2 2 1 4

vital DC, instrument

The OPERABILITY of the AC, DC, and AC vital ~~bus~~ electrical power distribution systems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining electrical power distribution systems OPERABLE during accident conditions in the event of: 1 4 1

a. An assumed loss of all offsite power or all onsite AC electrical power; and 3

b. A worst case single failure.

electrical power

The distribution systems satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii). 1

LCO

electrical vital instrument Insert 7

The required electrical power distribution subsystems listed in Table B 3.8.9-1 ensure the availability of AC, DC, and AC vital ~~bus~~ electrical power for the systems required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. ~~The AC, DC, and AC vital bus electrical power distribution subsystems are required to be OPERABLE.~~ 1 1 4 1 4

~~vital~~ ~~DC,~~ two trains

Maintaining ~~the Train A and Train B AC, DC, and AC vital bus~~ electrical power distribution ~~subsystems~~ OPERABLE ensures that the redundancy incorporated into the design of ESF is not defeated. Therefore, a single failure within any system or within the electrical power distribution ~~subsystems~~ will not prevent safe shutdown of the reactor. 1 4 4 1

trains

OPERABLE AC electrical power distribution subsystems require the associated ~~buses, load centers, motor control centers, and distribution panels~~ to be energized to their proper voltages. OPERABLE DC electrical power distribution subsystems require the associated ~~buses and distribution panels~~ to be energized to their proper voltage from either the associated battery or charger. OPERABLE vital ~~bus electrical~~ power distribution subsystems require the associated ~~buses~~ to be energized to their proper voltage from the associated ~~[~~inverter via inverted DC voltage, inverter using internal AC source~~, or Class 1E constant voltage transformer]~~. 1 2

boards vital and DG DC boards and distribution panels, as applicable, DC instrument boards or 120 volt regulated

INSERT 7

1 4

Two electrical power distribution trains are re□uired to be O□□□A□L□. □ach train includes□

a. an AC electrical power distribution subsystem □i.e., one □nit □6.9 □□ shutdown board, one □nit □6.9 □□ shutdown board, and associated □8□ □ shutdown boards□,
b. an AC vital instrument power distribution subsystem □i.e., two □nit □ □□□ □ AC instrument power boards and two □nit □ □□□ □ AC instrument power boards□,
c. a vital DC electrical power distribution subsystem □i.e., two □□□ □ DC boards□, and
d. a D□ DC electrical power distribution subsystem □i.e., two 125 V D□ distribution panels□.

BASES

LCO (continued)

vital

AC, DC,

In addition, tie breakers between redundant safety related AC, DC, and AC vital ~~bus~~ power distribution subsystems, if they exist, must be open. This prevents any electrical malfunction in any power distribution subsystem from propagating to the redundant subsystem, that could cause the failure of a redundant subsystem and a loss of essential safety function(s). If any tie breakers are closed, the affected redundant electrical power distribution subsystems are considered inoperable. This applies to the onsite, safety related redundant electrical power distribution subsystems. It does not, however, preclude redundant Class 1E ~~4.16 kV buses~~ from being powered from the same offsite circuit. 1

instrument electrical

6.9 kV Shutdown Boards

APPLICABILITY The electrical power distribution subsystems are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and 3

b. Adequate core cooling is provided, and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

Electrical power distribution subsystem requirements for MODES 5 and 6 are covered in the Bases for LCO 3.8.10, "Distribution Systems - Shutdown."

ACTIONS A.1

With one or more ~~Train A and B~~ ~~required~~ AC ~~buses, load centers, motor control centers, or distribution panels~~ (except AC vital ~~buses~~), ~~in one train~~ inoperable and a loss of function has not occurred, the remaining AC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining power distribution subsystems could result in the minimum required ESF functions not being supported. Therefore, the ~~required~~ AC ~~buses, load centers, motor control centers, and distribution panels~~ must be restored to OPERABLE status within 8 hours.

~~Unit 1~~

~~boards~~

portions of the

instrument

electrical power distribution subsystems

boards

due to one or more inoperable Unit 1 AC shutdown boards,

portions of the

Unit 1

~~boards~~

electrical distribution subsystems

Condition A worst scenario is one train without AC power (i.e., no offsite power to the train and the associated DG inoperable). In this Condition, the unit is more vulnerable to a complete loss of AC power. It is, therefore, imperative that the unit operator's attention be focused on minimizing the potential for loss of power to the remaining train by 4

case

of Unit 1 boards

Unit 1

SEQUOYAH UNIT 1

Revision XXX

□□SES

□CTI□NS (continued)

stabili□ing the unit, and on restoring power to the affected train. The 8 hour time limit before requiring a unit shutdown in this Condition is acceptable because of□

a. The potential for decreased safety if the unit operator's attention is diverted from the evaluations and actions necessary to restore power to the affected train, to the actions associated with taking the unit to shutdown within this time limit □ and 3

b. The potential for an event in con□unction with a single failure of a redundant component in the train with □C power.

Required □ction □.1 is modified by a Note that requires the applicable Conditions and Required □ctions of □C□ 3.8.4, "□C Sources - □perating," to be entered for vital □C trains made inoperable by inoperable AC electrical power electrical power distribution subsystems. This is an e□ception to □C□ 3.0.6 and ensures the proper actions are taken for these components. Inoperability of ~~a~~ one or more AC electrical power distribution ~~system~~ subsystems can result in loss of charging power to batteries and eventual loss of □C power. This Note ensures that the appropriate attention is given to restoring charging power to batteries, if necessary, after loss of distribution sub systems. 1 1 4 1 1

□.1

With one or more □C vital ~~buses~~ instrument power distribution subsystems inoperable, and a loss of function has not yet occurred, the remaining □PER□□□E □C vital ~~buses~~ portions of the instrument power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the unit and maintain it in the safe shutdown condition. □verall reliability is reduced, however, since an additional single failure could result in the minimum ~~(~~required~~)~~ ESF functions not being supported. Therefore, the ~~required~~ instrument power distribution subsystem(s) □C vital ~~bus~~ must be restored to □PER□□□E status within ~~2~~ 8 hours by powering the ~~bus~~ affected subsystems from the associated ~~(~~inverter via inverted □C~~,~~ or inverter using internal 120 volt regulated □C source~~, or Class 1E constant voltage transformer~~□. 1 1 2 1 2

Condition □ represents one or more □C vital ~~buses~~ instrument power distribution subsystems without power□ potentially both the □C source and the associated □C source are nonfunctioning. In this situation, the unit is significantly more vulnerable to a complete loss of all noninterruptible power. It is, therefore, imperative that the operator's attention focus on stabili□ing the unit, minimi□ing the potential for loss of power to the remaining vital ~~buses~~ ~~subsystems~~ instrument power boards and restoring power to the affected vital ~~bus~~ ~~subsystem~~ instrument power boards. 1 1 1

□□SES

□CTI□NS (continued)

8

This ~~2~~ hour limit is more conservative than Completion Times allowed for the vast ma□ority of components that are without adequate vital □C power. Taking e□ception to □C□ 3.0.2 for components without adequate vital □C power, that would have the Required □ction Completion Times shorter than ~~2~~ hours if declared inoperable, is acceptable because of□ 1

8

a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) and not allowing stable operations to continue~~,~~ 3

□

b. The potential for decreased safety by requiring entry into numerous □pplicable Conditions and Required □ctions for components without adequate vital □C power and not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected train, and 3

□

c. The potential for an event in con□unction with a single failure of a redundant component.

8

instrument power distribution subsystems remaining

The ~~2~~ hour Completion Time takes into account the importance to safety of restoring the □C vital ~~bus~~ to □PER□□□E status, the redundant capability afforded by the ~~other~~ □PER□□□E vital ~~buses~~, and the low probability of a □□□ occurring during this period. 1

~~subsystems~~ AC instrument power boards

STET electrical power distribution subsystems vital portions of the vital

C.1

With one ~~or more~~ □C ~~buses or distribution panels~~ inoperable, and a loss of function has not yet occurred, the remaining □C electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining □C electrical power distribution subsystem could result in the minimum required ESF functions not being supported. Therefore, the ~~required~~ □C ~~buses and distribution panels~~ must be restored to □PER□□□E status within 2 hours by powering the ~~bus~~ from the associated battery or charger. 4 1 2

portions of the vital s vital subsystems subsystem electrical power distribution

STET vital subsystems

Condition C represents one ~~or more~~ □C ~~buses or distribution panels~~ without adequate □C power□ potentially both with the battery significantly degraded and the associated charger nonfunctioning. In this situation, the unit is significantly more vulnerable to a complete loss of all □C power. It is, therefore, imperative that the operator's attention focus on stabili□ing the unit, minimi□ing the potential for loss of power to the remaining ~~trains~~ and restoring power to the affected ~~train.~~ 1

panels 1

□□SES

□CTI□NS (continued)

This 2 hour limit is more conservative than Completion Times allowed for the vast ma□ority of components that would be without power. Taking e□ception to □C□ 3.0.2 for components without adequate □C power, which would have Required □ction Completion Times shorter than 2 hours, is acceptable because of□

a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) while not allowing stable operations to continue~~,~~□ 5 3

b. The potential for decreased safety by requiring entry into numerous applicable Conditions and Required □ctions for components without □C power and not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected train~~,~~□ and 3

c. The potential for an event in con□unction with a single failure of a redundant component.

The 2 hour Completion Time for vital □C ~~buses~~ electrical power distribution subsystems is consistent with Regulatory □uide 1.93 (Ref. 3). 1

INSERT 4

G F ~~F~~ G

~~□~~.1 and ~~□~~.2 4

If ~~the~~ an inoperable electrical power distribution subsystem cannot be restored to □PER□□□E status within the required Completion Time, the unit must be brought to a □□□E in which the □C□ does not apply. To achieve this status, the unit must be brought to at least □□□E 3 within 6 hours and to □□□E 5 within 36 hours. The allowed Completion Times are reasonable, based on operating e□perience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems. 1

H □

~~E~~.1 H 4

□

Condition ~~E~~ corresponds to a level of degradation in the electrical power distribution system that ~~causes~~ results in a ~~required~~ loss of safety function ~~to be lost~~. When more than one inoperable electrical power distribution subsystem results in the loss of a ~~required~~ safety function, the plant is in a condition outside the accident analysis. Therefore, no additional time is □ustified for continued operation. □C□ 3.0.3 must be entered immediately to commence a controlled shutdown. 4 1 1

3.8.9

1 4 **INSERT 4**

□.1

~~With one or more Unit 2 □C electrical power distribution subsystems (e□cept □C vital) inoperable, the associated required feature(s) must be declared inoperable immediately and the appropriate Condition(s) entered. The Required □ctions of these appropriate Conditions will determine the impact of the inoperable Unit 2 □C electrical power distribution subsystem.~~

F ~~E~~.1

electrical power distribution panels

affected

With one or more ~~required~~ □□ □C ~~subsystems~~ inoperable there is no longer assurance the supported □□ is able to start and perform its necessary safety function. The □□ must therefore be declared inoperable immediately and the ~~appropriate~~ Condition(s) entered.

(s) corresponding (s)

□ ith one or more AC electrical power distribution subsystems □except AC vital instrument boards□inoperable due to one or more inoperable □nit □AC shutdown boards and a loss of function has not occurred, the remaining AC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining power distribution subsystems could result in the minimum re□uired □S□functions not being supported. Therefore, the associated re□uired feature□s□must be declared inoperable immediately and the corresponding Condition□s□entered. The □e□uired Action□s□of these Condition□s□will determine the impact of the inoperable □nit □AC shutdown board□s□.

Condition D is modified by two notes that limit the conditions and parameters that allow entry into Condition D. The first note states that Condition D is only applicable during planned maintenance. This will allow the plant configuration to be aligned to minimi□e features being inoperable when the opposite unit shutdown board is made inoperable. The second note limits the applicability of Condition D to the time period when the opposite unit is either defueled or in □OD□6 following defueled with refueling water cavity level □ □3 ft. above the top of the reactor vessel flange. This note limits the time period allowing Condition D to be entered, minimi□ing when the allowance can be utili□ed. The allowance for Condition D is acceptable based on the following□

a. The opposite unit's AC shutdown boards are not as critical to the operating unit □fewer operating unit loads□as the operating unit's AC shutdown boards.

b. □erforming maintenance on these components will increase the reliability of the Class □□ AC □lectrical □ower Distribution System.

c. The □e□uired Actions associated with the features declared inoperable provide compensatory measures during the performance of the planned maintenance.

d. The limited opportunities that allow the planned maintenance to occur.

During the planned maintenance of the □nit □AC shutdown boards, if a condition is discovered on these boards re□uiring corrective maintenance, this maintenance may be performed under Condition D.

□.□

□ ith one or more AC electrical power distribution subsystems □except AC vital instrument boards□inoperable due to one or more inoperable □nit □AC shutdown boards for reasons other than Condition D and a loss of function has not occurred, the remaining AC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining power distribution subsystems could result in the minimum re□uired □S□functions not being supported. Therefore, the inoperable □nit □AC electrical power distribution subsystem□s□must be returned to O□□□A□L□ status within □□ hours. The □□ hour time limit before re□uiring a unit shutdown in this Condition is acceptable because the opposite unit's AC shutdown boards are not as critical to the operating unit □fewer operating unit loads□as the operating unit's AC shutdown boards.

□□SES

SURVEI□□□NCE REQUIRE□ENTS

SR 3.8.9.1

instrument

□□ □C,

vital

sub

This Surveillance verifies that the ~~(~~required ~~□~~□C, □C, and □C vital ~~bus~~ electrical power distribution systems are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures the appropriate separation and independence of the electrical ~~divisions~~ is maintained, and the appropriate voltage is available to each required ~~bus~~. The verification of proper voltage availability on the ~~buses~~ ensures that the required voltage is readily available for motive as well as control functions for critical system loads connected to these ~~buses~~. ~~□The 7 day Frequency takes into account the redundant capability of the □C, □C, and □C vital bus electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.~~

power distribution trains

board

boards

2 1 4

1

6

~~□~~R

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S N□TE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utili□e the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~----------~~□

7

REFERENCES

U

1. FS□R, Chapter ~~6~~.□

U

2. FS□R, Chapter ~~15~~.□

1 2

3. Regulatory □uide 1.93, □ecember 1974.

~~Safety Related □nsite~~

Table □ 3.8.9-1 (page 1 of 1)
□C and □C Electrical Power □istribution Systems

INSERT 5

~~T□PE~~	~~V□□T□□E~~	~~TR□IN □□~~	~~TR□IN □□~~
~~□C safety buses~~	~~4160 V□~~	~~ESF □us □N□01□~~	~~ESF □us □N□02□~~
	~~480 V□~~	~~□oad Centers □N□01, N□03□~~	~~□oad Centers □N□02, N□04□~~
	~~480 V□~~	~~□otor Control Centers □N□01□, N□01I, N□01□, N□03C, N□03I, N□03□□~~	~~□otor Control Centers □N□02□, N□02I, N□02□, N□04C, N□04I, N□04□□~~
	~~120 V□~~	~~□istribution Panels □NP01, NP03□~~	~~□istribution Panels □NP02, NP04□~~
~~□C buses~~	~~125 V□~~	~~□us □N□01□~~	~~□us □N□02□~~
		~~□us □N□03□~~	~~□us □N□04□~~
		~~□istribution Panels □N□41, N□43, N□51□~~	~~□istribution Panels □N□42, N□44, N□52□~~
~~□C vital buses~~	~~120 V□~~	~~□us □NN01□~~	~~□us □NN02□~~
		~~□us □NN03□~~	~~□us □NN04□~~

1

~~□Each train of the □C and □C electrical power distribution systems is a subsystem.~~ 1

1 **INSERT 5**

T□PE	V□□T□□E (nominal)	SR 3.8.9.1 Voltage Range	TR□IN ~~□~~ SUBSYSTEMS		TR□IN ~~□~~ SUBSYSTEMS	
Vital □C ~~battery boards~~ electrical power	125 V	≥ 129 V and ≤ 140 V	□oard I	□oard III	□oard II	□oard IV
□C ~~safety boards~~ electrical power			Unit 1	Unit 2	Unit 1	Unit 2
	6900 V	≥ 6560 V and ≤ 7260 V	S□ □□ 1□-□	S□ □□ 2□-□	S□ □□ 1□-□	S□ □□ 2□-□
	480 V	≥ 440 V and ≤ 508 V	S□ □□ 1□1-□ 1□2-□	S□ □□ 2□1-□ 2□2-□	S□ □□ 1□1-□ 1□2-□	S□ □□ 2□1-□ 2□2-□
			~~R□□□V □d 1□1-□ 1□2-□~~	~~R□□□V □d 2□1-□ 2□2-□~~	~~R□□□V □d 1□1-□ 1□2-□~~	~~R□□□V □d 2□1-□ 2□2-□~~
			~~C □ □ Vent □d 1□1-□~~	~~C □ □ Vent □d 2□1-□~~	~~C □ □ Vent □d 1□1-□~~	~~C □ □ Vent □d 2□1-□~~
			~~□iesel □u□□d 1□1-□ 1□2-□~~	~~□iesel □u□□d 2□1-□ 2□2-□~~	~~□iesel □u□□d 1□1-□ 1□2-□~~	~~□iesel □u□□d 2□1-□ 2□2-□~~
			~~ERCW □CC 1□-□~~	~~ERCW □CC 2□-□~~	~~ERCW □CC 1□-□~~	~~ERCW □CC 2□-□~~
□C vital instrument power ~~boards~~ electrical	120 V	≥ 120.6 V and ≤ 126.6 V	Unit 1 □oard 1-I □oard 1-III	Unit 2 □oard 2-I □oard 2-III	Unit 1 □oard 1-II □oard 1-IV	Unit 2 □oard 2-II □oard 2-IV
□□ □C ~~boards~~ electrical power	125 V	≥ 124 V and ≤ 135 V	□□ 1□-□ □ist. Pnl.	□□ 2□-□ □ist. Pnl.	□□ 1□-□ □ist. Pnl.	□□ 2□-□ □ist. Pnl.

This page is replaced by Revised Insert 5. Changes made to INSERT 5 are illustrated on this page. Insertions are indicated by a text box with an arrow. Deletions are indicated with lines drawn through deleted text and highlighting. The subsystems in ITS Table B 3.8.9-1 have been reordered to align with the order of their description in the Bases Background Section.

1 REVISED INSERT 5

T□□□	□OLTA□□ □nominal□	S□ 3.8.9.□ □oltage □ange	T□AI□ A S□□S□ST□□S		T□AI□ □ S□□S□ST□□S	
AC electrical power			<u>□nit □</u>	<u>□nit □</u>	<u>□nit □</u>	<u>□nit □</u>
	69□□ □	≥ 6□6□ □ and ≤ □□6□ □	SD □D □A□A	SD □D □A□A	SD □D □□□□	SD □D □□□□
	□8□ □	≥ □□□ □ and ≤ □□8 □	SD □D □A□A □A□A	SD □D □A□A □A□A	SD □D □□□□ □□□□	SD □D □□□□ □□□□
AC vital instrument electrical power	□□□ □	≥ □□□.6 □ and ≤ □□6.6 □	<u>□nit □</u> □oard □□I □oard □□III	<u>□nit □</u> □oard □□I □oard □□III	<u>□nit □</u> □oard □□II □oard □□I□	<u>□nit □</u> □oard □□II □oard □□I□
□ital DC electrical power	□□□ □	≥ □□9 □ and ≤ □□□ □	□oard I	□oard III	□oard II	□oard I□
D□ DC electrical power	□□□ □	≥ 124 V and ≤ 135 V	D□ □A□A Dist. □nl.	D□ □A□A Dist. □nl.	D□ □□□□ Dist. □nl.	D□ □□□□ Dist. □nl.

□ 3.8 E□ECTRIC□□ P□WER S□STE□S

□ 3.8.9 □istribution Systems - □perating

□□SES

INSERT 1 1

DG DC, instrument vital

□□C□□R□UN□ The onsite Class 1E □C, □C, and □C vital ~~bus~~ electrical power distribution systems are divided ~~by train~~ into ~~□~~two~~□~~redundant and independent ~~□C, □C, and □C vital bus electrical power distribution subsystems.~~ INSERT 2 1 2 1 1 1

trains ~~vital~~

Each four two

~~The~~ □C electrical power subsystem ~~for each train~~ consists of ~~a primary Engineered Safety Feature (ESF) 4.16 kV bus~~ and ~~secondary~~ ~~□~~480 ~~and 120□~~V ~~buses, distribution panels, motor control centers and load centers~~. Each ~~4.16 kV ESF bus□~~has ~~at least~~ ~~□~~one separate and independent offsite source of power~~□~~as well as a dedicated onsite diesel generator (□□) source. Each ~~4.16 kV ESF bus□~~is normally connected to a preferred offsite source. ~~□fter a loss of the preferred offsite power source to a 4.16 kV ESF bus, a transfer to the alternate offsite source is accomplished by utili□ing a time delayed bus undervoltage relay.~~ If ~~all~~ offsite source~~s~~ ~~are~~ unavailable, the onsite emergency □□ suppli~~es~~ power to the ~~4.16 kV ESF bus~~. Control power for the ~~4.16 kV~~ breakers is supplied from the Class 1E batteries. □dditional description of this system may be found in the □ases for □C□ 3.8.1, "□C Sources - □perating," and the □ases for □C□ 3.8.4, "□C Sources - □perating." 1 1 2 1 2 1 2 2 1 1 1

6.9 kV Shutdown □oards
Shutdown Boards
train of 6.9 kV Shutdown □oards
6.9 kV Shutdown □oard
for each 6.9 kV Shutdown □oard
an
is
s
affected 6.9 kV Shutdown □oards
y
6.9 kV Shutdown □oard

~~The secondary □C electrical power distribution subsystem for each train includes the safety related buses, load centers, motor control centers, and distribution panels shown in Table □ 3.8.9-1.~~ 8 ~~4~~

~~boards~~

consists of two Unit 1 120 V AC vital instrument power boards and two Unit 2 120 V AC vital instrument power boards

instrument power distribution subsystems

Each

~~The~~ 120 V□C vital ~~buses~~ ~~are arranged in two load groups per train~~ and are ~~normally~~ powered from the inverters. ~~The alternate power supply for the vital buses are Class 1E constant voltage source transformers powered from the same train as the associated inverter, and its use is governed by □C□ 3.8.7, "Inverters - □perating." Each constant voltage source transformer is powered from a Class 1E □C bus.~~ 1

two

vital
Each 125 V
boards

~~The~~ □C electrical power distribution subsystem consists of ~~□~~125~~□~~V ~~bus(es) and distribution panel(s)~~. 1 2 1

The 125 V vital DC electrical power distribution subsystem has manual access to a fifth vital battery. The fifth vital battery is intended to serve as a replacement for any one of the four 125 V DC vital batteries with no loss of system reliabilty under any mode of operation.

INSERT 3 1
□C, vital

The list of ~~all required~~ □C and ~~vital~~ □C distribution ~~buses~~ ~~□and panels□~~ is presented in Table □ 3.8.9-1. 1 2 4

□□ □C,
subsystems
vital instrument electrical power
electrical power boards and distribution panels required for the

INSERT 6 1

SEQU□□□□ UNIT 2 Revision □□□

1

INSERT 1

The two units share several structures and systems including the preferred and emergency (standby) electric power systems (UFS□R Chapter 8.0). The vital □C Power System is shared to the e□tent that a few loads (e.g., the vital inverters) in one nuclear unit are energi□ed by the □C power channels assigned primarily to power loads of the other unit. In no case does the sharing inhibit the safe shutdown of one unit while the other unit is e□periencing an accident. The Standby Power System serving each unit is divided into two redundant load groups (power trains). These power trains (Train □ and Train □ for each unit) supply power to safety-related equipment. □enerally, the Engineered Safety Feature (ESF) loads assigned to a unit are supplied by the unit designated trains. For e□ample, Safety In□ection (SI) pump 1□-□ (associated with Unit 1) is supplied by Shutdown □oard 1□-□ (also associated with Unit 1) while SI pump 2□-□ (associated with Unit 2) is supplied by Shutdown □oard 2□-□ (also associated with Unit 2).

Separate and similar systems and equipment are provided for each unit when required. In certain instances, both units share systems or some components of a system. Shared systems are the e□ception to the unit/power system association. □ecause both units share the power system, one unit's power system(s) supports certain components required by the other unit (e.g., emergency gas treatment system). ~~To show the unit, train, board, and panel association, Table □ 3.8.9-1 lists these power system components by train and unit designation.~~

Each electrical power distribution train consists of:
a. an AC electrical power distribution subsystem,
b. an AC vital instrument power distribution subsystem,
c. a vital DC electrical power distribution subsystem, and
d. a diesel generator (DG) DC electrical power distribution subsystem.

1

INSERT 2

~~In addition, each diesel generator (□□) has an associated □C electrical power distribution panel.~~

1

INSERT 3

Each

electrical power

consists of two

DC

s that supply power to the respective DG's auxiliary loads

~~The~~ □□ ~~125 Volt~~ □C distribution subsystem ~~includes a~~ 125 V distribution panel ~~for each □□~~. □uring normal operation, power is supplied to the distribution panel by a 480 V□C board through a battery charger. □uring emergency operation of the □□ (loss of offsite power source), the distribution panel is supplied power from a ~~58 cell~~ battery. This panel supplies power for □□ control, protection, and the engine □C lube oil circulating pump.

dedicated

Insert Page □ 3.8.9-1

1 INSERT 6

Associated with each board listed in Table B 3.8.9-1 are a number of safety significant electrical loads. When one or more of the boards specified in Table B 3.8.9-1 becomes inoperable, entry into the appropriate ACTIONS of LCO 3.8.9 is required. Some boards, distribution panels, and motor control centers (MCCs), which help comprise the AC and DC electrical power distribution subsystems, are not listed in Table B 3.8.9-1. The loss of electrical loads associated with these boards, panels, or MCCs may not result in a complete loss of a safety function necessary to shut down the reactor and maintain it in a safe condition. Therefore, should one or more of these boards, panels, or MCCs become inoperable due to a failure not affecting the OPERABILITY of a board listed in Table B 3.8.9-1 (e.g., a breaker supplying a single distribution panel fails open), the individual loads associated with the board, panel, or MCC are declared inoperable, and the appropriate Conditions and Required Actions of the LCOs governing the individual loads are entered.

□□SES

□PP□IC□□□E S□FET□ □N□□□SES

U

vital

instrument

The initial conditions of □esign □asis □ccident (□□□) and transient analyses in the FS□R, Chapter ~~6~~ (Ref. 1), and in the FS□R, Chapter ~~15~~ (Ref. 2), assume ESF systems are □PER□□□E. The □C, □C, and □C vital ~~bus~~ electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System, and containment design limits are not e□ceeded. These limits are discussed in more detail in the □ases for Section 3.2, Power □istribution □imits□Section 3.4, Reactor Coolant System (RCS)□and Section 3.6, Containment Systems. 1 2 2 1 4

□□ □C,

vital □□ □C,

instrument

electrical

The □PER□□I□IT□ of the □C, □C, and □C vital ~~bus~~ electrical power distribution systems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining power distribution systems □PER□□□E during accident conditions in the event of□ 1 4 1

a. □n assumed loss of all offsite power or all onsite □C electrical power, and 3

□

b. □ worst case single failure.

electrical power

The distribution systems satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii). 1

□C□

electrical

vital

instrument

□□ □C,

The required power distribution subsystems listed in Table □ 3.8.9-1 ensure the availability of □C, □C, and □C vital ~~bus~~ electrical power for the systems required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (□□□) or a postulated □□□. ~~The □C, □C, and □C vital bus electrical power distribution subsystems are required to be □PER□□□E.~~ 1 1 4 1 4

~~vital~~

Insert 7

~~□□ □C,~~

~~vital~~

~~□□ □C,~~

two

trains

trains

□aintaining ~~the Train □ and Train □ □C, □C, and □C vital bus~~ ~~bus~~ electrical power distribution ~~subsystems~~ □PER□□□E ensures that the redundancy incorporated into the design of ESF is not defeated. Therefore, a single failure within any system or within the electrical power distribution ~~subsystems~~ will not prevent safe shutdown of the reactor. 1 4 4 1

boards

vital

and DG DC

boards

and distribution panels, as applicable,

□C

instrument

boards

or

□PER□□□E □C electrical power distribution subsystems require the associated ~~buses, load centers, motor control centers, and distribution panels~~ to be energi□ed to their proper voltages. □PER□□□E □C electrical power distribution subsystems require the associated ~~buses and distribution panels~~ to be energi□ed to their proper voltage from either the associated battery or charger. □PER□□□E vital ~~bus electrical~~ power distribution subsystems require the associated ~~buses~~ to be energi□ed to their proper voltage from the associated ~~□~~inverter via inverted □C voltage, inverter using internal □C source~~, or Class 1E constant voltage transformer□~~. 1 2

120 volt regulated

1 4 INSERT 7

Two electrical power distribution trains are re□uired to be O□□□A□L□. □ach train includes□

a. an AC electrical power distribution subsystem □i.e., one □nit □6.9 □□ shutdown board, one □nit □6.9 □□ shutdown board, and associated □8□ □ shutdown boards□,
b. an AC vital instrument power distribution subsystem □i.e., two □nit □ □□□ □ AC instrument power boards and two □nit □ □□□ □ AC instrument power boards□,
c. a vital DC electrical power distribution subsystem □i.e., two □□□ □ DC boards□, and
d. a D□ DC electrical power distribution subsystem □i.e., two 125 V D□ distribution panels□.

□□SES

□C□ (continued)

vital □□ □C,

In addition, tie breakers between redundant safety related □C, □C, and □C vital ~~bus~~ power distribution subsystems, if they e□ist, must be open. This prevents any electrical malfunction in any power distribution subsystem from propagating to the redundant subsystem, that could cause the failure of a redundant subsystem and a loss of essential safety function(s). If any tie breakers are closed, the affected redundant electrical power distribution subsystems are considered inoperable. This applies to the onsite, safety related redundant electrical power distribution subsystems. It does not, however, preclude redundant Class 1E ~~4.16 kV buses~~ from being powered from the same offsite circuit. 1 4 1 1

instrument electrical

6.9 kV Shutdown □oards

□PP□IC□□I□IT□

The electrical power distribution subsystems are required to be □PER□□□E in □□□ES 1, 2, 3, and 4 to ensure that□

a. □cceptable fuel design limits and reactor coolant pressure boundary limits are not e□ceeded as a result of □□□s or abnormal transients □ and 3

b. □dequate core cooling is provided, and containment □PER□□I□IT□ and other vital functions are maintained in the event of a postulated □□□.

Electrical power distribution subsystem requirements for □□□ES 5 and 6 are covered in the □ases for □C□ 3.8.10, "□istribution Systems - Shutdown."

□CTI□NS

□.1

~~Unit 2~~ ~~boards~~ portions of the

With one or more ~~Train □ and □~~ ~~required~~ □C ~~buses, load centers, motor control centers, or distribution panels~~ (e□cept □C vital ~~buses~~), ~~in one train~~ inoperable and a loss of function has not occurred, the remaining □C electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining power distribution subsystems could result in the minimum required ESF functions not being supported. Therefore, the ~~required~~ □C ~~buses, load centers, motor control centers, and distribution panels~~ must be restored to □PER□□□E status within 8 hours. 4 1 9 4 1 1 4 1 1

instrument

electrical power distribution subsystems

due to one or more inoperable Unit 2 AC shutdown boards,

boards

portions of the

Unit 2

~~boards~~

electrical distribution subsystems

case

of Unit 2 boards

Condition □ worst scenario is one train without □C power (i.e., no offsite power to the train and the associated □□ inoperable). In this Condition, the unit is more vulnerable to a complete loss of □C power. It is, therefore, imperative that the unit operator's attention be focused on minimi□ing the potential for loss of power to the remaining train by 4 4

Unit 2

□□SES

□CTI□NS (continued)

stabili□ing the unit, and on restoring power to the affected train. The 8 hour time limit before requiring a unit shutdown in this Condition is acceptable because of□

a. The potential for decreased safety if the unit operator's attention is diverted from the evaluations and actions necessary to restore power to the affected train, to the actions associated with taking the unit to shutdown within this time limit □ and 3

b. The potential for an event in con□unction with a single failure of a redundant component in the train with □C power.

Required □ction □.1 is modified by a Note that requires the applicable Conditions and Required □ctions of □C□ 3.8.4, "□C Sources - □perating," to be entered for vital □C electrical power trains made inoperable by inoperable AC electrical power distribution subsystems. This is an e□ception to □C□ 3.0.6 and ensures the proper actions are taken for these components. Inoperability of ~~a~~ one or more AC electrical power distribution ~~system~~ subsystems can result in loss of charging power to batteries and eventual loss of □C power. This Note ensures that the appropriate attention is given to restoring charging power to batteries, if necessary, after loss of distribution sub systems. 1 1 4 1 1 1

□.1

With one or more □C vital ~~buses~~ instrument power distribution subsystems inoperable, and a loss of function has not yet occurred, the remaining □PER□□□E □C vital ~~buses~~ portions of the instrument power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the unit and maintain it in the safe shutdown condition. □verall reliability is reduced, however, since an additional single failure could result in the minimum ~~(~~required~~)~~ ESF functions not being supported. Therefore, the ~~required~~ □C vital ~~bus~~ instrument power distribution subsystem(s) must be restored to □PER□□□E status within ~~2~~ 8 hours by powering the ~~bus~~ affected subsystems from the associated ~~(~~inverter via inverted □C~~,~~ or inverter using internal 120 volt regulated □C source~~, or Class 1E constant voltage transformer~~□. 1 2 1 1 2

Condition □ represents one or more □C vital ~~buses~~ instrument power distribution subsystems without power□ potentially both the □C source and the associated □C source are nonfunctioning. In this situation, the unit is significantly more vulnerable to a complete loss of all noninterruptible power. It is, therefore, imperative that the operator's attention focus on stabili□ing the unit, minimi□ing the potential for loss of power to the remaining vital ~~buses~~ ~~subsystems~~ instrument power boards and restoring power to the affected vital ~~bus~~ ~~subsystem~~ instrument power boards. 1 1 1

BASES

ACTIONS (continued)

8

This ~~2~~ hour limit is more conservative than Completion Times allowed for the vast majority of components that are without adequate vital DC power. Taking exception to LCO 3.0.2 for components without adequate vital DC power, that would have the Required Action Completion Times shorter than ~~2~~ hours if declared inoperable, is acceptable because of: 1 1

8

a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) and not allowing stable operations to continue~~,~~ ; 3

b. The potential for decreased safety by requiring entry into numerous Applicable Conditions and Required Actions for components without adequate vital DC power and not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected train~~,~~ ; and 3

c. The potential for an event in conjunction with a single failure of a redundant component.

8

The ~~2~~ hour Completion Time takes into account the importance to safety of restoring the DC vital ~~bus~~ subsystems instrument power distribution to OPERABLE status, the redundant capability afforded by the ~~other~~ remaining OPERABLE AC vital ~~buses~~ ~~subsystems~~ instrument power boards, and the low probability of a DBA occurring during this period. 1

C.1

STET

With one ~~or more~~ vital DC ~~buses or distribution panels~~ electrical power distribution subsystems inoperable, and a loss of function has not yet occurred, the remaining vital portions of the DC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining vital portions of the DC electrical power distribution subsystem s could result in the minimum required ESF functions not being supported. Therefore, the ~~required~~ vital DC ~~buses and distribution panels~~ subsystems must be restored to OPERABLE status within 2 hours by powering the ~~bus~~ subsystem from the associated battery or charger. 4 1 2

STET

Condition C represents one ~~or more~~ vital DC ~~buses or distribution panels~~ electrical power distribution subsystems without adequate DC power; potentially both with the battery significantly degraded and the associated charger nonfunctioning. In this situation, the unit is significantly more vulnerable to a complete loss of all DC power. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for loss of power to the remaining ~~trains~~ panels and restoring power to the affected ~~train~~ panels. 1 1

BASES

ACTIONS (continued)

This 2 hour limit is more conservative than Completion Times allowed for the vast majority of components that would be without power. Taking exception to LCO 3.0.2 for components without adequate AC power, which would have Required Action Completion Times shorter than 2 hours, is acceptable because of:

a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) while not allowing stable operations to continue~~,~~ ; 5 3

b. The potential for decreased safety by requiring entry into numerous applicable Conditions and Required Actions for components without AC power and not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected train~~,~~ ; and 3

c. The potential for an event in conjunction with a single failure of a redundant component.

electrical power distribution subsystems

vital

The 2 hour Completion Time for AC ~~buses~~ is consistent with Regulatory Guide 1.93 (Ref. 3). 1

INSERT 4

G F F G

~~E~~.1 and ~~E~~.2 4

an electrical power

If ~~the~~ inoperable distribution subsystem cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems. 1

H

~~E~~.1 H 4

results in loss of

Condition ~~E~~ corresponds to a level of degradation in the electrical power distribution system that ~~causes~~ a ~~required~~ safety function ~~to be lost~~. When more than one inoperable electrical power distribution subsystem results in the loss of a ~~required~~ function, the plant is in a condition outside the accident analysis. Therefore, no additional time is justified for continued operation. LCO 3.0.3 must be entered immediately to commence a controlled shutdown. 4 1 1

safety

1 4

INSERT 4

□.1

~~With one or more Unit 1 □C electrical power distribution subsystems (e□cept □C vital) inoperable, the associated required feature(s) must be declared inoperable immediately and the appropriate Condition(s) entered. The Required □ctions of these appropriate Conditions will determine the impact of the inoperable Unit 1 □C electrical power distribution subsystem.~~

F ~~E~~.1

electrical power distribution panels

affected

With one or more ~~required~~ □□ □C ~~subsystems~~ inoperable there is no longer assurance the supported □□ is able to start and perform its necessary safety function. The □□ must therefore be declared inoperable immediately and the ~~appropriate~~ Condition(s) entered.

(s) corresponding (s)

□ ith one or more AC electrical power distribution subsystems □except AC vital instrument boards□inoperable due to one or more inoperable □nit □AC shutdown boards and a loss of function has not occurred, the remaining AC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining power distribution subsystems could result in the minimum re□uired □S□functions not being supported. Therefore, the associated re□uired feature□s□must be declared inoperable immediately and the corresponding Condition□s□entered. The □e□uired Action□s□of these Condition□s□will determine the impact of the inoperable □nit □AC shutdown board□s□.

Condition D is modified by two notes that limit the conditions and parameters that allow entry into Condition D. The first note states that Condition D is only applicable during planned maintenance. This will allow the plant configuration to be aligned to minimi□e features being inoperable when the opposite unit shutdown board is made inoperable. The second note limits the applicability of Condition D to the time period when the opposite unit is either defueled or in □OD□ 6 following defueled with refueling water cavity level □ □3 ft. above the top of the reactor vessel flange. This note limits the time period allowing Condition D to be entered, minimi□ing when the allowance can be utili□ed. The allowance for Condition D is acceptable based on the following□

a. The opposite unit's AC shutdown boards are not as critical to the operating unit □fewer operating unit loads□as the operating unit's AC shutdown boards.

b. □erforming maintenance on these components will increase the reliability of the Class □□ AC □lectrical □ower Distribution System.

c. The □e□uired Actions associated with the features declared inoperable provide compensatory measures during the performance of the planned maintenance.

d. The limited opportunities that allow the planned maintenance to occur.

During the planned maintenance of the □nit □AC shutdown boards, if a condition is discovered on these boards re□uiring corrective maintenance, this maintenance may be performed under Condition D.

□.□

□ ith one or more AC electrical power distribution subsystems □except AC vital instrument boards□inoperable due to one or more inoperable □nit □AC shutdown boards for reasons other than Condition D and a loss of function has not occurred, the remaining AC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining power distribution subsystems could result in the minimum re□uired □S□functions not being supported. Therefore, the inoperable □nit □AC electrical power distribution subsystem□s□must be returned to O□□□A□L□ status within □□ hours. The □□ hour time limit before re□uiring a unit shutdown in this Condition is acceptable because the opposite unit's AC shutdown boards are not as critical to the operating unit □fewer operating unit loads□as the operating unit's AC shutdown boards.

□□SES

SURVEI□□□NCE REQUIRE□ENTS

SR 3.8.9.1

instrument

□□ □C, vital sub

This Surveillance verifies that the ~~□~~required~~□~~□C, □C, and □C vital ~~bus~~ electrical power distribution systems are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures the appropriate separation and independence of the electrical ~~divisions~~ is maintained, and the appropriate voltage is available to each required ~~bus~~. The verification of proper voltage availability on the ~~buses~~ ensures that the required voltage is readily available for motive as well as control functions for critical system loads connected to these ~~buses~~. ~~□The 7 day Frequency takes into account the redundant capability of the □C, □C, and □C vital bus electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.~~ 2 1 4

power distribution trains 1

board

boards

~~□R~~ 6

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER□S N□TE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utili□e the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---□~~ 7

REFERENCES

1. U FS□R, Chapter ~~6~~.□
2. U FS□R, Chapter ~~15~~.□ 1 2
3. Regulatory □uide 1.93, □ecember 1974.

~~Safety Related □nsite~~

Table □ 3.8.9-1 (page 1 of 1)
□C and □C Electrical Power □istribution Systems

INSERT 5

~~T□PE~~	~~V□□T□□E~~	~~TR□IN □□~~	~~TR□IN □□~~
~~□C safety buses~~	~~4160 V□~~	~~ESF □us□N□01□~~	~~ESF □us□N□02□~~
	~~480 V□~~	~~□oad Centers N□01, N□03□~~	~~□oad Centers N□02, N□04□~~
	~~480 V□~~	~~□otor Control Centers N□01□, N□01I, N□01□, N□03C, N□03I, N□03□□~~	~~□otor Control Centers N□02□, N□02I, N□02□, N□04C, N□04I, N□04□□~~
	~~120 V□~~	~~□istribution Panels NP01, NP03□~~	~~□istribution Panels NP02, NP04□~~
~~□C buses~~	~~125 V□~~	~~□us N□01□~~	~~□us N□02□~~
		~~□us N□03□~~	~~□us N□04□~~
		~~□istribution Panels N□41, N□43, N□51□~~	~~□istribution Panels N□42, N□44, N□52□~~
~~□C vital buses~~	~~120 V□~~	~~□us NN01□~~	~~□us NN02□~~
		~~□us NN03□~~	~~□us NN04□~~

1

~~□Each train of the □C and □C electrical power distribution systems is a subsystem.~~

1

1 **INSERT 5**

T□PE	V□□T□□E (nominal)	SR 3.8.9.1 Voltage Range	TR□IN □~~□~~ SUBSYSTEMS		TR□IN □~~□~~ SUBSYSTEMS	
Vital □C electrical power ~~battery boards~~	125 V	≥ 129 V and ≤ 140 V	□oard I	□oard III	□oard II	□oard IV
□C ~~safety boards~~ electrical power	6900 V 480 V	≥ 6560 V and ≤ 7260 V ≥ 440 V and ≤ 508 V	Unit 1 S□ □□ 1□-□ S□ □□ 1□1-□ 1□2-□ ~~R□□□V□d 1□1-□ 1□2-□~~ ~~C□□□Vent□d 1□1-□~~ ~~□iesel □u□□d 1□1-□ 1□2-□~~ ~~ERCW □CC 1□-□~~	Unit 2 S□ □□ 2□-□ S□ □□ 2□1-□ 2□2-□ ~~R□□□V□d 2□1-□ 2□2-□~~ ~~C□□□Vent□d 2□1-□~~ ~~□iesel □u□□d 2□1-□ 2□2-□~~ ~~ERCW □CC 2□-□~~	Unit 1 S□ □□ 1□-□ S□ □□ 1□1-□ 1□2-□ ~~R□□□V□d 1□1-□ 1□2-□~~ ~~C□□□Vent□d 1□1-□~~ ~~□iesel □u□□d 1□1-□ 1□2-□~~ ~~ERCW □CC 1□-□~~	Unit 2 S□ □□ 2□-□ S□ □□ 2□1-□ 2□2-□ ~~R□□□V□d 2□1-□ 2□2-□~~ ~~C□□□Vent□d 2□1-□~~ ~~□iesel □u□□d 2□1-□ 2□2-□~~ ~~ERCW □CC 2□-□~~
□C vital instrument power electrical ~~boards~~	120 V	≥ 120.6 V and ≤ 126.6 V	Unit 1 □oard 1-I □oard 1-III	Unit 2 □oard 2-I □oard 2-III	Unit 1 □oard 1-II □oard 1-IV	Unit 2 □oard 2-II □oard 2-IV
□□ □C ~~boards~~ electrical power	125 V	≥ 124 V and ≤ 135 V	□□ 1□-□ □ist. Pnl.	□□ 2□-□ □ist. Pnl.	□□ 1□-□ □ist. Pnl.	□□ 2□-□ □ist. Pnl.

This page is replaced by Revised Insert 5. Changes made to INSERT 5 are illustrated on this page. Insertions are indicated by a text box with an arrow. Deletions are indicated with lines drawn through deleted text and highlighting. The subsystems in ITS Table B 3.8.9-1 have been reordered to align with the order of their description in the Bases Background Section.

1

REVISED INSERT 5

T□□□	□OLTA□□ (□nominal□)	S□ 3.8.9.□ □oltage □ange	T□AI□ A S□□S□ST□□S		T□AI□ □ S□□S□ST□□S	
AC electrical power			□nit □	□nit □	□nit □	□nit □
	69□□ □	≥ 6□6□ □ and ≤ □□6□ □	SD □D □A□A	SD □D □A□A	SD □D □□□□	SD □D □□□□
	□8□ □	≥ □□□ □ and ≤ □□8 □	SD □D □A□A □A□A	SD □D □A□A □A□A	SD □D □□□□ □□□□	SD □D □□□□ □□□□
AC vital instrument electrical power			□nit □	□nit □	□nit □	□nit □
	□□□ □	≥ □□□.6 □ and ≤ □□6.6 □	□oard □□I □oard □□III	□oard □□I □oard □□III	□oard □□II □oard □□I□	□oard □□II □oard □□I□
□ital DC electrical power	□□□ □	≥ □□9 □ and ≤ □□□ □	□oard I	□oard III	□oard II	□oard I□
D□ DC electrical power	□□□ □	≥ 124 V and ≤ 135 V	D□ □A□A Dist. □nl.	D□ □A□A Dist. □nl.	D□ □□□□ Dist. □nl.	D□ □□□□ Dist. □nl.

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.9 BASES, DISTRIBUTION SYSTEMS - OPERATING

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

3. The punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

4. Changes are made to be consistent with changes made to the Specification.

5. Editorial changes made for enhanced clarity.

6. ISTS SR 3.8.9.1 provides two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Therefore, the Frequency for ITS SR 3.8.9.1 is "In accordance with the Surveillance Frequency Control Program."

7. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

8. This redundant information has been deleted. Following the description of the electrical power distribution subsystems is a statement that a list of all boards and distribution panels is found in Table B 3.8.9-1.

9. Changes are made to ISTS 3.8.9 Bases Action A.1 to resolve a conflict within the first sentence. The first sentence states that, “With <u>one or more</u> Train A <u>and</u> B required AC buses, load centers, motor control centers, or distribution panels (except AC vital buses), <u>in one train</u> inoperable and a loss of function has not occurred, the remaining AC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure.” ISTS 3.8.9 Condition A states, “One or more AC electrical power distribution subsystems inoperable.” ISTS 3.8.9 Condition E states, “Two or more electrical power distribution subsystems inoperable that result in a loss of safety function.” Both Condition A and Condition E address a situation with more than one electrical power distribution subsystem inoperable. According to ITS Chapter 1.0, Use and Application, all applicable Conditions are required to be entered for an LCO. If it is discovered that the inoperability of more than one electrical power distribution subsystem results in a loss of safety function, then entry into ISTS 3.8.9 Conditions A and E would be required. If it is discovered that the inoperability does not result in a loss of safety function, then entry into ISTS 3.8.9 Condition A is all that is required regardless of the number of inoperable trains. ISTS 3.8.9 Condition A provides Required Actions if one or more AC electrical power distribution subsystems are inoperable and a loss of safety function has not occurred. It is not the intent of ISTS 3.8.9 Condition A to be applicable to only one inoperable train of AC electrical power distribution subsystems. Therefore, the phrase, “in one train,” has been deleted.

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

operation of the facility in accordance with this proposed change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. □oes the proposed change involve a significant reduction in the margin of safety□

Response□No.

The proposed change rela□es the Required □ctions for the opposite unit's onsite electrical distribution system. The margin of safety is not affected by this change because the minimum requirements for onsite electrical distribution systems will be maintained to ensure the availability of the required power to shutdown the reactor and maintain it in a safe shutdown condition after an □□□ or a postulated □□□. Therefore, the proposed changes do not involve a significant reduction in a margin of safety

Add INSERT 1

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INSERT 1

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.9 DISTRIBUTION SYSTEMS - OPERATING

LCO 3.8.9 EVALUATION
FOR
LESS RESTRICTIVE CHANGE L03

SQN is converting to the Improved Technical Specifications (ITS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." The proposed change involves making the Current Technical Specifications (CTS) less restrictive. Below are the description of this less restrictive change and the determination of No Significant Hazards Considerations for conversion to NUREG-1431.

CTS 3.8.2.1 ACTION a requires that with less than the listed AC electrical boards OPERABLE and energized to restore the inoperable boards to OPERABLE status within 8 hours. ITS LCO 3.8.9 ACTION A requires that with one or more AC electrical power distribution subsystems inoperable due to one or more of the associated unit's AC shutdown boards inoperable to restore the associated unit's AC electrical power distribution subsystem(s) to OPERABLE status within 8 hours. ITS 3.8.9 ACTION D requires that with one or more AC electrical power distribution subsystem(s) inoperable due to one or more opposite unit AC shutdown boards inoperable to declare the associated required feature(s) inoperable immediately. ITS 3.8.9 Action D is only applicable during planned maintenance when the opposite unit is defueled or in MODE 6 following defueled with the opposite unit refueling water level ≥23 feet above top of the reactor vessel flange. ITS 3.8.9 ACTION E requires that with one or more AC electrical power distribution subsystems inoperable due to one or more opposite unit AC shutdown boards inoperable for reasons other than Condition D to restore the opposite unit's AC electrical power distribution subsystem(s) to OPERABLE status in 24 hours. This changes the CTS by providing a new ACTION that extends the time allowed to restore to OPERABLE status the AC electrical power distribution subsystem(s) made inoperable due to the opposite unit's AC shutdown boards for other than planned maintenance from 8 hours to 24 hours.

The safety function of the Standby AC Power System is to supply power to support the functioning of components and systems required to assure that (1) fuel design limits and reactor coolant pressure boundary design conditions are not exceeded due to anticipated operational occurrences, and (2) the core is cooled and vital functions are maintained in the event of postulated accidents, subject to loss of the Preferred Power System and subject to any single failure in the Standby Power System. To accomplish its safety function, the onsite Class 1E AC distribution system supplies electrical power to two power trains for each unit. Each power train includes two Class 1E 6.9 kV shutdown boards powered from one of two separate and independent offsite power circuits or a dedicated onsite DG. Two DGs in one train can provide the safety related functions to mitigate a loss-of-coolant accident (LOCA) in one unit and safely shut down the other unit. The major core cooling and containment cooling system loads are unitized to the respective unit's 6.9 kV shutdown boards. Although the major core cooling systems and containment systems credited in the mitigation of an anticipated operational occurrence (AOO) or postulated Design Basis Accident (DBA) are unitized (not shared with the opposite unit) and powered from the associated unit's shutdown boards, some safety-related systems (e.g., Essential Raw Cooling Water (ERCW), Component Cooling (CCS), Emergency Gas Treatment (EGTS), Auxiliary Building Gas Treatment (ABGTS), Control Room Emergency Ventilation (CREVS), and Control Room Air Conditioning (CRACS)) are shared between the units. The AC sources for these loads are supplied from an A train and B train AC shutdown boards from a single unit.

Therefore, in addition to requiring the associated unit's boards to be OPERABLE, the opposite unit's boards supplying power to both trains of required shared system components are also required to be OPERABLE. The purpose of CTS 3.8.2.1 ACTION a is to limit the time AC boards can be inoperable. The proposed change maintains the CTS ACTIONs and allowed outage time for the associated unit's AC shutdown boards, and proposes a new ITS ACTION E that changes the allowed outage time from 8 hours to 24 hours for the opposite unit's AC shutdown boards that are inoperable for reasons other than planned maintenance. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. These changes are acceptable because the 24 hour limit for the AC electrical power distribution subsystems made inoperable due to the opposite unit's AC shutdown boards is more conservative than Completion Times allowed for the components that would be without power. This change is designated as less restrictive, because additional time is allowed to restore the OPERABILITY of the AC electrical power distribution subsystem(s) when the AC electrical power distribution subsystems are inoperable due to the opposite unit's AC shutdown boards under the ITS than under the CTS.

Tennessee Valley Authority (TVA) has evaluated whether or not a significant hazards consideration is involved with these proposed Technical Specification changes by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of any accident previously evaluated?

Response: No.

The proposed change relaxes the ACTIONs for the opposite unit's distribution system. This change will not affect the probability of an accident, since the distribution system is not an initiator of any accident sequence analyzed in the Updated Final Safety Analysis Report (UFSAR). Rather, the opposite unit's distribution system supports equipment used to mitigate accidents. The consequences of an analyzed accident will not be increased since the minimum requirements for distribution systems will be maintained to ensure the availability of the required power to mitigate accidents assumed in the UFSAR. Operation in accordance with the proposed TS will ensure that sufficient onsite electrical distribution systems are OPERABLE as required to support the unit's required features. Therefore, the mitigating functions supported by the onsite electrical distribution systems will continue to provide the protection assumed by the accident analysis. The integrity of fission product barriers, plant configuration, and operating procedures as described in the UFSAR will not be affected by the proposed changes. Thus, the consequences of previously analyzed accidents will not increase by implementing these changes. Therefore, the proposed changes do not involve an increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any previously evaluated?

Response: No

The proposed change relaxes the ACTIONs for the opposite unit's onsite electrical distribution systems. This change will not physically alter the plant (no new or different type of equipment will be installed). The proposed change will maintain the minimum requirements for onsite electrical distribution systems to ensure the availability of the equipment required to mitigate accidents assumed in the UFSAR. Therefore, operation of the facility in accordance with this proposed change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in the margin of safety?

Response: No.

The proposed change relaxes the ACTIONs for the opposite unit's onsite electrical distribution system. The margin of safety is not affected by this change because the minimum requirements for onsite electrical distribution systems will be maintained to ensure the availability of the required power to shutdown the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. Therefore, the proposed changes do not involve a significant reduction in a margin of safety

DISCUSSION OF CHANGES
ITS 3.8.10, DISTRIBUTION SYSTEMS - SHUTDOWN

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications - Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.8.1.2.b.5 requires, in part, a separate and independent 125 volt DC distribution panel for diesel generator (DG) OPERABILITY. ITS 3.8.10 ACTION B requires for one or more inoperable DG DC electrical power distribution panels ~~subsystems~~ to immediately declare the associated DG inoperable. This changes the CTS by specifying an Action to declare a DG inoperable if its associated DC electrical power distribution panel ~~subsystem~~ is inoperable.

The purpose of CTS 3.8.1.2.b.5 is to specify the requirements for DG OPERABILITY. ITS 3.8.10 ACTION B preserves the intent of CTS 3.8.1.2.b.5 by declaring the DG inoperable if the associated DG DC distribution panel ~~subsystem~~ is inoperable. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.8.1.2.b.5 requires, in part, a separate ~~sparate~~ 125 volt DC distribution panel for each DG set to be OPERABLE. CTS 3.8.2.2 states, in part, that as a minimum the following AC electrical boards shall be OPERABLE and energized, and then lists the applicable boards. CTS 3.8.2.4 requires, in part, that as a minimum the following 125 volt DC boards shall be energized and OPERABLE as listed. ITS 3.8.10 states that the necessary portion of AC, vital DC, DG DC, and AC vital instrument electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE. In addition, an optional Required Action (ITS 3.8.10 Required Action A.1) has been added which allows the associated supported required feature(s) to be declared inoperable. This changes the CTS by requiring those necessary portions of electrical power distribution subsystems to be OPERABLE to support equipment required to be OPERABLE, which could require more distribution boards or panels to be OPERABLE than is currently required. In addition, an action has been added to allow an option to the existing actions.

The purpose of CTS 3.8.1.2.b.5, CTS 3.8.2.2 and CTS 3.8.2.4 is to ensure that at least one train of AC, vital DC, DG DC, and 120 volt AC vital instrument electrical power distribution systems are OPERABLE. This change adds a requirement that the applicable portions of AC, vital DC, DG DC, and 120 volt AC vital instrument electrical power distribution subsystems must be OPERABLE when required to support equipment required to be OPERABLE by the Technical Specifications. This

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DISCUSSION OF CHANGES
ITS 3.8.10, DISTRIBUTION SYSTEMS - SHUTDOWN

added restriction conservatively assures the needed electrical power distribution boards and panels are OPERABLE, even if this results in both trains of one or more of the electrical power distribution systems being required. Because the ITS 3.8.10 electrical power distribution subsystem OPERABILITY requirements require the necessary portions of the distribution subsystems to be OPERABLE to support equipment required to be OPERABLE, if a portion of the electrical power distribution subsystem cannot supply any required equipment, that electrical power distribution subsystem is inoperable. In this event, it may not be necessary to suspend, irradiated fuel handling, and positive reactivity additions. Conservative actions can be assured if all required equipment without the necessary power is declared inoperable, and the associated ACTIONS of the individual equipment is taken (ITS 3.8.10 Required Action A.1). Therefore, along with the conservative additional requirements placed on the electrical power distribution subsystems, Required Action A.1, which requires the associated supported equipment to be declared inoperable, is also added. These changes are acceptable since the additions represent restrictions consistent with implicit assumptions for operation in shutdown conditions (required equipment receiving the necessary required power), and these restrictions are not currently imposed by the Technical Specifications. This change is designated as more restrictive because it adds a new requirement to the CTS and more boards may be required to be OPERABLE in ITS than in the CTS.

M02 CTS 3.8.1.2, CTS 3.8.2.2 and CTS 3.8.2.4 are applicable in MODES 5 and 6. ITS 3.8.10 is applicable in MODES 5 and 6 and during movement of irradiated fuel assemblies and contains an ACTIONS Note stating that LCO 3.0.3 is not applicable. This changes the CTS by adding the Applicability of "During movement of irradiated fuel assemblies," and adds a Note to the ACTIONS stating that LCO 3.0.3 is not applicable.

This change is acceptable because the proposed requirements are necessary to ensure the electrical power subsystems are OPERABLE to support equipment required to be OPERABLE during movement of irradiated fuel assemblies. Movement of fuel normally occurs during MODES 5 and 6; however, it can also occur outside of containment in other plant MODES (MODES 1, 2, 3, and 4) or other conditions (i.e., reactor defueled). This addition to the applicability is needed to ensure the appropriate electrical distribution system requirements are specified during fuel handling and to ensure the appropriate actions are taken (i.e., stop fuel movement) when the minimum electrical supply is not available. In addition, this change adds a clarification Note stating that LCO 3.0.3 is not applicable because LCO 3.0.3 has no Required Actions that restore safety. If moving irradiated fuel assemblies while in MODES 5 or 6, LCO 3.0.3 is not applicable because LCO 3.0.3 applicability is limited to MODES 1, 2, 3, and 4 only with a designated endpoint of MODE 5. In addition, if moving irradiated fuel assemblies while in MODES 1, 2, 3, or 4, the fuel movement is independent of reactor operations and the inability to suspend movement in accordance with ITS 3.8.10 Required Actions would not be sufficient reason to require a reactor shutdown. This Note has been added for clarification and is necessary since defaulting to LCO 3.0.3 would require the reactor to be shutdown, but would not require suspension of the activities with a potential for releasing radioactive materials. This change is designated as more restrictive because the ITS requires equipment to be OPERABLE during movement of irradiated fuel

DISCUSSION OF CHANGES
ITS 3.8.10, DISTRIBUTION SYSTEMS - SHUTDOWN

assemblies both inside and outside of the containment, not only when in MODES 5 and 6.

M03 CTS 4.8.1.2 requires, in part, the performance of CTS 4.8.1.1.3, which includes a requirement that the 125 volt DC distribution panel for each DG be demonstrated OPERABLE. ITS SR 3.8.10.1 requires, in part, verification of the correct breaker alignments and voltage to the 125 volt DC distribution panel for each DG. This changes the CTS by adding a specific surveillance requiring verification of correct breaker alignment and correct voltage to the DG DC distribution subsystem.

The purpose of CTS 4.8.1.2 is to provide assurance that necessary power to required supported systems is available with sufficient capacity, capability, redundancy, and reliability to ensure the fuel, Reactor Coolant System, and containment design limits are not exceeded and postulated accidents are mitigated. This change is acceptable because it provides additional assurance that the distribution panels associated with the DG DC electrical power distribution subsystem are OPERABLE. This change is designated as more restrictive because it add a Surveillance Requirement to the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.8.1.2 requires AC electrical power sources to be OPERABLE, listing the sources and subsystems. CTS LCO 3.8.2.2 requires AC electrical boards to be OPERABLE, listing the boards. CTS LCO 3.8.2.4 requires DC electrical equipment and boards to be energized and OPERABLE and CTS 4.8.2.4.1 requires the overall battery voltage to be greater than or equal to 125 volts. ITS LCO 3.8.10 requires necessary portions of the AC, vital DC, DG DC,
instrument
and AC vital electrical power distribution subsystems to be OPERABLE to support equipment required to be OPERABLE. ITS SR 3.8.10.1 requires the verification of correct breaker alignment and voltage to each required AC, vital
□ital□
instrument
DC, and ~~vital~~ AC electrical power distribution subsystem. The details of the boards are contained in the ITS Bases. This changes the CTS by moving description of the boards and panels (including the nominal voltages and any specified limits) from the CTS to the ITS Bases.

The removal of these details relating to system design from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the electrical power distribution subsystems to be OPERABLE and requires the verification of correct breaker alignment and voltage to required AC and DC electrical power distribution subsystems. This change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the

DISCUSSION OF CHANGES
ITS 3.8.10, DISTRIBUTION SYSTEMS - SHUTDOWN

Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA02 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.8.2.2 requires, in part, that the specified AC boards be determined OPERABLE and energized at least once per 7 days by verifying correct breaker alignment and indicated voltage on the buses. CTS 4.8.2.4.1 requires, in part, that each required DC battery board be determined OPERABLE and energized at least once per 7 days by verifying correct breaker alignment and indicated power availability with an overall battery voltage of greater than or equal to 125 volts. ITS SR 3.8.10.1 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for this SR and associated Bases to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* With less than the minimum complement of AC boards OPERABLE and energized, CTS 3.8.2.2 requires the establishment of containment integrity within 8 hours. With less than the minimum complement of DC boards OPERABLE and energized, CTS 3.8.2.4 also requires the establishment of containment integrity within 8 hours.
ITS 3.8.10 ACTION A requires, in part, suspending movement of irradiated fuel assemblies, suspension of operations involving positive reactivity additions that could result in the loss of required SDM or boron concentration, the initiation of actions to restore required AC, vital DC, and AC vital instrument board electrical power distribution subsystems to OPERABLE status, and the declaration of the associated required residual heat removal subsystems(s) inoperable and not in

DISCUSSION OF CHANGES
ITS 3.8.10, DISTRIBUTION SYSTEMS - SHUTDOWN

operation. This changes the CTS by replacing the existing Required Action to restore containment integrity.

The purpose of the CTS 3.8.2.2 Action and CTS 3.8.2.4 Action is to isolate the containment to minimize any release from the plant if an event were to occur during shutdown conditions. This change is acceptable because the Required Actions establish remedial measures taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features including the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. The proposed Required Actions require the suspension of movement of irradiated fuel assemblies, the suspension of operations involving positive reactivity additions that could result in the loss of required SDM or boron concentration, the initiation
instrument
of actions to restore required AC, vital DC, and AC vital electrical power distribution subsystems to OPERABLE status, and the declaration of the associated required residual heat removal subsystems(s) inoperable and not in operation. Suspending the movement of irradiated fuel assemblies will prevent a fuel handling accident from occurring. Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. The actions to restore required AC, vital DC, and AC vital electrical power distribution subsystems to OPERABLE status will place the plant in compliance with the LCO. Declaration of the associated required decay heat removal subsystems(s) inoperable and not in operation will require the plant to enter the applicable LCOs to apply additional Required Actions. The proposed actions will immediately minimize the potential for any accident releases outside of containment and are considered acceptable instead of the current action to restore containment integrity within 8 hours. The actions may be considered somewhat more restrictive since immediate action is required, however, is classified as less restrictive since the current actions to restore containment integrity have been deleted. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

CTS

3.8 ELECTRICAL POWER SYSTEMS

3.8.10 Distribution Systems - Shutdown

3.8.1.2, 3.8.2.2, 3.8.2.4

LCO 3.8.10 The necessary portion of AC, vital DC, ~~and~~ AC vital instrument ~~bus~~ , and diesel generator (DG) DC electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE. 1

Applicability 3.8.1.2, 3.8.2.2, 3.8.2.4 DOC M02

APPLICABILITY: MODES 5 and 6,
During movement of ~~[recently]~~ irradiated fuel assemblies. 2

ACTIONS

DOC M02

-----NOTE-----
LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION 3.8.2.2 3.8.2.4 DOC M01 A. One or more required AC, vital DC, or AC vital instrument ~~bus~~ electrical power distribution subsystems inoperable.	A.1 Declare associated supported required feature(s) inoperable. 1 <u>OR</u>	Immediately
DOC L01	A.2.1 Suspend movement of ~~[recently]~~ irradiated fuel assemblies. 2 <u>AND</u>	Immediately
DOC L01	A.2.2 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration. <u>AND</u>	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC L01	A.2.3 Initiate actions to restore required AC, vital DC, and AC vital ~~bus~~ instrument electrical power distribution subsystems to OPERABLE status. AND	Immediately 1 1
DOC L01 INSERT 1	A.2.4 Declare associated required residual heat removal subsystem(s) inoperable and not in operation.	Immediately 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.8.1.2, 4.8.2.2, 4.8.2.4.1 SR 3.8.10.1	Verify correct breaker alignments and voltage to required AC, vital DC, ~~and~~ AC vital ~~bus~~ instrument, and DG DC electrical power distribution subsystems.	~~[7 days~~ ~~OR~~ 1 In accordance with the Surveillance Frequency Control Program ~~]~~ 3

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1

INSERT 1

DOC A02	B. One or more required DG DC electrical power distribution ~~subsystems~~ panels inoperable.	B.1 Declare associated DG(s) inoperable.	Immediately

3.8 ELECTRICAL POWER SYSTEMS

3.8.10 Distribution Systems - Shutdown

3.8.1.2, 3.8.2.2, 3.8.2.4

LCO 3.8.10 The necessary portion of AC, vital DC, ~~and~~ AC vital ~~bus~~ instrument , and diesel generator (DG) DC electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE. 1

Applicability 3.8.1.2, 3.8.2.2, 3.8.2.4 DOC M02

APPLICABILITY: MODES 5 and 6,
During movement of ~~[recently]~~ irradiated fuel assemblies. 2

ACTIONS

-----NOTE-----

DOC M02

LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION 3.8.2.2 3.8.2.4 DOC M01 A. One or more required AC, vital DC, or AC vital ~~bus~~ instrument electrical power distribution subsystems inoperable.	A.1 Declare associated supported required feature(s) inoperable. <u>OR</u>	Immediately 1
DOC L01	A.2.1 Suspend movement of ~~[recently]~~ irradiated fuel assemblies. <u>AND</u>	Immediately 2
DOC L01	A.2.2 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration. <u>AND</u>	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC L01	A.2.3 Initiate actions to restore required AC, vital DC, and AC vital instrument ~~bus~~ electrical power distribution subsystems to OPERABLE status.	Immediately 1 1
	AND	
DOC L01	A.2.4 Declare associated required residual heat removal subsystem(s) inoperable and not in operation.	Immediately
INSERT 1		1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
4.8.1.2, 4.8.2.2, 4.8.2.4.1 SR 3.8.10.1 Verify correct breaker alignments and voltage to required AC, vital DC, ~~and~~ AC vital instrument ~~bus~~, and DG DC electrical power distribution subsystems.	~~[7 days~~ ~~OR~~ 1 In accordance with the Surveillance Frequency Control Program ~~]~~ 3

1

INSERT 1

DOC A02

B. One or more required DG DC electrical power distribution ~~subsystems~~ panels inoperable.	B.1 Declare associated DG(s) inoperable.	Immediately

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B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.10 Distribution Systems - Shutdown

BASES

BACKGROUND

A description of the AC, vital DC, ,diesel generator (DG) DC, and AC vital ~~bus~~ instrument electrical power distribution systems is provided in the Bases for LCO 3.8.9, "Distribution Systems - Operating." 1

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident and transient analyses in the U FSAR, Chapter ~~[~~6~~]~~ (Ref. 1) and Chapter ~~[~~15~~]~~ (Ref. 2), assume Engineered Safety Feature (ESF) systems are OPERABLE. The AC, vital DC, DG DC, and AC vital ~~bus~~ instrument electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System, and containment design limits are not exceeded. 1 2 1 1

The OPERABILITY of the AC, vital DC, DG DC, and AC vital ~~bus~~ instrument electrical power distribution system is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY. 1

The OPERABILITY of the minimum AC, vital DC, DG DC, and AC vital ~~bus~~ instrument electrical power distribution subsystems during MODES 5 and 6, and during movement of ~~[recently]~~ irradiated fuel assemblies ensures that: 1 2

a. The unit can be maintained in the shutdown or refueling condition for extended periods,

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status, and

c. Adequate power is provided to mitigate events postulated during shutdown, such as a fuel handling accident ~~[involving handling recently irradiated fuel. Due to radioactive decay, AC and DC electrical power is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~. 2

The AC and DC electrical power distribution systems satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

BASES

LCO

Various combinations of subsystems, equipment, and components are required OPERABLE by other LCOs, depending on the specific plant condition. Implicit in those requirements is the required OPERABILITY of necessary support required features. This LCO explicitly requires energi□ation of the portions of the electrical distribution system necessary to support OPERABILITY of required systems, equipment, and components - all specifically addressed in each LCO and implicitly required via the definition of OPERABILITY.

Maintaining these portions of the distribution system energi□ed ensures the availability of sufficient power to operate the unit in a safe manner to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents ~~[involving handling recently irradiated fuel]~~). 2

APPLICABILITY

The AC and DC electrical power distribution subsystems required to be OPERABLE in MODES 5 and 6, and during movement of ~~[recently]~~ irradiated fuel assemblies, provide assurance that: 2

a. Systems to provide adequate coolant inventory ma□eup are available for the irradiated fuel in the core,

b. Systems needed to mitigate a fuel handling accident ~~[involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~ are available, 2

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available, and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition and refueling condition.

The AC, vital DC, DG DC, and AC vital ~~bus~~ instrument electrical power distribution subsystems requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.9. 1

ACTIONS

LCO 3.0.3 is not applicable while in MODE 5 or 6. However, since irradiated fuel assembly movement can occur in MODE 1, 2, 3, or 4, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operations. Entering LCO 3.0.3, while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

BASES

ACTIONS (continued)

A.1, A.2.1, A.2.2, A.2.3, and A.2.4

Although redundant required features may require redundant trains of electrical power distribution subsystems to be OPERABLE, one OPERABLE distribution subsystem train may be capable of supporting sufficient required features to allow continuation of ~~[recently]~~ irradiated fuel movement. By allowing the option to declare required features associated with an inoperable distribution subsystem inoperable, appropriate restrictions are implemented in accordance with the affected distribution subsystem LCO's Required Actions. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend movement of ~~[recently]~~ irradiated fuel assemblies, and operations involving positive reactivity additions that could result in loss of required SDM (MODE 5) or boron concentration (MODE 6). Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes including temperature increases when operating with a positive MTC must also be evaluated to ensure they do not result in a loss of required SDM. 2 2

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimi□e the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC and DC electrical power distribution subsystems and to continue this action until restoration is accomplished in order to provide the necessary power to the unit safety systems.

Notwithstanding performance of the above conservative Required Actions, a required residual heat removal (RHR) subsystem may be inoperable. In this case, Required Actions A.2.1 through A.2.~~4~~ 3 do not adequately address the concerns relating to coolant circulation and heat removal. Pursuant to LCO 3.0.6, the RHR ACTIONS would not be entered. Therefore, Required Action A.2.~~5~~ 4 is provided to direct declaring RHR inoperable and not in operation, which results in ta□ing the appropriate RHR actions. 3 3

BASES

ACTIONS (continued)

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required distribution subsystems should be completed as quic□ly as possible in order to minimi□e the time the unit safety systems may be without power. INSERT 1 1

SURVEILLANCE REQUIREMENTS

SR 3.8.10.1

This Surveillance verifies that the AC, vital DC, DG DC, and AC vital instrument ~~bus~~ electrical power distribution subsystems are functioning properly, with all the ~~buses~~ boards energi□ed. The verification of proper voltage availability on the ~~buses~~ boards ensures that the required power is readily available for motive as well as control functions for critical system loads connected to these ~~buses~~ boards. 1

~~[The □day Frequency ta□es into account the capability of the electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.~~ 4

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER□S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utili□e the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ 5

REFERENCES

1. U FSAR, Chapter ~~[~~6~~]~~.
2. U FSAR, Chapter ~~[~~15~~]~~. 1 2

1

INSERT 1

B.1

panels

If one or more required DG DC electrical power distribution ~~subsystems~~ are inoperable, the associated DGs may be incapable of performing their intended function and must be immediately declared inoperable. This declaration also requires entry into the applicable Conditions and Required Actions for inoperable DGs, LCO 3.8.2, "AC Sources Shutdown."

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.10 Distribution Systems - Shutdown

BASES

BACKGROUND

A description of the AC, vital DC, diesel generator (DG) DC, and AC vital instrument ~~bus~~ electrical power distribution systems is provided in the Bases for LCO 3.8.9, "Distribution Systems - Operating." 1

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident and transient analyses in the U FSAR, Chapter ~~[~~6~~]~~ (Ref. 1) and Chapter ~~[~~15~~]~~ (Ref. 2), assume Engineered Safety Feature (ESF) systems are OPERABLE. The AC, vital DC, DG DC, and AC vital instrument ~~bus~~ electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System, and containment design limits are not exceeded. 1 2 1 1

The OPERABILITY of the AC, vital DC, DG DC, and AC vital instrument ~~bus~~ electrical power distribution system is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY. 1

The OPERABILITY of the minimum AC, vital DC, DG DC, and AC vital instrument ~~bus~~ electrical power distribution subsystems during MODES 5 and 6, and during movement of ~~[recently]~~ irradiated fuel assemblies ensures that: 1 2

a. The unit can be maintained in the shutdown or refueling condition for extended periods,

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status, and

c. Adequate power is provided to mitigate events postulated during shutdown, such as a fuel handling accident ~~[involving handling recently irradiated fuel. Due to radioactive decay, AC and DC electrical power is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~. 2

The AC and DC electrical power distribution systems satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

BASES

LCO

Various combinations of subsystems, equipment, and components are required OPERABLE by other LCOs, depending on the specific plant condition. Implicit in those requirements is the required OPERABILITY of necessary support required features. This LCO explicitly requires energi□ation of the portions of the electrical distribution system necessary to support OPERABILITY of required systems, equipment, and components - all specifically addressed in each LCO and implicitly required via the definition of OPERABILITY.

Maintaining these portions of the distribution system energi□ed ensures the availability of sufficient power to operate the unit in a safe manner to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents ~~[involving handling recently irradiated fuel]~~). 2

APPLICABILITY

The AC and DC electrical power distribution subsystems required to be OPERABLE in MODES 5 and 6, and during movement of ~~[recently]~~ irradiated fuel assemblies, provide assurance that: 2

a. Systems to provide adequate coolant inventory ma□eup are available for the irradiated fuel in the core,

b. Systems needed to mitigate a fuel handling accident ~~[involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~ are available, 2

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available, and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition and refueling condition.

vital DG DC,

instrument The AC, DC, and AC vital ~~bus~~ electrical power distribution subsystems requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.9. 1

ACTIONS

LCO 3.0.3 is not applicable while in MODE 5 or 6. However, since irradiated fuel assembly movement can occur in MODE 1, 2, 3, or 4, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operations. Entering LCO 3.0.3, while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

BASES

ACTIONS (continued)

A.1, A.2.1, A.2.2, A.2.3, and A.2.4

Although redundant required features may require redundant trains of electrical power distribution subsystems to be OPERABLE, one OPERABLE distribution subsystem train may be capable of supporting sufficient required features to allow continuation of ~~[recently]~~ irradiated 2
fuel movement. By allowing the option to declare required features associated with an inoperable distribution subsystem inoperable, appropriate restrictions are implemented in accordance with the affected distribution subsystem LCO's Required Actions. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend movement of ~~[recently]~~ irradiated fuel assemblies, and operations 2
involving positive reactivity additions that could result in loss of required SDM (MODE 5) or boron concentration (MODE 6). Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes including temperature increases when operating with a positive MTC must also be evaluated to ensure they do not result in a loss of required SDM.

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC and DC electrical power distribution subsystems and to continue this action until restoration is accomplished in order to provide the necessary power to the unit safety systems.

Notwithstanding performance of the above conservative Required Actions, a required residual heat removal (RHR) subsystem may be inoperable. In this case, Required Actions A.2.1 through A.2.~~4~~ 3 do not 3
adequately address the concerns relating to coolant circulation and heat removal. Pursuant to LCO 3.0.6, the RHR ACTIONS would not be entered. Therefore, Required Action A.2.~~5~~ 4 is provided to direct declaring 3
RHR inoperable and not in operation, which results in taking the appropriate RHR actions.

BASES

ACTIONS (continued)

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required distribution subsystems should be completed as quickly as possible in order to minimize the time the unit safety systems may be without power. INSERT 1 1

SURVEILLANCE REQUIREMENTS

SR 3.8.10.1

This Surveillance verifies that the AC, vital DC, DG DC, and AC vital ~~bus~~ instrument electrical power distribution subsystems are functioning properly, with all the ~~buses~~ boards energized. The verification of proper voltage availability on the ~~buses~~ boards ensures that the required power is readily available for motive as well as control functions for critical system loads connected to these ~~buses~~ boards. 1

~~[The 7 day Frequency takes into account the capability of the electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.~~ 4

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----~~ ~~]~~ 5

REFERENCES

1. U FSAR, Chapter ~~[~~6~~]~~.
2. U FSAR, Chapter ~~[~~15~~]~~. 1 2

1

INSERT 1

B.1

panels

If one or more required DG DC electrical power distribution ~~subsystems~~ are inoperable, the associated DGs may be incapable of performing their intended function and must be immediately declared inoperable. This declaration also requires entry into the applicable Conditions and Required Actions for inoperable DGs, LCO 3.8.2, "AC Sources Shutdown."

Licensee Response/NRC Response/NRC Question Closure

Id	**452**
NRC Question Number	**VKG025**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**5/14/2015**
Notification	**Michelle Conner Vijay Goel Khadijah Hemphill Andrew Hon Lynn Mynatt Ray Schiele Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**5/14/2015 3:10 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**196**
NRC Question Number	**VKG026**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.1**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

ITS 3.8.1 (for Unit 1), Condition D, "DG 2A-A or 2B-B inoperable," Action D.4 requires "Declare associated required feature(s) inoperable," within 7 days. However, this Action does not specify the DG to be restored to the operable status within any given time. While Unit 2 will be required to shutdown if the DG is not restored to operable within 7 days, Unit 1 can remain in operational mode unless some other LCO Action statement requires Unit 1 to shutdown or restore the DG to operable status.

In response to RAI # VKG007, the licensee provided details of major shared loads fed from 6.9 kV shutdown boards and associated 480 V boards, and the various LCOs which would be entered when the one of the DGs belonging to the opposite (shutdown) Unit becomes inoperable. A review of various LCOs indicates the Unit can remain in operational mode (without requiring the DG to be recovered) for up to 10 days (7 days + 72 hours); and 14 days (7 days + 7 days) if UHS related license amendment (TS-SQN-13-01 and TS-SQN-13-02, ML132280A267) and proposed plant modification to install one or more additional auxiliary control air compressors is approved and implemented by the licensee.

CTS requires both Units to shutdown after 7 days if a DG is not restored to operable. However, the ITS would allow one of the Units to remain in operational mode for 10 to 14 days before requiring shutdown. The staff is concerned that the remaining Unit in operation would not be able to safely shutdown in case of "Loss of Offsite power (only Onsite power available from remaining DGs), LOCA, <u>and worst case single failure</u> in one of the safety-related systems (GDC 17, GDC 34, and GDC 35 requirements)," during the extended period of DG inoperability. CTS accepts this risk for 7 days, but ITS is extending this risk for an additional 3 or 7 days. Although, the Commission allows single failure not to be considered during an LCO Action statement, the staff is concerned regarding the extended DG inoperability. Typically, according to standard TS and Regulatory Guide 1.93, the inoperability of a DG is limited to 72 hours.

The above staff concerns are also applicable to Condition H, in which a DG belonging to the opposite Unit becomes inoperable. ITS 3.8.1.H does not require the DG to be restored; only the associated required features are to be declared inoperable.

Please provide the technical basis for the relaxation of Completion Times described above or revise ITS 3.8.1 Conditions D and H appropriately for both Units (i.e., to be consistent with the current licensing basis).

Attach File 1	
Attach File 2	
Issue Date	**11/18/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**11/18/2014 5:35 PM**
Notification	**Scott Bowman Michelle Conner Vijay Goel Khadijah Hemphill Andrew Hon Lynn Mynatt Ray Schiele Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**432**
NRC Question Number	**VKG026**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 for RAI VKG026.pdf** (21MB)
Attachment 2	
Response Statement	

In response to RAI VKG-026, the CTS 3.8.1.1 ACTION b markups will be revised to maintain the current licensing basis that specifies, in part, with one or more Train A DGs, or one or more Train B DGs inoperable, the DGs shall be restored to OPERABLE status within 7 days. Discusion of Change (DOC) L01 will also be revised to remove the discussion of providing a separate ITS LCO 3.8.1 Condition for an inoperable opposite unit DG.

The restoration of the current licensing basis for inoperable DGs will be reflected in ITS 3.8.1 Condition B. Based on the inclusion of inoperable opposite unit DGs in ITS 3.8.1 Condition B, previously proposed ITS 3.8.1 Conditions D, G, H and I are no longer necessary and will be deleted. The remaining Conditions will be resequenced, and as a result, conforming changes will be made to the CTS markups where reference is made to resequenced ITS 3.8.1 Conditions.

Conforming ITS 3.8.1 changes will be made to the following:

1. **DOCs L02 and L20 will be revised to reflect the changes to Condition B and deletion of the previously proposed ITS 3.8.1 Conditions D, G, H and I;**
2. **DOCs A03, A04, M01, L05, and L20 will be revsied to reflect the resequenced ITS 3.8.1 Conditions;**
3. **JFD 5; and**
4. **ISTS 3.8.1 Bases markups.**

See Attachment 1 for the draft revised CTS 3.8.1.1, ISTS 3.8.1, and ISTS 3.8.1 Bases markups, DOCs, and JFD discussed above. (Note: Attachment 1 contains draft changes made in response to RAI VKG-027):

1. **CTS 3.8.1.1 ACTION b markups will be revised to reflect maintaining the requirement for the DGs to be restored to OPERABLE status within 7 days (Pages 5 and 13 of Enclosure 2, Volume 13).**
2. **Conforming changes will be made to DOCs L02 and L20 to reflect the changes to Condition B and deletion of ITS 3.8.1 Conditions D, G, H and I (Pages 34, 35, and 44 of Enclosure 2, Volume 13).**
3. **Conforming changes will be made to DOCs A03, A04, M01, L05, and L20 to reflect the resequenced ITS 3.8.1 Conditions (Pages 22, 24, 33, 36, and 44 of Enclosure 2, Volume 13)**
4. **DOCs L01 and L02 will be revised (Pages 32-35 of Enclosure 2, Volume 13).**
5. **ITS 3.8.1 Condition B will be revised to reflect the restoration of the current licensing basis for inoperable DGs (Pages 48, 49, 72, and 73 of Enclosure 2, Volume 13). Conforming changes will be made to the ITS Bases (Pages 110 and 160 of Enclosure 2, Volume 13).**

6. ITS 3.8.1 Condition D, G, H, and I will be deleted. The remaining Conditions will be resequenced, where necessary. (Pages 50-55 and 74-79 of Enclosure 2, Volume 13). Conforming changes will be made to the ITS Bases (Pages 107, 110, 111, 113, 115-121, 157, 160, 161, 163, and 165-171 of Enclosure 2, Volume 13). CTS markups will be revised where reference is made to resequenced ITS 3.8.1 Conditions (Pages 5, 6, 11-14, 20, and 21 of Enclosure 2, Volume 13).
7. JFD 5 will be revised to reflect conforming changes (Page 95 and Insert JFD 5 of Enclosure 2, Volume 13).
8. Determination of No Significant Hazards will be revised to reflect the restoration of the current licensing basis for inoperable DGs (Pages 200-203 of Enclosure 2, Volume 13).

Response Date/Time	**4/9/2015 2:30 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**4/9/2015 1:23 PM**
Date Modified	
Modified By	

ITS A01 ITS 3.8.1

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.8.1 3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

LCO 3.8.1.a a. Two ~~physically independent~~ qualified circuits between the offsite transmission network and the onsite Class 1E distribution system~~@~~, and LA01 A02

LCO 3.8.1.b b. Four ~~separate and independent~~ diesel generator sets each with: LA01

1. ~~Two diesels driving a common generator~~

SR 3.8.1.4 2. Two engine-mounted fuel tanks containing a minimum volume of 250 gallons of fuel, per tank

3. A separate fuel storage system containing a minimum volume of 62,000 gallons of fuel, See ITS 3.8.3

SR 3.8.1.6 4. A separate fuel transfer pump, and

5. A separate 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger. See ITS 3.8.4 and 3.8.9

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A a. Add proposed Condition A ~~With one offsite A.C. circuit of the above required A.C. electrical power source inoperable,~~ demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter. Restore ~~at least two~~ offsite circuit~~s~~ to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. L01 L01

ACTION ~~K~~ G L02

ACTION B b.~~#~~ ~~Add proposed Condition B~~ ~~With diesel generator set(s) 1A-A and/or 2A-A or 1B-B and/or 2B-B of the above required A.C. electrical power sources inoperable,~~* demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter, and determining OPERABLE diesel generator sets are not inoperable due to common cause failure or performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours; restore ~~at least four~~ diesel generator set~~s~~ to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. STET ~~L01~~ ~~L01~~ STET

ACTION ~~K~~ G

Add proposed ACTION~~S~~ C ~~and D~~ L01

~~# Required actions, to verify OPERABLE diesel generator sets are not inoperable due to common cause failure or perform SR 4.8.1.1.2.a.4, shall be completed if this action is entered.~~ L02

SR 3.8.1.3 Note 3 * No more than one diesel generator may be made simultaneously inoperable on a pre-planned basis for ~~maintenance, modifications, or~~ surveillance testing. L03

~~@ Offsite circuits utilizing USST 2A and USST 2B as the normal power sources require CSST A and CSST C to be available as the alternate power sources via automatic transfer at the associated 6.9 kV Unit Boards. (CSST B can be substituted for CSST A or CSST C.) This Note remains in effect until November 30, 2013, or until the USST modifications are implemented on Units 1 and 2, whichever occurs first.~~ A02

ITS | A01 | ITS 3.8.1

ELECTRICAL POWER SYSTEMS

Add proposed ACTION ~~F~~ Note E | A03

ACTION (Continued)

Add proposed Condition ~~F~~ E | L01

ACTION ~~F~~ E — c. ~~With one offsite circuit and one diesel generator set of the above required A.C. electrical power sources inoperable~~, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter, and Surveillance Requirement 4.8.1.1.2.a.4 within ~~8~~ 24 hours; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. (L04)

ACTION A, ACTION B, ACTION ~~F~~ E, ACTION ~~K~~ G

ACTION ~~E~~ D — d. With two of the above required offsite A.C. circuits inoperable, ~~demonstrate the OPERABILITY of 4 diesel generator sets by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours, unless the diesel generator sets are already operating~~; restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and MODE 5 within 36 hours. (L05, M01)

ACTION ~~K~~ G

ACTION ~~J~~ F — e. With either diesel generator sets 1A-A and/or 2A-A inoperable simultaneous with 1B-B and/or 2B-B, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least 1) 1A-A and 2A-A or 2) 1B-B and 2B-B to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. (~~L01~~)

ACTION B, ACTION ~~J~~ F, ACTION ~~K~~ G

~~Add proposed ACTIONS G, H, and I~~ (~~L01~~)

ACTIONS Note — f. LCO 3.0.4.b is not applicable to diesel generators.

Add proposed ACTIONS ~~L~~ H and ~~M~~ I | A04

SURVEILLANCE REQUIREMENTS

SR 3.8.1.1 — 4.8.1.1.1 Each of the above required ~~independent~~ circuits between the offsite transmission network and the onsite Class 1E distribution system shall be: (LA01)

SR 3.8.1.1 — a. Determined OPERABLE ~~at least once per 7 days~~ by verifying correct breaker alignments and indicated power availability.

In accordance with the Surveillance Frequency Control Program (LA02)

SR 3.8.1.8 — b. Demonstrated OPERABLE ~~at least once per 18 months~~# by manually and automatically transferring the power supply to each 6.9 kV Unit Board## from the normal supply to the alternate supply.

SR 3.8.1.8 Note 1 — # For the 1A, 1B, 1C and 1D 6.9 kV Unit Boards, this Surveillance shall not be performed in MODES 1 and 2.

Add proposed SR 3.8.1.8 Note 1, second and third sentences. (L06)

SR 3.8.1.8 Note 2 — ## Transfer capability is only required to be met for 6.9 kV Unit Boards that require normal and alternate power supplies.

ITS

A01

ITS 3.8.1

3/4 LIMITING CONDITIONS FOR OPEATION AND SURVEILLANCE REQUIREMENTS

3/4.0 APPLICABILITY

LIMITING CONDITION FOR OPERATION

3.0.1 Compliance with the Limiting Conditions for Operation contained in the succeeding Specifications is required during the OPERATIONAL MODES or other conditions specified therein; except that upon failure to meet the Limiting Conditions for Operation, the associated ACTION requirements shall be met and as provided in LCO 3.0.7.

3.0.2 Noncompliance with a Specification shall exist when the requirements of the Limiting Condition for Operation and associated ACTION requirements are not met within the specified time intervals. If the Limiting Conditions for Operation is restored prior to expiration of the specified time intervals, completion of the ACTION requirements is not required.

3.0.3 When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within one hour action shall be initiated to place the unit in a MODE in which the Specification does not apply by placing it, as applicable, in:

1. At least HOT STANDBY within the next 6 hours,
2. At least HOT SHUTDOWN within the following 6 hours, and
3. At least COLD SHUTDOWN within the subsequent 24 hours.

See ITS 3.0

Where corrective measures are completed that permit operation under the ACTION requirements, the ACTION may be taken in accordance with the specified time limits as measured from the time of failure to meet the Limiting Condition for Operation. Exceptions to these requirements are stated in the individual Specifications.

3.0.4 When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made:

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time;

b. After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate; exceptions to this Specification are stated in the individual Specifications, or

c. When an allowance is stated in the individual value, parameter, or other Specification.

This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

Required Actions A.2, B.2, ~~E.1~~, and associated Completion Times

C.2, D.1

3.0.5 When a system, subsystem, train, component or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of its applicable Limiting Condition for Operation, provided: (1) its corresponding normal or emergency power source is OPERABLE; and (2) all of its redundant system(s), subsystem(s), train(s), component(s) and device(s) are OPERABLE, or likewise satisfy the requirements of this Specification. Unless both

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ITS

A01

ITS 3.8.1

APPLICABILITY

LIMITING CONDITION FOR OPERATION (Continued)

, C.2

24 hours for Required Action A.2
4 hours for Required Action B.2
12 hours for Required Action ~~E~~.1

D

3.0.5 (Continued)

conditions (1) and (2) are satisfied, within ~~2 hours~~ ~~action shall be initiated to place the unit in a MODE in which the applicable Limiting Condition for Operation does not apply by placing it as applicable in~~:

L20

~~1. At least HOT STANDBY within the next 6 hours,~~
~~2. At least HOT SHUTDOWN within the following 6 hours, and~~
~~3. At least COLD SHUTDOWN within the subsequent 24 hours.~~

Declare required features inoperable.

~~This Specification is not applicable in MODES 5 or 6.~~

A08

3.0.6 Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.1 and 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

3.0.7 When one or more required snubbers are unable to perform their associated support function(s), any affected supported LCO(s) are not required to be declared not met solely for this reason if risk is assessed and managed, and:

a. the snubbers not able to perform their associated support function(s) are associated with only one train or subsystem of a multiple train or subsystem supported system or are associated with a single train or subsystem supported system and are able to perform their associated support function within 72 hours; or

b. the snubbers not able to perform their associated support function(s) are associated with more than one train or subsystem of a multiple train or subsystem supported system and are able to perform their associated support function within 12 hours.

At the end of the specified period the required snubbers must be able to perform their associated support function(s), or the affected supported system LCO(s) shall be declared not met.

See ITS 3.0

SURVEILLANCE REQUIREMENTS

4.0.1 Surveillance Requirements shall be met during the MODES or other specified conditions in the Applicability for individual Limiting Condition for Operation, unless otherwise stated in the individual Surveillance Requirement. Failure to meet a Surveillance Requirement, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the Limiting Condition for Operation. Failure to perform a Surveillance within the specified surveillance interval shall be failure to meet the Limiting Conditions for Operation except as provided in Specification 4.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.

4.0.2 Each Surveillance Requirement shall be performed within the specified surveillance interval with a maximum allowable extension not to exceed 25 percent of the specified surveillance interval.

4.0.3 If it is discovered that a Surveillance was not performed within its specified surveillance interval (including the allowed extension per Specification 4.0.2), then compliance with the requirement to declare the Limiting Condition for Operation not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified surveillance interval, whichever is greater. This delay period is permitted to allow performance of the Surveillance. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours and the risk impact shall be managed.

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ITS A01 ITS 3.8.1

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.8.1 3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE: LA01

LCO 3.8.1.a a. Two ~~physically independent~~ qualified circuits between the offsite transmission network and the onsite Class 1E distribution system~~@~~, and A02

LCO 3.8.1.b b. Four ~~separate and independent~~ diesel generator sets each with: LA01

1. ~~Two diesels driving a common generator~~

SR 3.8.1.4 2. Two engine-mounted fuel tanks containing a minimum volume of 250 gallons of fuel, per tank

3. A separate fuel storage system containing a minimum volume of 62,000 gallons of fuel, See ITS 3.8.3

SR 3.8.1.6 4. A separate fuel transfer pump, and

5. A separate 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger. See ITS 3.8.4 and 3.8.9

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Add proposed Condition A L01

ACTION A a. ~~With one offsite A.C. circuit of the above required A.C. electrical power sources inoperable,~~ demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter. Restore ~~at least two~~ offsite circuit~~s~~ to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. L01 L02

ACTION ~~K~~ G

~~Add proposed Condition B~~ ~~L01~~

STET

ACTION B b.~~#~~ ~~With diesel generator set(s) 1A-A and/or 2A-A or 1B-B and/or 2B-B of the above required A.C. electrical power sources inoperable,~~* demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter, and determining OPERABLE diesel generator sets are not inoperable due to common cause failure or performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours; restore ~~at least four~~ diesel generator set~~s~~ to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. ~~L01~~ STET

ACTION ~~K~~ G

Add proposed ACTIONS C ~~and D~~ L01

~~# Required actions, to verify OPERABLE diesel generator sets are not inoperable due to common cause failure or perform SR 4.8.1.1.2.a.4, shall be completed if this action is entered.~~ L02

SR 3.8.1.3 Note 3 * No more than one diesel generator may be made simultaneously inoperable on a pre-planned basis for ~~maintenance, modifications, or~~ surveillance testing. L03

~~@ Offsite circuits utilizing USST 2A and USST 2B as the normal power sources require CSST A and CSST C to be available as the alternate power sources via automatic transfer at the associated 6.9 kV Unit Boards. (CSST B can be substituted for CSST A or CSST C.) This Note remains in effect until November 30, 2013, or until the USST modifications are implemented on Units 1 and 2, whichever occurs first.~~ A02

ITS | A01 | ITS 3.8.1

ELECTRICAL POWER SYSTEMS

ACTION (Continued)

Add proposed ACTION ~~F~~ E Note — A03

Add proposed Condition ~~F~~ E — L01

ACTION ~~F~~ E | c. ~~With one offsite circuit and one diesel generator set of the above required A.C. electrical power sources inoperable,~~ demonstrate the OPERABILITY of the remaining A.C. sources by

ACTION A, ACTION B, ACTION ~~F~~ E | performing Surveillance Requirements 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter, and Surveillance Requirement 4.8.1.1.2.a.4 within ~~8~~ 24 hours; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT — L04

ACTION ~~K~~ G | STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION ~~E~~ D | d. With two of the above required offsite A.C. circuits inoperable, ~~demonstrate the OPERABILITY of 4 diesel generator sets by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours, unless the diesel generator sets are already operating~~; restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in — L05

ACTION ~~K~~ G | at least HOT STANDBY within the next 6 hours and MODE 5 within 36 hours — M01

ACTION ~~J~~ F | e. With either diesel generator sets 1A-A and/or 2 A-A inoperable simultaneous with 1B-B and/or 2B-B, demonstrate the OPERABILITY of two offsite A.C. circuits by performing

ACTION B | Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least 1) 1A-A and 2A-A or 2) 1B-B and 2B-B to OPERABLE status — ~~L01~~

ACTION ~~J~~ F | within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD

ACTION ~~K~~ G | SHUTDOWN within the following 30 hours.

~~Add proposed ACTIONS G, H, and I~~ — ~~L01~~

ACTIONS Note | f. LCO 3.0.4.b is not applicable to diesel generators.

Add proposed ACTIONS ~~L~~ H and ~~M~~ I — A04

SURVEILLANCE REQUIREMENTS

SR 3.8.1.1 | 4.8.1.1.1 Each of the above required ~~independent~~ circuits between the offsite transmission network and the onsite Class 1E distribution system shall be: — LA01

SR 3.8.1.1 | a. Determined OPERABLE ~~at least once per 7 days~~ by verifying correct breaker alignments and indicated power availability.

In accordance with the Surveillance Frequency Control Program — LA02

SR 3.8.1.8 | b. Demonstrated OPERABLE ~~at least once per 18 months~~# by manually and automatically transferring the power supply to each 6.9 kV Unit Board ## from the normal supply to the alternate supply.

SR 3.8.1.8 Note 1 | # For the 2A, 2B, 2C and 2D 6.9 kV Unit Boards this Surveillance shall not be performed in MODES 1 and 2.

Add proposed SR 3.8.1.8 Note 1, second and third sentences. — L06

SR 3.8.1.8 Note 2 | ## Transfer capability is only required to be met for 6.9 kV Unit Boards that require normal and alternate power supplies.

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

3/4.0 APPLICABILITY

LIMITING CONDITION FOR OPERATION

3.0.1 Compliance with the Limiting Conditions for Operation contained in the succeeding Specifications is required during the OPERATIONAL MODES or other conditions specified therein; except that upon failure to meet the Limiting Conditions for Operation, the associated ACTION requirements shall be met and as provided in LCO 3.0.7.

3.0.2 Noncompliance with a Specification shall exist when the requirements of the Limiting Condition for Operation and associated ACTION requirements are not met within the specified time intervals. If the Limiting Conditions for Operation is restored prior to expiration of the specified time intervals, completion of the ACTION requirements is not required.

3.0.3 When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within one hour action shall be initiated to place the unit in a MODE in which the Specification does not apply by placing it, as applicable, in:

1. At least HOT STANDBY within the next 6 hours,
2. At least HOT SHUTDOWN within the following 6 hours, and
3. At least COLD SHUTDOWN within the subsequent 24 hours.

Where corrective measures are completed that permit operation under the ACTION requirements, the ACTION may be taken in accordance with the specified time limits as measured from the time of failure to meet the Limiting Condition for Operation. Exceptions to these requirements are stated in the individual Specifications.

See ITS 3.0

3.0.4 When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made:

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time;

b. After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate; exceptions to this Specification are stated in the individual Specifications, or

c. When an allowance is stated in the individual value, parameter, or other Specification.

This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

Required Actions A.2, B.2, ~~E.1,~~ C.2, D.1 and associated Completion Times

3.0.5 When a system, subsystem, train, component or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of its applicable Limiting Condition for Operation, provided: (1) its corresponding normal or emergency power source is OPERABLE; and (2) all of its redundant system(s), subsystem(s), train(s), component(s) and device(s) are OPERABLE, or likewise satisfy the requirements of this Specification. Unless both

APPLICABILITY

LIMITING CONDITION FOR OPERATION

, C.2

24 hours for Required Action A.2
4 hours for Required Action B.2
12 hours for Required Action ~~E~~.1

D

3.0.5 (Continued)

conditions (1) and (2) are satisfied, within ~~2 hours~~ ~~action shall be initiated to place the unit in a MODE in which the applicable Limiting Condition for Operation does not apply by placing it as applicable in:~~

~~1. At least HOT STANDBY within the next 6 hours~~
~~2. At least HOT SHUTDOWN within the following 6 hours, and~~
~~3. At least COLD SHUTDOWN within the subsequent 24 hours.~~

Declare required features inoperable.

L20

~~This Specification is not applicable in MODES 5 or 6.~~

A08

3.0.6 Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.1 and 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

3.0.7 When one or more required snubbers are unable to perform their associated support function(s), any affected supported LCO(s) are not required to be declared not met solely for this reason if risk is assessed and managed, and:

a. the snubbers not able to perform their associated support function(s) are associated with only one train or subsystem of a multiple train or subsystem supported system or are associated with a single train or subsystem supported system and are able to perform their associated support function within 72 hours; or

b. the snubbers not able to perform their associated support function(s) are associated with more than one train or subsystem of a multiple train or subsystem supported system and are able to perform their associated support function within 12 hours.

At the end of the specified period the required snubbers must be able to perform their associated support function(s), or the affected supported system LCO(s) shall be declared not met.

SURVEILLANCE REQUIREMENTS

See ITS 3.0

4.0.1 Surveillance Requirements shall be met during the MODES or other specified conditions in the Applicability for individual Limiting Condition for Operation, unless otherwise stated in the individual Surveillance Requirement. Failure to meet a Surveillance Requirement, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the Limiting Condition for Operation. Failure to perform a Surveillance within the specified surveillance interval shall be failure to meet the Limiting Conditions for Operation except as provided in Specification 4.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.

4.0.2 Each Surveillance Requirement shall be performed within the specified surveillance interval with a maximum allowable extension not to exceed 25 percent of the specified surveillance interval.

4.0.3 If it is discovered that a Surveillance was not performed within its specified surveillance interval (including the allowed extension per Specification 4.0.2), then compliance with the requirement to declare the Limiting Condition for Operation not met may be delayed, from the time of discovery,

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ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.8.1.1.a Note @ has an expiration date of November 30, 2013. As it is anticipated that the SQN ITS Conversion License Amendment Request will not be approved by the NRC before this date, Note @ has been deleted. As such, these changes are administrative.

A03 CTS 3.8.1.1 ACTION c applies when one offsite circuit and one diesel generator (DG) are inoperable. In this condition, one or more required electrical boards may be de-energized. CTS 3.8.2.1 provides an ACTION for a de-energized required electrical board. ITS 3.8.1 ACTION ~~F~~ E Note in the Required Actions column states, "Enter applicable Conditions and Required Action of LCO 3.8.9, "Distribution System - Operating," when Condition ~~F~~ E is entered with no AC power source to ~~any train~~." This changes the CTS by specifically requiring the compensatory actions for Distribution System - Operating to be taken, if a distribution train is made inoperable by inoperable AC Sources.

This change is acceptable because no changes are made to CTS requirements. CTS 3.0.1 requires the associated ACTION requirements to be met when an LCO is not met. With the addition of ITS LCO 3.0.6, an exception to ITS LCO 3.0.2 (CTS 3.0.1) was created, whereby ACTION requirements associated with an unmet LCO are not required to be met. Therefore, in the event AC Sources are inoperable such that a distribution subsystem is de-energized, ITS LCO 3.0.6 would allow taking only the AC Sources ACTIONS; taking exception to complying with the Distribution System ACTIONS. Since the AC Sources ACTIONS may not be sufficiently conservative in the event of an entire train without power, specific direction to take appropriate ACTIONS for the Distribution System is added (ITS 3.8.1, Note to ACTION ~~F~~ E) for the condition of no power for ~~a train~~. This format and construction implements the existing treatment of this condition within the framework of the ITS methods. This change is designated as administrative because it does not result in a technical change to the CTS.

A04 CTS 3.8.1.1 does not contain an ACTION for multiple offsite circuits and DGs inoperable. Having multiple offsite circuits and DGs inoperable requires entering CTS LCO 3.0.3. ITS 3.8.1 ACTION ~~L~~ H requires entering LCO 3.0.3 immediately, if two offsite circuits are inoperable concurrent with one or more inoperable Train A or Train B DG(s). ITS 3.8.1 ACTION ~~M~~ I requires entering LCO 3.0.3 immediately, if one offsite circuit is inoperable concurrent with one or more inoperable Train A and Train DGs. This changes the CTS by adding specific ACTIONS requiring entry into LCO 3.0.3.

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specific CTS DG loading requirement with a statement that DG loadings may include gradual loading as recommended by the manufacturer. This change is consistent with the recommendations of Generic Letter (GL) 93-05, "Line- Item Technical Specifications Improvements to Reduce Surveillance Requirements for Testing During Power Operation." GL 93-05, Section 10.1, states that DGs "should be loaded in accordance with vendor recommendations for all test purposes other than the refueling outage LOOP tests." The change is acceptable, because it will ensure the DGs will continue to be operated consistent with manufacturer recommendations. This change is designated as administrative, because it does not result in a technical change to the CTS.

A07 CTS 4.8.1.1.2.d.5 requires verification that on an ESF actuation test signal (without loss of offsite power), each DG starts and operates for at least 5 minutes. ITS SR 3.8.1.12 requires a similar test, but does not specify that the DG auto-start on an ESF actuation test signal is "without loss of offsite power." This changes the CTS by not specifying the DG auto-start on an ESF actuation test signal is without a loss of offsite power signal.

The purpose of CTS 4.8.1.1.2.d.5 is to demonstrate that each DG automatically starts on an ESF actuation test signal. The requirements of this Surveillance are retained in the ITS as SR 3.8.1.12. The purpose of CTS 4.8.1.1.2.d.6.b) is to verify that each DG starts on a loss of offsite power concurrent with an ESF actuation test signal. The requirements of this Surveillance are retained in the ITS as SR 3.8.1.18. This change is acceptable, because it is understood that the CTS 4.8.1.1.2.d.5 required DG start on an ESF actuation test signal is without a loss of offsite power signal. Therefore, it is unnecessary to provide this information in ITS SR 3.8.1.12. This change is designated as administrative, because it does not result in a technical change to the CTS.

A08 CTS 3.0.5 states that it is not applicable in MODE 5 or 6. CTS 3.0.5 has been incorporated into the ACTIONS of ITS 3.8.1. This changes the CTS by incorporating the allowances of CTS 3.0.5 in ITS 3.8.1.

This change is acceptable because ITS 3.8.1 is only applicable in MODES 1, 2, 3, and 4. Therefore, the statement in CTS 3.0.5, that states that the Specification is not applicable in MODE 5 or 6, is no longer necessary and is deleted. This change is designated as administrative, because it does not result in technical changes to the CTS.

<u>MORE RESTRICTIVE CHANGES</u>

M01 CTS 3.8.1.1 ACTION d specifies the compensatory actions for two inoperable offsite circuits. The action requires restoration of at least one of the offsite sources within 24 hours, and if it is not restored within the allowed time, the unit is required to be in at least HOT STANDBY within the next 6 hours. ITS 3.8.1
D ACTION ~~E~~ requires restoration of at least one offsite circuit to OPERABLE status G
within 24 hours, otherwise ITS 3.8.1 ACTION ~~K~~ requires the unit to be in MODE 3 within 6 hours and MODE 5 within 36 hours. This changes the CTS by adding the requirement to be in MODE 5 within 36 hours.

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LA06 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.8.1.1.2.g.1 requires verification of each DG's capability to reject a load of greater than or equal to 600 kW while maintaining voltage and frequency within specified ranges. ITS SR 3.8.1.9 requires a similar verification, but does not specify the value of the single largest post-accident load to reject. This changes the CTS by moving the detail of the single largest load to the ITS Bases.

The removal of these details related to system design from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS retains the requirement to verify that each DG is capable of maintaining voltage and frequency within specified ranges upon reject of the single largest post-accident load. The removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change, because information relating to system design is being removed from the Technical Specifications.

<u>LESS RESTRICTIVE CHANGES</u>

L01 CTS 3.8.1.1 ACTION a provides actions for one inoperable offsite circuit and allows 72 hours to restore the inoperable offsite circuit to OPERABLE status before requiring the unit to be shut down and cooled down. ~~CTS 3.8.1.1 ACTION b provides actions for one or both DGs in a train inoperable and allows 7 days to restore the inoperable DG(s) to OPERABLE status before requiring the unit to be shut down and cooled down.~~ CTS 3.8.1.1 ACTION c provides actions for one inoperable offsite circuit and one inoperable DG and allows 12 hours to restore at least one of the inoperable AC sources to OPERABLE status before requiring the unit to be shut down and cooled down. ~~CTS 3.8.1.1 ACTION d provides actions for two inoperable offsite circuits and allows 24 hours to restore at least one of the inoperable offsite circuits to OPERABLE status before requiring the unit to be shut down. CTS 3.8.1.1 ACTION e provides actions for one or two inoperable DGs in both trains and allows 2 hours to restore the inoperable DG(s) in one train to OPERABLE status before requiring the unit to be shut down and cooled down.~~ ~~CTS 3.8.1.1 ACTION f states LCO 3.0.4.b is not applicable to DGs.~~ ~~The ITS ACTIONS are modified by a Note stating LCO 3.0.4.b is not applicable to DGs.~~ ITS 3.8.1 ACTION A provides actions for one inoperable offsite circuit for reasons other than Condition C, and allows 72 hours to restore the inoperable offsite power source to OPERABLE status. ~~ITS 3.8.1 ACTION B provides actions for one inoperable associated unit's DG or both DGs in one train inoperable, and allows 7 days to restore the inoperable DG(s) to OPERABLE status.~~ ITS 3.8.1 ACTION C provides actions for one offsite circuit inoperable solely due to an inoperable offsite power source to an opposite unit's 6.9 kV Shutdown Board, and ~~requires declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours.~~ ~~Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the offsite circuit cannot be~~

DISCUSSION OF CHANGES
ITS 3.8.1, AC SOURCES - OPERATING

~~restored to an OPERABLE status. ITS 3.8.1 ACTION D requires declaration that the affected required feature(s) with no OPERABLE DG are inoperable when its redundant required feature is inoperable in 4 hours. Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the DG cannot be restored to an OPERABLE status. ITS 3.8.1 ACTION E requires declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 12 hours. Otherwise, one offsite circuit is required to be restored to an OPERABLE status in 24 hours.~~ ITS 3.8.1 ACTION ~~F~~ E provides actions for one associated unit's offsite circuit inoperable concurrent with one associated unit's DG inoperable, and allows 12 hours to restore one of the inoperable AC sources to OPERABLE status. [illegible] This changes the CTS by providing a new ITS 3.8.1 ACTION C to allow 7 days to restore an inoperable offsite circuit to an OPERABLE status, if the offsite circuit is inoperable solely due to an inoperable power source to an opposite unit's Shutdown Board (e.g., for Unit 1 an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B is inoperable). ~~ITS ACTION G requires declaring the required feature(s) on the opposite unit's 6.9 kV Shutdown Board with no offsite power available inoperable in 7 days. ITS~~ [illegible] ~~more Train B DGs inoperable and allows 2 hours to restore one Train of DGs to OPERABLE status. ITS 3.8.1 ACTION K requires the unit to be shut down and cooled down if a Required Action and associated Completion Time of Condition A, B, E, F, I, or J is not met. These changes to the CTS provide separate ACTIONS to declare the required features powered from the opposite unit's Class 1E AC Electrical Power Distribution System inoperable as the remedial measures for the inoperable AC sources.~~

The purpose of the CTS 3.8.1.1 ACTIONS is to limit the time the unit can remain operating with different combinations of inoperable offsite circuits and DGs. The onsite Class 1E AC Electrical Distribution System supplies electrical power to two power trains shared between the two units. The core cooling and containment cooling system loads (e.g., Safety Injection (SI) pumps, Auxiliary Feedwater (AFW) pumps, Residual Heat Removal (RHR) pumps, Centrifugal Charging pumps, Containment Spray pumps, and Air Return System (ARS) fans) are unitized to the respective unit's 6.9 kV Shutdown Boards. However, some safety-related systems (e.g., Essential Raw Cooling Water (ERCW), Component Cooling (CCS), Emergency Gas Treatment (EGTS), Auxiliary Building Gas Treatment, (ABGTS), Control Room Emergency Ventilation (CREVs), and Control Room HVAC (CRACS)) are shared between the units. The AC sources for the shared loads are distributed across both unit's shutdown boards. Therefore, two qualified offsite circuits and four DGs capable of supplying the onsite Class 1E AC Electrical Distribution System are required to be OPERABLE. However, the impacts of an inoperable offsite power source or DG on an opposite unit's 6.9 kV Shutdown Board differ from the impacts of an inoperable offsite power source or DG on an associated unit's 6.9 kV Shutdown Board, due to the loads powered from the respective board.

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For example, with SQN Unit 1 in MODES 1, 2, 3, and 4, 6.9 kV Shutdown Boards 1A-A and 1B-B, and the associated offsite power sources and DGs are required to be OPERABLE to provide electrical power to the ESF systems powered from those boards. Additionally, 6.9 kV Shutdown Boards 2A-A and 2B-B and associated offsite power sources and DGs are required to be OPERABLE to provide electrical power to any required shared components required for Unit 1. If it is necessary to de-energize 6.9 kV Shutdown Board 2A-A or 2B-B, the redundant shared systems can be aligned prior to de-energizing the shutdown board to ensure no loss of safety function will occur. Upon removing the shutdown board from service, the applicable Conditions and Required Actions for the affected shared system LCOs will be entered and tracked and either the offsite power source or the DG is required to be restored to an OPERABLE status in 7 days.

, and restoration of the offsite circuit to OPERABLE status in 7 days

In

, and restoration of the DG to OPERABLE status in 7 days

In the event of an unplanned loss of an offsite power source to an opposite unit's 6.9 kV Shutdown Board, the proposed actions require declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours. ~~Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the offsite power source cannot be restored to an OPERABLE status. Similarly, in~~ the event of an unplanned loss of a DG ~~to an opposite unit 6.9 kV Shutdown Board~~, the proposed actions require declaration that the affected required feature(s) with no OPERABLE DG are inoperable when its redundant required feature is inoperable in 4 hours. ~~Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the DG cannot be restored to an OPERABLE status.~~ In both cases, the ACTIONS require performance of SR 3.8.1.1 for the required OPERABLE offsite circuit(s) within 1 hour and once per 8 hours thereafter.

ITS 3.8.1 ACTION G is entered and the unit is required to be shut down to MODE 3 in 6 hours and MODE 5 in 36 hours.

The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. These changes are acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation, while providing time to repair inoperable features. If the necessary repairs cannot be made within the established Completion Time, ~~the associated required features are declared inoperable and the applicable Conditions and Required Actions for the affected shared system LCOs are entered and tracked~~. This change is acceptable because the provided ACTIONS effect restoration of the opposite unit's ~~AC sources~~ commensurate with the importance of maintaining ~~these AC sources~~ capable of supporting the associated unit's required feature(s). This change is designated as less restrictive, because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

offsite circuit

L02 *(Category 4 – Relaxation of Required Action)* CTS 3.8.1.1 ACTION b requires with DG set(s) 1A-A and/or 2A-A or 1B-B and/or 2B-B inoperable, determination that OPERABLE DGs are not inoperable due to common cause failure or through performance of CTS 4.8.1.1.2.a.4. This ACTION is modified by Note #, requiring completion of the required action once the ACTION is entered. ITS 3.8.1

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ACTION B requires that with ~~an associated unit's DG inoperable (or with both~~ any DGs in a train inoperable~~)~~, determination that OPERABLE DGs are not inoperable due to common cause failure or through performance of SR 3.8.1.2. However, ITS does not specify completion of the ACTIONS if the Condition is exited. This changes the CTS by removing a requirement to complete the ACTIONS once the ACTION is entered.

The purpose of CTS 3.8.1.1 ACTION b is to provide compensatory measures to be taken in response to inoperable DG set(s), including demonstration that the OPERABLE DGs are not inoperable. The Note requiring completion of the actions to verify the remaining DGs are OPERABLE once the ACTION is entered was added to the CTS with License Amendments 205 (Unit 1) and 195 (Unit 2), dated June 29, 1995 (ADAMS Accession No. ML013320017). TVA license amendment request TS 94-19, submitted on April 6, 1995, stated that the addition of this Note was being made to align with the requirements contained in NUREG-1431, LCO 3.8.1. On April 7, 1995, NUREG-1431, Rev. 1 was issued. The Note modifying LCO 3.8.1 ACTION B that required completion of Required Actions B.3.1 and B.3.2 (demonstration of DG OPERABILITY) was removed from NUREG-1431 in Revision 1. The requirement to complete the actions to demonstrate the OPERABLE DGs are not inoperable is an exception to ITS LCO 3.0.2 (CTS LCO 3.0.2). Completing the ACTIONS to verify the OPERABILITY of the remaining OPERABLE DGs is not required to restore compliance with the LCO. This change is acceptable because completion of the ACTIONS to evaluate the possibility of a DG common cause failure will be tracked as an item in the corrective action program. This change is designated as less restrictive, because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L03 *(Category 4 – Relaxation of Required Action)* CTS 3.8.1.1 ACTION b provides actions for one or both DGs in a train inoperable. ACTION b is modified by Note * stating that no more than one DG may be made simultaneously inoperable on a pre-planned basis for maintenance, modifications, or surveillance testing. ITS SR 3.8.1.3 verifies each DG can be started, synchronized, loaded, and operated for at least 60 minutes. SR 3.8.1.3 is modified by Note 3 stating the Surveillance shall be conducted on only one DG at a time. This changes the CTS by deleting the restriction for not making more than one DG simultaneously inoperable on a pre-planned basis, with the exception of the performance of SR 3.8.1.3.

The purpose of CTS 3.8.1.1 ACTION b is to provide required actions for one or both DGs in a train inoperable. The purpose of Note * is to ensure pre-planned activities that may result in an inoperable DG (i.e., maintenance, modifications, or surveillance testing) are not performed on both DGs in a train at the same time. The proposed required actions do not include the restriction for limiting pre-planned activities to one DG at a time. The control of pre-planned maintenance, modifications, or surveillance testing is an issue for procedures and scheduling. This change is designated as less restrictive, because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L04 *(Category □ – Relaxation of Co□□letion □i□e)* CTS 3.8.1.1 ACTION b requires, in part, with one or both DG(s) in a train inoperable to demonstrate the

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OPERABILITY of the remaining DGs by performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours. CTS 3.8.1.1 ACTION c requires, in part, with one offsite circuit and one DG inoperable to demonstrate the OPERABILITY of the remaining DGs by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours. ITS 3.8.1 ACTION B requires with one or both DG(s) in a train inoperable to perform SR 3.8.1.2 for OPERABLE DGs within 24 hours. This changes the CTS by extending the time allowed to demonstrate the OPERABILITY of the OPERABLE DGs with one offsite circuit and one DG inoperable from 8 hours to 24 hours.

The purpose of the CTS 3.8.1.1 ACTIONS b and c is to ensure that the OPERABLE DGs are not inoperable as a result of a similar, yet undetected, failure (i.e., due to a common mode failure). CTS 3.0.1 states that upon failure to meet an LCO, the associated ACTION requirements shall be met. In the instance of one offsite circuit and one DG inoperable, the condition of one inoperable DG also exists. Therefore, in addition to meeting the requirements of CTS 3.8.1.1 ACTION c, the requirements of CTS 3.8.1.1 ACTION b are required to be met. However, this results in conflicting time requirements for performing CTS 4.8.1.1.2.a.4 on the OPERABLE DGs. A 24 hour Completion Time for performing DG common mode failure checks is consistent with the guidance provided in Generic Letter 84-15. This change is acceptable, since the vast majority of DG start tests demonstrate that the DG is OPERABLE. This change is designated as less restrictive, because additional time is allowed to demonstrate the OPERABILITY of the OPERABLE DGs for the condition of one offsite circuit and one DG inoperable under the ITS than under the CTS.

L05 *(Category 4 – Relaxation of Required Action)* CTS 3.8.1.1 ACTION d states, in part, with two offsite circuits inoperable demonstrate the OPERABILITY of the DGs by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours, unless the DGs are already operating. CTS 4.8.1.1.2.a.4 requires verification that each DG starts and achieves voltage and frequency within established ranges within 10 seconds. ITS 3.8.1 ACTION ~~E~~ D does not contain this requirement. This changes the CTS by deleting the requirement to test each DG when two offsite circuits are inoperable.

The purpose of the CTS 4.8.1.1.2.a.4 requirement in CTS 3.8.1.1 ACTION c is to ensure that the DGs are OPERABLE in the case of a loss of offsite power. Since the DGs are tested on monthly basis, there is no reason to suspect that they would not perform their intended safety function. Furthermore, the inoperability of two offsite circuits does not affect the OPERABILITY of the DGs, since the DGs are independent of the offsite circuits. Therefore, there is no need to subject the DGs to additional testing. This change is designated as less restrictive because the CTS requirement to perform testing on the DGs when both offsite circuits are inoperable is not being retained in the ITS.

L06 *(Category □ – □eletion of □ur□eillance Require□ent □□utdo□n □erfor□ance Require□ent□)* CTS 4.8.1.1.1.b requires the demonstration of a manual and automatic transfer of the power supply to each 6.9 kV Unit Board from the normal to alternate once per 18 months. Note # specifies that the Surveillance shall not be performed on the associated unit's 6.9 kV Unit Boards in MODES 1 and 2. This test has been incorporated in ITS SR 3.8.1.8. ITS SR 3.8.1.8 includes a

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L19 *(Category □ – Relaxation of □ur□eillance Require□ent Acce□tance Criteria)* CTS 4.8.1.1.2.g.4 requires demonstration of a DG hot restart and verification following energization that steady state voltage and frequency are maintained ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz during this test. ITS SR 3.8.1.15 requires demonstration of a DG hot restart and requires verification that within 10 seconds, voltage ≥ 6800 V and frequency ≥ 58.8 Hz, and steady state voltage ≥ 6800 V and ≤ 7260 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz. This changes the CTS by specifying a minimum voltage and frequency limit to be achieved within 10 seconds instead of a voltage and frequency range.

The purpose of CTS 4.8.1.1.2.g.4 is to test the ability of each DG to restart on an accident signal under hot conditions and achieve the appropriate voltage and frequency. This changes the CTS by specifying a minimum voltage and frequency limit to be achieved within 10 seconds instead of a voltage and frequency range. This effectively allows the upper voltage and frequency limits to be exceeded during DG acceleration and stabilization. As stated above, the proposed Surveillance will require the establishment of the minimum frequency (58.8 Hz) and voltage (6800 V) within the given time frame. The accident analyses require that the DGs be capable of being loaded within 10 seconds. This can be accomplished at 58.8 Hz and 6800 V. While the upper level requirement regarding the frequency and voltage acceptance criterion is being eliminated, the requirement to establish a steady state voltage and frequency has been retained. Verification that the minimum voltage and frequency limits are met within the proper time is sufficient to ensure the DG can perform its design function. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L20 *(Category □ – Relaxation of Co□□letion □i□e)* CTS 3.0.5 allows a system, subsystem, train, component, or device to be considered OPERABLE with an inoperable emergency or normal power source provided its corresponding normal or emergency power source is OPERABLE and its redundant system(s), subsystem(s), train(s), component(s), and device(s) are OPERABLE. CTS 3.0.5 requires a unit shut down to start within two hours with these requirements not met. CTS 3.0.5 also provides an explicit time period to be in HOT STANDBY (MODE 3), HOT SHUTDOWN (MODE 4), and COLD SHUTDOWN (MODE 5). ITS 3.8.1 ACTION A (one associated unit offsite source inoperable) and ACTION C (one opposite unit offsite source inoperable) require ~~requires~~ the declaration of required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable. The Completion Time allowed by Required Actions A.2 and C.2 ~~the Required Action A.2~~ is 24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s). ITS 3.8.1 ACTION B (one ~~associated unit DG~~ or both DGs in a train inoperable) requires the declaration of required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable. The Completion Time allowed by the Required Action B.2 is 4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s). ITS 3.8.1 ACTION D ~~E~~ (two offsite circuits inoperable) requires the declaration of required feature(s) inoperable when its redundant required feature(s) is inoperable. The Completion Time allowed by the Required Action D ~~E~~.1 is 12 hours from discovery of Condition D ~~E~~ concurrent with inoperability of redundant required features. This changes the CTS by allowing more time to restore inoperable equipment and

replaces the explicit times to be in MODE 3, MODE 4, and MODE 5 with a requirement to declare the affected features inoperable (and thus to take the ACTIONS required by the individual system LCO, including possible shut down of the unit).

This change is acceptable because the Completion Time is consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the allowed Completion Time. This change allows more time to restore inoperable equipment when required AC Sources are inoperable concurrent with inoperabilities of redundant required features and deletes the explicit times to be in MODE 3, MODE 4, and MODE 5. By declaring the affected supported equipment inoperable, and as a result, taking the Technical Specifications ACTIONS of the affected supported equipment, unit operation is maintained within the bounds of the Technical Specifications and approved ACTIONS. Since the AC Sources support the OPERABILITY of the affected equipment, it is appropriate that the proper action, in this condition, would be to declare that affected supported equipment inoperable. CTS 3.0.5 is overly restrictive, in that if the associated supported equipment were inoperable for other reasons and the redundant equipment was also inoperable, a restoration time is sometimes provided, in other CTS sections. The 24 hour Completion Time when one associated unit offsite circuit is inoperable is acceptable because: a) the redundant counterpart to the inoperable required feature is still OPERABLE although single failure protection may have been lost; b) the capacity and capability of the remaining AC Sources is still available; c) a reasonable time for repairs is provided for restoration before the unit is subjected to transients associated with shut down; and d) the low probability of a DBA occurring during this period. The 12 hour Completion Time when two offsite circuits are inoperable is acceptable because Regulatory Guide 1.93 allows a Completion Time of 24 hours for two offsite circuits inoperable. When a concurrent redundant required function is inoperable, a shorter Completion Time of 12 hours is appropriate. The 4 hour Completion Time with one ~~associated unit~~ DG inoperable takes into account the component OPERABILITY of the redundant counterpart to the inoperable required feature and is considered to be less of a risk than subjecting the unit to transients associated with shut down. Additionally, the 4 hour Completion Time takes into account the capacity and capability of the remaining AC Sources, reasonable time for repairs, and low probability of a DBA occurring during this period. This change is designated as less restrictive because additional time is allowed to restore equipment to OPERABLE status and the change deletes the explicit times to reach MODE 3, MODE 4, and MODE 5.

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CTS

ACTIONS (continued)

CTS	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION a		A.3 Restore ~~[required]~~ offsite circuit to OPERABLE status.	72 hours	4
ACTIONS b, c, and e	B. ~~One [required] DG inoperable.~~ INSERT 1 ~~1A-A~~	B.1 Perform SR 3.8.1.1 for the ~~[required]~~ offsite circuit~~(s)~~.	1 hour AND Once per 8 hours thereafter	4 ~~5~~
		AND		
DOC L20		B.2 Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)	
		AND		
ACTION b		B.3.1 Determine OPERABLE DG~~(s)~~ ~~is~~ are not inoperable due to common cause failure.	~~[~~24~~]~~ hours	4 1
		OR		
ACTION b ACTION c		B.3.2 Perform SR 3.8.1.2 for OPERABLE DG~~(s)~~.	~~[~~24~~]~~ hours	4 1
		AND		
ACTION b		B.4 Restore ~~[required]~~ DG(s) to OPERABLE status.	~~72 hours~~ 7 days	4 1

INSERT 2

5

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~~5~~ 4

INSERT 1

~~DOC L01~~

~~OR~~

~~DG 1B-B inoperable.~~

~~OR~~

~~DGs 1A-A and 2A-A inoperable.~~

One or more Train A DG(s) inoperable.

OR

One or more Train B DG(s) inoperable.

~~OR~~

~~DGs 1B-B and 2B-B inoperable.~~

5

INSERT 2

DOC L01

DOC L20

C. One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B inoperable.	C.1	Perform SR 3.8.1.1 for OPERABLE offsite circuit.	1 hour AND Once per 8 hours thereafter
	AND		
	C.2	Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable.	24 hours from discovery of no offsite power to 6.9 kV Shutdown Board 2A-A or 2B-B concurrent with inoperability of redundant required feature(s)
	AND		
	C.3	~~Declare associated required feature(s) inoperable.~~ Restore offsite circuit to OPERABLE status.	7 days

Insert Page 3.8.1-2a

5

INSERT 2 (Continued)

D. DG 2A-A or 2B-B inoperable.	D.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit(s).	1 hour AND Once per 8 hours thereafter
	AND	
	D.2 Declare required feature(s) supported by the inoperable DG inoperable when its redundant required feature(s) is inoperable.	4 hours from discovery of Condition D concurrent with inoperability of redundant required feature(s)
	AND	
	D.3.1 Determine OPERABLE DGs are not inoperable due to common cause failure.	24 hours
	OR	
	D.3.2 Perform SR 3.8.1.2 for OPERABLE DGs.	24 hours
	AND	
	D.4 Declare associated required feature(s) inoperable.	7 days

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CTS

AC Sources - Operating
3.8.1

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION d DOC L20	~~C~~ ~~E~~ D. Two ~~[required]~~ offsite circuits inoperable.	~~C~~ ~~E~~ D.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable.	12 hours from discovery of Condition ~~C~~ ~~E~~ D concurrent with inoperability of redundant required features	5
		AND		
ACTION d		~~C~~ ~~E~~ D.2 Restore one ~~[required]~~ offsite circuit to OPERABLE status.	24 hours	5 4
ACTION c DOC A03	~~D~~ ~~F~~ E. One ~~[required]~~ offsite circuit inoperable for reasons other than Condition C. AND ~~One [required]~~ DG 1A-A or 1B-B inoperable.	--------------------NOTE-------------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition ~~D~~ ~~F~~ E is entered with no AC power source to ~~any train~~ 6.9 kV Shutdown Board 1A-A or 1B-B. ---		5 4
ACTION c		~~D~~ ~~F~~ E.1 Restore ~~[required]~~ offsite circuit to OPERABLE status.	12 hours	
		OR		
	~~INSERT 3~~	~~D~~ ~~F~~ E.2 Restore ~~[required]~~ DG to OPERABLE status.	12 hours	5 4
ACTION e	~~E~~ ~~J~~ F. ~~Two~~ One or more Train A ~~[required]~~ DG(s) ~~s~~ inoperable. INSERT 4	~~E~~ ~~J~~ F.1 Restore one ~~[required]~~ train of DG s to OPERABLE status.	2 hours	5

5

5

~~**INSERT 3**~~

~~DOC L01~~	G. One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B inoperable. AND DG 1A-A or 1B-B inoperable.	G.1	Declare required feature(s) on associated Unit 2 6.9 kV Shutdown Board inoperable.	7 days
~~DOC L01~~	H. One offsite circuit inoperable for reasons other than Condition C. AND DG 2A-A or 2B-B inoperable.	H.1	Declare required feature(s) on associated Unit 2 6.9 kV Shutdown Board inoperable.	7 days

~~5~~ ~~**INSERT 3 (continued)**~~

~~DOC L01~~

I. One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B inoperable. AND DG 2A-A or 2B-B inoperable.	--------------------NOTE------------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition I is entered with no AC power source to 6.9 kV Shutdown Board 2A-A or 2B-B. -- I.1 Restore offsite circuit to OPERABLE status. OR I.2 Restore DG to OPERABLE status.	 7 days 7 days

5 **INSERT 4**

ACTION e

AND

One or more Train B DG(s) inoperable.

Insert Page 3.8.1-3b

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~-----REVIEWER'S NOTE----- This Condition may be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads following a loss of offsite power independent of, or coincident with, a Design Basis Event.~~ ~~-----------------------------------~~ ~~F. [One [required] [automatic load sequencer] inoperable.~~	~~F.1 Restore [required] [automatic load sequencer] to OPERABLE status.~~	~~[12] hours]~~ 3
ACTIONS a, b, c, d, e G ~~K~~ ~~G~~. Required Action and associated Completion Time of Condition A, B, C, D, E, or F ~~A, B, C, D~~, E, ~~or [F]~~ ~~F, I,~~ ~~J~~ not met. DOC M01	G ~~K~~ ~~G~~.1 Be in MODE 3. AND G ~~K~~ ~~G~~.2 Be in MODE 5.	6 hours 36 hours 3 5
INSERT 5 ~~H. Three or more [required] AC sources inoperable.~~	~~H.1 Enter LCO 3.0.3.~~	~~Immediately~~ 5

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.8.1.1 4.8.1.1.1.a SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each ~~[required]~~ offsite circuit.	~~[7 days~~ ~~OR~~ 4 6 In accordance with the Surveillance Frequency Control Program ~~]~~ 6

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5 **INSERT 5**

DOC A04	~~L~~. H Two offsite circuits inoperable. AND One or more Train A DG(s) inoperable. OR One or more Train B DG(s) inoperable.	~~L~~.1 H Enter LCO 3.0.3.	Immediately
DOC A04	~~M~~. I One offsite circuit inoperable. AND One or more Train A DG(s) inoperable. AND One or more Train B DG(s) inoperable.	~~M~~.1 I Enter LCO 3.0.3.	Immediately

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CTS

AC Sources - Operating
3.8.1

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
ACTION a		A.3	Restore ~~[required]~~ offsite circuit to OPERABLE status.	72 hours	4
ACTIONS b, c, and e	B. ~~One [required] DG inoperable.~~ ~~2A-A~~ INSERT 1	B.1	Perform SR 3.8.1.1 for the ~~[required]~~ offsite circuit~~(s)~~.	1 hour AND Once per 8 hours thereafter	4 ~~5~~
		AND			
DOC L20		B.2	Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)	
		AND			
ACTION b		B.3.1	Determine OPERABLE DG~~(s)~~ ~~is~~ are not inoperable due to common cause failure.	~~[~~24~~]~~ hours	4 1
		OR			
ACTION b ACTION c		B.3.2	Perform SR 3.8.1.2 for OPERABLE DG~~(s)~~.	~~[~~24~~]~~ hours	4 1
		AND			
ACTION b		B.4	Restore ~~[required]~~ DG(s) to OPERABLE status.	~~72 hours~~ 7 days	4 1

INSERT 2

5

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~~5~~ 4

INSERT 1

~~DOC L01~~

~~OR~~

~~DG 2B-B inoperable.~~

~~OR~~

~~DGs 1A-A and 2A-A inoperable.~~

One or more Train A DG(s) inoperable.

OR

One or more Train B DG(s) inoperable.

~~OR~~

~~DGs 1B-B and 2B-B inoperable.~~

5

INSERT 2

DOC L01	C. One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 1A-A or 1B-B inoperable.	C.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit.	1 hour AND Once per 8 hours thereafter
		AND	
DOC L20		C.2 Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable.	24 hours from discovery of no offsite power to 6.9 kV Shutdown Board 1A-A or 1B-B concurrent with inoperability of redundant required feature(s)
		AND	
		C.3 ~~Declare associated required feature(s) inoperable.~~ Restore offsite circuit to OPERABLE status.	7 days

Insert Page 3.8.1-2a

5

INSERT 2 (Continued)

D. DG 1A-A or 1B-B inoperable.	D.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit(s).	1 hour AND Once per 8 hours thereafter
	AND	
	D.2 Declare required feature(s) supported by the inoperable DG inoperable when its redundant required feature(s) is inoperable.	4 hours from discovery of Condition D concurrent with inoperability of redundant required feature(s)
	AND	
	D.3.1 Determine OPERABLE DGs are not inoperable due to common cause failure.	24 hours
	OR	
	D.3.2 Perform SR 3.8.1.2 for OPERABLE DGs.	24 hours
	AND	
	D.4 Declare associated required feature(s) inoperable.	7 days

Insert Page 3.8.1-2b

CTS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION d DOC L20	~~C~~ E D. Two ~~[required]~~ offsite circuits inoperable.	~~C~~ E D.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable.	12 hours from discovery of Condition ~~C~~ E D concurrent with inoperability of redundant required features	5
		AND		
ACTION d		~~C~~ E D.2 Restore one ~~[required]~~ offsite circuit to OPERABLE status.	24 hours	5 4
ACTION c DOC A03	~~D~~ F E. One ~~[required]~~ offsite circuit inoperable for reasons other than Condition C. AND ~~One [required]~~ DG 2A-A or 2B-B inoperable.	--------------------NOTE-------------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition ~~D~~ F E is entered with no AC power source to ~~any train~~ 6.9 kV Shutdown Board 2A-A or 2B-B. --		5 4
ACTION c		~~D~~ F E.1 Restore ~~[required]~~ offsite circuit to OPERABLE status.	12 hours	
		OR		
ACTION c	~~INSERT 3~~	~~D~~ ~~F~~ E.2 Restore ~~[required]~~ DG to OPERABLE status.	12 hours	5 4
ACTION e	~~E~~ J F. ~~Two [required]~~ One or more Train A DG~~s~~ (s) inoperable. INSERT 4	~~E~~ J F.1 Restore one ~~[required]~~ train of DG s to OPERABLE status.	2 hours	5

5

SEQUOYAH UNIT 2

5 ~~**INSERT 3**~~

~~DOC L01~~	G. One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 1A-A or 1B-B inoperable. AND DG 2A-A or 2B-B inoperable.	G.1 Declare required feature(s) on associated Unit 1 6.9 kV Shutdown Board inoperable.	7 days
~~DOC L01~~	H. One offsite circuit inoperable for reasons other than Condition C. AND DG 1A-A or 1B-B inoperable.	H.1 Declare required feature(s) on associated Unit 1 6.9 kV Shutdown Board inoperable.	7 days

Insert Page 3.8.1-3a

5 **~~INSERT 3 (continued)~~**

~~DOC L01~~

I. One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 1A-A or 1B-B inoperable. AND DG 1A-A or 1B-B inoperable.	--------------------NOTE------------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition I is entered with no AC power source to 6.9 kV Shutdown Board 1A-A or 1B-B. --- I.1 Restore offsite circuit to OPERABLE status. OR I.2 Restore DG to OPERABLE status.	 7 days 7 days

5 **INSERT 4**

ACTION e

AND

One or more Train B DG(s) inoperable.

~~Insert Page 3.8.1-3b~~

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~-----REVIEWER'S NOTE----- This Condition may be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads following a loss of offsite power independent of, or coincident with, a Design Basis Event.~~ ~~---~~ ~~F. [One [required] [automatic load sequencer] inoperable.~~	~~F.1 Restore [required] [automatic load sequencer] to OPERABLE status.~~	~~[12] hours]~~ 3
ACTIONS a, b, c, d, e G ~~K~~ ~~G~~. Required Action and associated Completion Time of Condition ~~A, B,~~ A, B, C, D, E, or F ~~C, D~~, E, ~~or~~ ~~[F]~~ ~~F, I,~~ ~~J~~ not met. DOC M01	~~G~~ ~~K~~ G.1 Be in MODE 3. AND ~~G~~ ~~K~~ G.2 Be in MODE 5.	6 hours 36 hours 3 5
INSERT 5 ~~H. Three or more [required] AC sources inoperable.~~	~~H.1 Enter LCO 3.0.3.~~	~~Immediately~~ 5

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.8.1.1 4.8.1.1.1.a SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each ~~[required]~~ offsite circuit.	~~[7 days~~ ~~OR~~ 4 6 In accordance with the Surveillance Frequency Control Program ~~]~~ 6

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5 **INSERT 5**

DOC A04 H ~~L~~. Two offsite circuits inoperable. AND One or more Train A DG(s) inoperable. OR One or more Train B DG(s) inoperable.	H ~~L~~.1 Enter LCO 3.0.3.	Immediately
DOC A04 I ~~M~~. One offsite circuit inoperable. AND One or more Train A DG(s) inoperable. AND One or more Train B DG(s) inoperable.	I ~~M~~.1 Enter LCO 3.0.3.	Immediately

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JUSTIFICATION FOR DEVIATIONS
ITS 3.8.1, AC SOURCES - OPERATING

1. Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. The punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

3. ISTS LCO 3.8.1.c and ISTS 3.8.1 ACTION F have been deleted since SQN Units 1 and 2 do not use load sequencers. Each load or load block is sequenced with the use of its associated time delay relay. Each major ESF component has individual time delay relays that operate individual components, not all ESF components. Thus, if a single time delay relay fails, only the individual component and the DG could be affected. Subsequent Conditions and Required Actions have been renumbered, as applicable. ISTS SR 3.8.1.11 (ITS SR 3.8.1.11), ISTS SR 3.8.1.12 (ITS SR 3.8.1.12), ISTS SR 3.8.1.18 (ITS SR 3.8.1.17), and ISTS SR 3.8.1.19 (ITS SR 3.8.1.18) have been revised to reflect the use of time delay relays.

4. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

5. ~~Changes were made to ISTS LCO 3.8.1 to ensure the appropriate AC power sources are OPERABLE during unit operation in MODES 1, 2, 3 and 4 to satisfy the design requirements. This modification was necessary due to shared systems between Units 1 and 2. This is an exception that is intended to allow taking the ACTIONS associated with inoperable shared equipment in lieu of requiring the opposite unit AC sources to be restored to OPERABLE status within a specified Completion Time. This exception is acceptable since, with the opposite unit equipment inoperable and the associated ACTIONS entered, the opposite unit AC Sources provide no additional assurance of meeting the safety criteria of the given unit's AC power sources.~~ INSERT JFD 5

   SR Notes associated with ISTS SR 3.8.1.8 (ITS SR 3.8.1.8), ISTS SR 3.8.1.9 (ITS SR 3.8.1.9), ISTS SR 3.8.1.10 (ITS SR 3.8.1.10), ISTS SR 3.8.1.11 (ITS SR 3.8.1.11), ISTS SR 3.8.1.12 (ITS SR 3.8.1.12), ISTS SR 3.8.1.13 (ITS SR 3.8.1.13), ISTS SR 3.8.1.14 (ITS SR 3.8.1.14), ISTS SR 3.8.1.16 (ITS SR 3.8.1.16), ISTS SR 3.8.1.18 (ITS SR 3.8.1.17), and ISTS SR 3.8.1.19 (ITS SR 3.8.1.18) have been revised to allow performance of the affected SR on opposite unit shutdown board or DGs when the given unit is in a restricted MODE.

6. ISTS SR 3.8.1.1 (ITS SR 3.8.1.1), ISTS SR 3.8.1.2 (ITS SR 3.8.1.2), ISTS SR 3.8.1.3 (ITS SR 3.8.1.3), ISTS SR 3.8.1.4 (ITS SR 3.8.1.4), ISTS SR 3.8.1.5 (ITS SR 3.8.1.5), ISTS SR 3.8.1.6 (ITS SR 3.8.1.6), ISTS SR 3.8.1.7 (ITS SR 3.8.1.7), ISTS SR 3.8.1.8 (ITS SR 3.8.1.8), ISTS SR 3.8.1.9 (ITS SR 3.8.1.9), ISTS SR 3.8.1.10 (ITS SR 3.8.1.10), ISTS SR 3.8.1.11 (ITS SR 3.8.1.11), ISTS SR 3.8.1.12 (ITS SR 3.8.1.12), ISTS SR 3.8.1.13 (ITS SR 3.8.1.13), ISTS SR 3.8.1.14 (ITS SR 3.8.1.14), ISTS SR 3.8.1.15 (ITS SR 3.8.1.15), ISTS SR 3.8.1.16 (ITS SR 3.8.1.16), ISTS SR 3.8.1.18 (ITS SR 3.8.1.17), ISTS SR 3.8.1.19 (ITS SR 3.8.1.18), and ISTS SR 3.8.1.20 (ITS SR 3.8.1.19) provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the

INSERT JFD 5

□han□es □ere □ade to the I□□□ to ref□ect the interaction □et□een an o□eratin□ unit□s A□ □o□er sources and those credited features needin□ A□ □o□er fro□ the o□□osite unit□s associated A□ □o□er sources□ I□□ □□□□ A□□IO□ □ has □een added to address the condition □hen the offsite circuit is ino□era□e so□e□y due to an ino□era□e □o□er source to the o□□osite unit□s □□□ □□ □hutdo□n Board □e□□□, for □nit □ an offsite □o□er source to □□□ □□□hutdo□n Board □A□A or □B□B is ino□era□e□, and re□uires, in □art, restoration of the ino□era□e offsite circuit □ithin 7 days□ I□□□ □□□□ A□□IO□□ A and D ha□e □een re□ised to address conditions □hen the offsite circuit is ino□era□e for reasons other than I□□ □□□□ □ondition □□ I□□ □□□□ A□□IO□ A re□uires restoration of the ino□era□e offsite circuit in 7□ hours□ I□□ □□□□ A□□IO□ E re□uires restoration of an ino□era□e A□ source in □□ hours□ □his chan□e ref□ects a restoration □o□ □etion □i□e co□ □ensurate □ith the i□ □ortance of □aintainin□ the A□ □o□er source ca□a□e of su□□ortin□ the affected shared syste□s□ □ ith the addition of I□□ □□□□ A□□IO□ □, su□se□uent I□□□ A□□IO□□ ha□e □een renu□ □ered□

BASES

APPLICABILITY

The AC sources ~~[and sequencers]~~ are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that: 2

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients and

b. Adequate core cooling is provided and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

The AC power requirements for MODES 5 and 6 are covered in LCO 3.8.2, "AC Sources - Shutdown."

ACTIONS

A Note prohibits the application of LCO 3.0.4.b to an inoperable DG. There is an increased risk associated with entering a MODE or other specified condition in the Applicability with an inoperable DG and the provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance.

A.1

To ensure a highly reliable power source remains with one offsite circuit inoperable for reasons other than Condition C, it is necessary to verify the OPERABILITY of the remaining required offsite circuit on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action not met. However, if a second required circuit fails SR 3.8.1.1, the second offsite circuit is inoperable, and Condition ~~C~~ ~~E~~ D, for two offsite circuits inoperable, is entered. 5 5

~~-----REVIEWER'S NOTE-----~~ 6
~~The turbine driven auxiliary feedwater pump is only required to be considered a redundant required feature, and, therefore, required to be determined OPERABLE by this Required Action, if the design is such that the remaining OPERABLE motor or turbine driven auxiliary feedwater pump(s) is not by itself capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.~~
~~-----~~

ACTIONS (continued)

A.3

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition A for a period that should not exceed 72 hours. With one offsite circuit inoperable, the reliability of the offsite system is degraded, and the potential for a loss of offsite power is increased, with attendant potential for a challenge to the unit safety systems. In this Condition, however, the remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the onsite Class 1E AC Electrical Power Distribution System. 1

The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

B.1

To ensure a highly reliable power source remains with ~~an~~ INSERT 9 inoperable ~~DG~~, it is necessary to verify the availability of the offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must then be entered. 5

~~-----REVIEWER'S NOTE-----~~ 6
~~The turbine driven auxiliary feedwater pump is only required to be considered a redundant required feature, and, therefore, required to be determined OPERABLE by this Required Action, if the design is such that the remaining OPERABLE motor or turbine driven auxiliary feedwater pump(s) is not by itself capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.~~
~~-----~~

B.2

Required Action B.2 is intended to provide assurance that a loss of offsite power, during the period that a DG(s) is inoperable, does not result in a complete loss of safety function of critical systems. These features are designed with redundant safety related trains. This includes motor driven auxiliary feedwater pumps. Single train systems, such as turbine driven auxiliary feedwater pumps, are not included. Redundant required feature failures consist of inoperable features associated with a train, redundant to the train that has an inoperable DG(s). 5 5

5

INSERT 9

~~DG 1A-A, DG 1B-B, DGs 1A-A and 2A-A, or DGs 1B-B and 2B-B~~

one or more Train A DGs, or one or more Train B DGs

ACTIONS (continued)

The Completion Time for Required Action B.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. An inoperable DG exists and

b. A required feature on the other train ~~(Train A or Train B)~~ is inoperable. 5

If at any time during the existence of this Condition (one or more DGs in a train ~~DG~~ inoperable) a required feature subsequently becomes inoperable, this Completion Time would begin to be tracked. 5

Discovering one or more DGs in a train ~~required DG~~ inoperable coincident with one or more inoperable required support or supported features, or both, that are associated with the OPERABLE DG, results in starting the Completion Time for the Required Action. Four hours from the discovery of these events existing concurrently is Acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown. 5 4

In this Condition, the remaining OPERABLE DGs and offsite circuits are adequate to supply electrical power to the onsite Class 1E AC Electrical Power Distribution System. Thus, on a component basis, single failure protection for the required feature's function may have been lost; however, function has not been lost. The 4 hour Completion Time takes into account the OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 4 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 1 5

B.3.1 and B.3.2

Required Action B.3.1 provides an allowance to avoid unnecessary testing of OPERABLE DG(s). If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG, SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on other DG~~(s)~~, the other DG~~(s)~~ would be declared inoperable upon discovery and Condition ~~E~~ ~~J~~ F of LCO 3.8.1 would be entered INSERT 10. Once the failure is repaired, the common cause failure no longer exists, and Required Action B.3.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DG~~(s)~~, performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of that DG. 5

5 **INSERT 10**

if one or more DG(s) in Train A and Train B are inoperable

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BASES

ACTIONS (continued)

(s)

In the event the inoperable DG is restored to OPERABLE status prior to completing either B.3.1 or B.3.2, the ~~[plant~~ corrective action program~~]~~ will continue to evaluate the common cause possibility. This continued evaluation, however, is no longer under the 24 hour constraint imposed while in Condition B. 5 2

According to Generic Letter 84-15 (Ref. 7), ~~[~~24~~]~~ hours is reasonable to confirm that the OPERABLE DG(s) is not affected by the same problem as the inoperable DG. 2

B.4

~~According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition B for a period that should not exceed 72 hours.~~

(s) AC Electrical Power

In Condition B, the remaining OPERABLE DG and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. The 7 day ~~72 hour~~ Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 5

INSERT 11 5

D D D

~~C~~E.1 and ~~C~~E.2 5

Required Action ~~C~~E.1, which applies when two offsite circuits are inoperable, is intended to provide assurance that an event with a coincident single failure will not result in a complete loss of redundant required safety functions. The Completion Time for this failure of redundant required features is reduced to 12 hours from that allowed for one train without offsite power (Required Action A.2). The rationale for the reduction to 12 hours is that Regulatory Guide 1.93 (Ref. 6) allows a Completion Time of 24 hours for two required offsite circuits inoperable, based upon the assumption that two complete safety trains are OPERABLE. When a concurrent redundant required feature failure exists, this assumption is not the case, and a shorter Completion Time of 12 hours is appropriate. These features are powered from redundant AC safety trains. This includes motor driven auxiliary feedwater pumps. Single train features, such as turbine driven auxiliary pumps, are not included in the list.

5 **INSERT 11**

C.1, C.2, and C.3

Condition C is entered for an offsite circuit inoperable solely due to an inoperable power source to 6.9 kV Shutdown Board 2A-A or 2B-B. Required Action C.1 verifies the OPERABILITY of the remaining offsite circuit within an hour of the inoperability and every 8 hours thereafter. Since the Required Action only specifies "perform," a failure of the SR 3.8.1.1 acceptance criteria does not result in a Required Action not met.

The Completion Time for Required Action C.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. 6.9 kV Shutdown Board 2A-A or 2B-B has no offsite power; and
b. A required feature on the other train is inoperable.

If at any time during the existence of Condition C a redundant required feature subsequently becomes inoperable, this Completion Time begins to be tracked.

A Completion Time of 24 hours is acceptable, because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown. The remaining OPERABLE offsite circuit and DGs are adequate to support these functions. The Completion Time takes into account the component OPERABILITY of the remaining redundant feature(s), a reasonable time for repairs, and the low probability of a DBA occurring during this period.

Operation may continue in Condition C for a period of 7 days. With one offsite circuit inoperable, the reliability of the functions is degraded. The potential for the loss of offsite power to the redundant feature(s) is increased, with the attendant potential for a challenge to their safety functions.

The required offsite circuit must be returned to OPERABLE status within 7 days~~, or the support function for the associated required feature is considered inoperable. At that time, the required feature must be declared inoperable and the appropriate Conditions must be entered~~. The 7 days Completion Time takes into account the capacity and capability of the remaining AC sources providing electrical power to the required feature(s), a reasonable time for repairs and the low probability of a DBA occurring during this period of time.

5

INSERT 11 (Continued)

D.1, D.2, D.3 and D.4

To ensure a highly reliable power source remains with an inoperable DG to a Unit 2 6.9 kV Shutdown Board, it is necessary to verify the availability of the required offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. Required Action D.1 verifies the OPERABILITY of the required offsite sources within an hour of the inoperability and every 8 hours thereafter. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must be entered.

Required Action D.2 is intended to provide assurance that a loss of offsite power, during the period that an LCO 3.8.1.d DG is inoperable, does not result in a complete loss of the safety functions.

The Completion Time for Required Action D.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. An inoperable DG to 6.9 kV Shutdown Board 2A-A or 2B-B exists; and
b. A redundant feature in the same system is inoperable.

If at any time during the existence of Condition D (one DG to 6.9 kV Shutdown Board 2A-A or 2B-B) a redundant feature in the same system subsequently becomes inoperable, this Completion Time begins to be tracked. The four hour Completion Time is acceptable, because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown.

The remaining OPERABLE offsite circuits and DGs are adequate to support the functions. The 4 hour Completion Time takes into account the component OPERABILITY of the remaining redundant feature(s), a reasonable time for repairs, and the low probability of a DBA occurring during this period.

D.3.1 and D.3.2

Required Action D.3.1 provides an allowance to avoid unnecessary testing of OPERABLE DG(s). If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG(s), SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on another DG, the other DG would be declared inoperable, and upon discovery, Condition J of LCO 3.8.1 would be entered, if one or more DG(s) in Train A and Train B are inoperable. Otherwise, if the inoperability exists on the other DG in the same train, the other DG would be declared inoperable upon discovery, Condition B would be entered. Once the failure is repaired, the common cause failure no longer exists, and Required Action D.3.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DGs, performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of that DG.

5

INSERT 11 (Continued)

Operation may continue in Condition D for a period of 7 days. With one Unit 2 DG inoperable, the reliability of the respective function is degraded. The potential for the loss of a DG to the redundant feature(s) is increased, with the attendant potential for a challenge to respective safety function.

The required DG must be returned to OPERABLE status within 7 days, or the support function for the associated required feature is considered inoperable. At that time, the required feature must be declared inoperable and the appropriate Conditions must be entered. The 7 day Completion Time takes into account the capacity and capability of the remaining AC sources providing electrical power to the required feature(s), a reasonable time for repairs and the low probability of a DBA occurring during this period of time.

BASES

ACTIONS (continued)

The Completion Time for Required Action ~~C~~ E.1 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action the Completion Time only begins on discovery that both: 5

a. All required offsite circuits are inoperable and

b. A required feature is inoperable.

If at any time during the existence of Condition ~~C~~ E (two offsite circuits inoperable) a required feature becomes inoperable, this Completion Time begins to be tracked. 5

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition ~~C~~ E for a period that should not exceed 24 hours. This level of degradation means that the offsite electrical power system does not have the capability to effect a safe shutdown and to mitigate the effects of an accident; however, the onsite AC sources have not been degraded. This level of degradation generally corresponds to a total loss of the immediately accessible offsite power sources. 5

Because of the normally high availability of the offsite sources, this level of degradation may appear to be more severe than other combinations of two AC sources inoperable that involve one or more DGs inoperable. However, two factors tend to decrease the severity of this level of degradation:

a. The configuration of the redundant AC electrical power system that remains available is not susceptible to a single bus or switching failure and

b. The time required to detect and restore an unavailable offsite power source is generally much less than that required to detect and restore an unavailable onsite AC source.

With both ~~of the required~~ offsite circuits inoperable, sufficient onsite AC sources are available to maintain the unit in a safe shutdown condition in the event of a DBA or transient. In fact, a simultaneous loss of offsite AC sources, a LOCA, and a worst case single failure were postulated as a part of the design basis in the safety analysis. Thus, the 24 hour Completion Time provides a period of time to effect restoration of one of the offsite circuits commensurate with the importance of maintaining an AC electrical power system capable of meeting its design criteria. 5

ACTIONS (continued)

According to Reference 6, with the available offsite AC sources, two less than required by the LCO, operation may continue for 24 hours. If two offsite sources are restored within 24 hours, unrestricted operation may continue. If only one offsite source is restored within 24 hours, power operation continues in accordance with Condition A or Condition C, as applicable. 5

E E F F

~~D~~.1 and ~~D~~.2 5

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Actions of Condition ~~D~~ F are modified by a Note to indicate that when Condition ~~D~~ F is entered with no AC source to ~~any train~~ 6.9 kV Shutdown Board 1A-A or 1B-B, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows Condition ~~D~~ F to provide requirements for the loss of one offsite circuit and one DG~~,~~ to 6.9 kV Shutdown Board 1A-A or 1B-B without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized train. E 5

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition ~~D~~ F for a period that should not exceed 12 hours. E E 5

In Condition ~~D~~ F, individual redundancy is lost in both the offsite electrical power system and the onsite AC electrical power system. Since power system redundancy is provided by two diverse sources of power, however, the reliability of the power systems in this Condition may appear higher than that in Condition ~~C~~ E (loss of both ~~required~~ offsite circuits). This difference in reliability is offset by the susceptibility of this power system configuration to a single bus or switching failure. The 12 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. D 5

~~INSERT 12~~

F

~~E~~.1 J 5

With ~~Train A and Train B DGs~~ one or more Train A DG(s) and one or more Train B DG(s) inoperable, there are ~~no remaining~~ insufficient standby AC sources available to power an entire load group. Thus, with an assumed loss of offsite electrical power, insufficient standby AC sources are available to power the minimum required ESF functions. Since the offsite electrical power system is the only source of AC power for this level of degradation, the risk associated with continued operation for a very short time could be less than that associated with an immediate controlled shutdown (the immediate shutdown could cause grid instability, which could result in a total loss of AC power). Since any inadvertent generator trip could also result in a

5 ~~INSERT 12~~

G.1 and H.1

In Conditions G and H, individual redundancy is lost in the offsite electrical power system for one unit and the onsite AC electrical power system for the other unit. Since Conditions B and C are entered concurrent with entry into Condition G, and Conditions A and D are entered concurrent with entry into Condition H, the Required Actions of Conditions B and C (or Conditions A and D) provide the appropriate compensatory measures to ensure the onsite and offsite power sources are either restored to an OPERABLE status, or the associated required features are declared inoperable, thereby requiring entry into the appropriate Conditions associated with the associated feature's LCO. The Completion Times of Required Actions G.1 and H.1 are consistent with the Completion Times of Required Actions C.3 and D.4. If, while in Condition G or H, a redundant required feature is determined to be inoperable, the required feature(s) would be declared inoperable at the Completion Times specified in Conditions A, B, C, or D, as applicable.

I.1 and I.2

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Actions of Condition I are modified by a Note to indicate that when Condition I is entered with no AC source to 6.9 kV Shutdown Board 2A-A or 2B-B, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows Condition I to provide requirements for the loss of one offsite power source and one DG, without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized 6.9 kV Shutdown Board.

In Condition I, individual redundancy is lost in the offsite electrical power system and the onsite AC electrical power system. Concurrent with entry into Condition I, entry into Condition C (inoperable offsite power source) and Condition D (inoperable DG) are required. The Required Actions of Conditions C and D ensure the remaining offsite circuit and DGs are OPERABLE and that required features with no offsite or onsite power sources are declared inoperable when its redundant required feature is inoperable within the Completion Times of Required Actions C.2 and D.2.

ACTIONS (continued)

total loss of offsite AC power, however, the time allowed for continued operation is severely restricted. The intent here is to avoid the risk associated with an immediate controlled shutdown and to minimize the risk associated with this level of degradation.

In this Condition,

~~According to Reference 6, with both DGs inoperable,~~ operation may continue for a period that should not exceed 2 hours, consistent with the guidance provided in Reference 6. 5

~~[F.1~~ 5

~~The sequencer(s) is an essential support system to [both the offsite circuit and the DG associated with a given ESF bus]. [Furthermore, the sequencer is on the primary success path for most major AC electrically powered safety systems powered from the associated ESF bus.] Therefore, loss of an [ESF bus sequencer] affects every major ESF system in the [division]. The [12] hour Completion Time provides a period of time to correct the problem commensurate with the importance of maintaining sequencer OPERABILITY. This time period also ensures that the probability of an accident (requiring sequencer OPERABILITY) occurring during periods when the sequencer is inoperable is minimal.~~

~~This Condition is preceded by a Note that allows the Condition to be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads under any conditions. Implicit in this Note is the concept that the Condition must be retained if any sequencer failure mode results in the inability to start all or part of the safety loads when required, regardless of power availability, or results in overloading the offsite power circuit to a safety bus during an event and thereby causes its failure. Also implicit in the Note, is that the Condition is not applicable to any train that does not have a sequencer.]~~

G ~~K~~ ~~K~~ G

~~G~~.1 and ~~G~~.2 5

If the inoperable AC electric power sources cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

BASES

ACTIONS (continued)

H

I

~~L.1 and M.1~~

~~H.1~~

H and I

s

~~L and M~~

Condition ~~H~~ correspond~~s~~ to a level of degradation in which ~~all~~ redundancy in the AC electrical power supplies cannot be assured ~~has been lost~~. At this severely degraded level, any further losses in the AC electrical power system will cause a loss of function. Therefore, no additional time is justified for continued operation. The unit is required by LCO 3.0.3 to commence a controlled shutdown. 5

SURVEILLANCE REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function, in accordance with 10 CFR 50, Appendix A, GDC 18 (Ref. 8). Periodic component tests are supplemented by extensive functional tests during refueling outages (under simulated accident conditions). The SRs for demonstrating the OPERABILITY of the DGs are in accordance with the recommendations of Regulatory Guide 1.9 (Ref. 3)~~,~~ and Regulatory Guide 1.108 (Ref. 9)~~, and Regulatory Guide 1.137 (Ref. 10), as addressed in the FSAR~~. 1

Where the SRs discussed herein specify voltage and frequency tolerances, the following is applicable. The minimum steady state output voltage of 6210 ~~[3740]~~ V is 90% of the nominal 6900 ~~4160~~ V output voltage. This value, which is specified in ANSI C84.1 (Ref. 10 ~~11~~), allows for voltage drop to the terminals of 6600 ~~4000~~ V motors whose minimum operating voltage is specified as 90% or 5940 ~~3600~~ V. It also allows for voltage drops to motors and other equipment down through the 120 V level where minimum operating voltage is also usually specified as 90% of name plate rating. The specified maximum steady state output voltage of 7260 ~~[4756]~~ V is equal to the maximum operating voltage specified for 6600 ~~4000~~ V motors. It ensures that for a lightly loaded distribution system, the voltage at the terminals of 6600 ~~4000~~ V motors is no more than the maximum rated operating voltages. The specified minimum and maximum frequencies of the DG are 58.8 Hz and 61.2 Hz, respectively. These values are equal to ± 2% of the 60 Hz nominal frequency and are derived from the recommendations given in Regulatory Guide 1.9 (Ref. 3). 2 1 1 1 2 1 1

SR 3.8.1.1

This SR ensures proper circuit continuity for the offsite AC electrical power supply to the onsite distribution network and availability of offsite AC electrical power. The breaker alignment verifies that each breaker is in its correct position to ensure that distribution buses and loads are connected to their preferred power source, and that appropriate independence of offsite circuits is maintained. ~~[The 7 day Frequency is~~ 7

BASES

APPLICABILITY

The AC sources ~~[and sequencers]~~ are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that: 2

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients and

b. Adequate core cooling is provided and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

The AC power requirements for MODES 5 and 6 are covered in LCO 3.8.2, "AC Sources - Shutdown."

ACTIONS

A Note prohibits the application of LCO 3.0.4.b to an inoperable DG. There is an increased risk associated with entering a MODE or other specified condition in the Applicability with an inoperable DG and the provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance.

A.1

To ensure a highly reliable power source remains with one offsite circuit inoperable for reasons other than Condition C, it is necessary to verify the OPERABILITY of the remaining required offsite circuit on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action not met. However, if a second required circuit fails SR 3.8.1.1, the second offsite circuit is inoperable, and Condition ~~C~~ ~~E~~ D, for two offsite circuits inoperable, is entered. 5 5

~~-----REVIEWER'S NOTE-----~~ 6
~~The turbine driven auxiliary feedwater pump is only required to be considered a redundant required feature, and, therefore, required to be determined OPERABLE by this Required Action, if the design is such that the remaining OPERABLE motor or turbine driven auxiliary feedwater pump(s) is not by itself capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.~~

BASES

ACTIONS (continued)

A.3

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition A for a period that should not exceed 72 hours. With one offsite circuit inoperable, the reliability of the offsite system is degraded, and the potential for a loss of offsite power is increased, with attendant potential for a challenge to the unit safety systems. In this Condition, however, the remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the onsite Class 1E AC Electrical Power Distribution System. 1

The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

B.1

To ensure a highly reliable power source remains with ~~an~~ INSERT 9 inoperable ~~DG~~, it is necessary to verify the availability of the offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must then be entered. 5

~~REVIEWER'S NOTE~~ 6

~~The turbine driven auxiliary feedwater pump is only required to be considered a redundant required feature, and, therefore, required to be determined OPERABLE by this Required Action, if the design is such that the remaining OPERABLE motor or turbine driven auxiliary feedwater pump(s) is not by itself capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.~~

B.2

Required Action B.2 is intended to provide assurance that a loss of offsite power, during the period that a DG(s) is inoperable, does not result in a complete loss of safety function of critical systems. These features are designed with redundant safety related trains. This includes motor driven auxiliary feedwater pumps. Single train systems, such as turbine driven auxiliary feedwater pumps, are not included. Redundant required feature failures consist of inoperable features associated with a train, redundant to the train that has an inoperable DG(s). 5 5

5 **INSERT 9**

~~DG 1A-A, DG 1B-B, DGs 1A-A and 2A-A, or DGs 1B-B and 2B-B~~

one or more Train A DGs, or one or more Train B DGs

ACTIONS (continued)

The Completion Time for Required Action B.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. An inoperable DG exists and

b. A required feature on the other train ~~(Train A or Train B)~~ is inoperable. 5

If at any time during the existence of this Condition (one or more DGs in a train ~~DG~~ inoperable) a required feature subsequently becomes inoperable, this Completion Time would begin to be tracked. 5

Discovering one or more DGs in a train ~~required DG~~ inoperable coincident with one or more inoperable required support or supported features, or both, that are associated with the OPERABLE DG, results in starting the Completion Time for the Required Action. Four hours from the discovery of these events existing concurrently is Acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown. 5 4

In this Condition, the remaining OPERABLE DGs and offsite circuits are adequate to supply electrical power to the onsite Class 1E AC Electrical Power Distribution System. Thus, on a component basis, single failure protection for the required feature's function may have been lost; however, function has not been lost. The 4 hour Completion Time takes into account the OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 4 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 1 5

B.3.1 and B.3.2

Required Action B.3.1 provides an allowance to avoid unnecessary testing of OPERABLE DG(s). If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG, SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on other DG~~(s)~~, the other DG~~(s)~~ would be declared inoperable upon discovery and Condition F ~~J~~ ~~E~~ of LCO 3.8.1 would be entered. INSERT 10 Once the failure is repaired, the common cause failure no longer exists, and Required Action B.3.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DG~~(s)~~, performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of that DG. 5

5 **INSERT 10**

if one or more DG(s) in Train A and Train B are inoperable

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BASES

ACTIONS (continued)

(s)

In the event the inoperable DG is restored to OPERABLE status prior to completing either B.3.1 or B.3.2, the ~~[plant~~ corrective action program~~]~~ will continue to evaluate the common cause possibility. This continued evaluation, however, is no longer under the 24 hour constraint imposed while in Condition B. 5 2

According to Generic Letter 84-15 (Ref. 7), ~~[~~24~~]~~ hours is reasonable to confirm that the OPERABLE DG(s) is not affected by the same problem as the inoperable DG. 2

B.4

~~According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition B for a period that should not exceed 72 hours.~~

(s) AC Electrical Power

In Condition B, the remaining OPERABLE DG and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. The ~~72 hour~~ 7 day Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 5

INSERT 11 5

D D D

~~C~~.1 and ~~C~~.2 ~~E~~ ~~E~~ ~~E~~ 5

Required Action ~~C~~.1, which applies when two offsite circuits are inoperable, is intended to provide assurance that an event with a coincident single failure will not result in a complete loss of redundant required safety functions. The Completion Time for this failure of redundant required features is reduced to 12 hours from that allowed for one train without offsite power (Required Action A.2). The rationale for the reduction to 12 hours is that Regulatory Guide 1.93 (Ref. 6) allows a Completion Time of 24 hours for two required offsite circuits inoperable, based upon the assumption that two complete safety trains are OPERABLE. When a concurrent redundant required feature failure exists, this assumption is not the case, and a shorter Completion Time of 12 hours is appropriate. These features are powered from redundant AC safety trains. This includes motor driven auxiliary feedwater pumps. Single train features, such as turbine driven auxiliary pumps, are not included in the list.

5 **INSERT 11**

C.1, C.2, and C.3

Condition C is entered for an offsite circuit inoperable solely due to an inoperable power source to 6.9 kV Shutdown Board 1A-A or 1B-B. Required Action C.1 verifies the OPERABILITY of the remaining offsite circuit within an hour of the inoperability and every 8 hours thereafter. Since the Required Action only specifies "perform," a failure of the SR 3.8.1.1 acceptance criteria does not result in a Required Action not met.

The Completion Time for Required Action C.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. 6.9 kV Shutdown Board 1A-A or 1B-B has no offsite power; and
b. A required feature on the other train is inoperable.

If at any time during the existence of Condition C a redundant required feature subsequently becomes inoperable, this Completion Time begins to be tracked.

A Completion Time of 24 hours is acceptable, because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown. The remaining OPERABLE offsite circuit and DGs are adequate to support these functions. The Completion Time takes into account the component OPERABILITY of the remaining redundant feature(s), a reasonable time for repairs, and the low probability of a DBA occurring during this period.

Operation may continue in Condition C for a period of 7 days. With one offsite circuit inoperable, the reliability of the functions is degraded. The potential for the loss of offsite power to the redundant feature(s) is increased, with the attendant potential for a challenge to their safety functions.

The required offsite circuit must be returned to OPERABLE status within 7 days~~, or the support function for the associated required feature is considered inoperable. At that time, the required feature must be declared inoperable and the appropriate Conditions must be entered~~. The 7 days Completion Time takes into account the capacity and capability of the remaining AC sources providing electrical power to the required feature(s), a reasonable time for repairs and the low probability of a DBA occurring during this period of time.

5

INSERT 11 (Continued)

D.1, D.2, D.3, and D.4

To ensure a highly reliable power source remains with an inoperable DG to a Unit 1 6.9 kV Shutdown Board, it is necessary to verify the availability of the required offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. Required Action D.1 verifies the OPERABILITY of the required offsite sources within an hour of the inoperability and every 8 hours thereafter. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must be entered.

Required Action D.2 is intended to provide assurance that a loss of offsite power, during the period that an LCO 3.8.1.d DG is inoperable, does not result in a complete loss of the safety functions.

The Completion Time for Required Action D.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. An inoperable DG to 6.9 kV Shutdown Board 1A-A or 1B-B exists; and
b. A redundant feature in the same system is inoperable.

If at any time during the existence of Condition D (one DG to 6.9 kV Shutdown Board 1A-A or 1B-B) a redundant feature in the same system subsequently becomes inoperable, this Completion Time begins to be tracked. The four hour Completion Time is acceptable, because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown.

The remaining OPERABLE offsite circuits and DGs are adequate to support the functions. The 4 hour Completion Time takes into account the component OPERABILITY of the remaining redundant feature(s), a reasonable time for repairs, and the low probability of a DBA occurring during this period.

D.3.1 and D.3.2

Required Action D.3.1 provides an allowance to avoid unnecessary testing of OPERABLE DG(s). If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG(s), SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on another DG, the other DG would be declared inoperable, and upon discovery, Condition J of LCO 3.8.1 would be entered, if one or more DG(s) in Train A and Train B are inoperable. Otherwise, if the inoperability exists on the other DG in the same train, the other DG would be declared inoperable upon discovery, Condition B would be entered. Once the failure is repaired, the common cause failure no longer exists, and Required Action D.3.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DGs, performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of that DG.

5

~~INSERT 11 (Continued)~~

~~Operation may continue in Condition D for a period of 7 days. With one Unit 2 DG inoperable, the reliability of the respective function is degraded. The potential for the loss of a DG to the redundant feature(s) is increased, with the attendant potential for a challenge to respective safety function.~~

~~The required DG must be returned to OPERABLE status within 7 days, or the support function for the associated required feature is considered inoperable. At that time, the required feature must be declared inoperable and the appropriate Conditions must be entered. The 7 day Completion Time takes into account the capacity and capability of the remaining AC sources providing electrical power to the required feature(s), a reasonable time for repairs and the low probability of a DBA occurring during this period of time.~~

BASES

ACTIONS (continued)

D E
The Completion Time for Required Action ~~C~~.1 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action the Completion Time only begins on discovery that both: 5

a. All required offsite circuits are inoperable and

b. A required feature is inoperable.

D E
If at any time during the existence of Condition ~~C~~ (two offsite circuits inoperable) a required feature becomes inoperable, this Completion Time begins to be tracked. 5

D E
According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition ~~C~~ for a period that should not exceed 24 hours. This level of degradation means that the offsite electrical power system does not have the capability to effect a safe shutdown and to mitigate the effects of an accident; however, the onsite AC sources have not been degraded. This level of degradation generally corresponds to a total loss of the immediately accessible offsite power sources. 5

Because of the normally high availability of the offsite sources, this level of degradation may appear to be more severe than other combinations of two AC sources inoperable that involve one or more DGs inoperable. However, two factors tend to decrease the severity of this level of degradation:

a. The configuration of the redundant AC electrical power system that remains available is not susceptible to a single bus or switching failure and

b. The time required to detect and restore an unavailable offsite power source is generally much less than that required to detect and restore an unavailable onsite AC source.

With both ~~of the required~~ offsite circuits inoperable, sufficient onsite AC sources are available to maintain the unit in a safe shutdown condition in the event of a DBA or transient. In fact, a simultaneous loss of offsite AC sources, a LOCA, and a worst case single failure were postulated as a part of the design basis in the safety analysis. Thus, the 24 hour Completion Time provides a period of time to effect restoration of one of the offsite circuits commensurate with the importance of maintaining an AC electrical power system capable of meeting its design criteria. 5

BASES

ACTIONS (continued)

According to Reference 6, with the available offsite AC sources, two less than required by the LCO, operation may continue for 24 hours. If two offsite sources are restored within 24 hours, unrestricted operation may continue. If only one offsite source is restored within 24 hours, power operation continues in accordance with Condition A [or Condition C, as applicable]. 5

E ~~F~~ E ~~F~~ 5

~~D~~.1 and ~~D~~.2

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Actions of Condition ~~D~~ [~~F~~] are modified by a Note to indicate that when Condition ~~D~~ [~~F~~] is entered with no AC source to ~~any train~~ [6.9 kV Shutdown Board 2A-A or 2B-B], the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows Condition ~~D~~ [~~F~~] to provide requirements for the loss of one offsite circuit and one DG [to 6.9 kV Shutdown Board 2A-A or 2B-B], without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized train. E 5

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition ~~D~~ [E ~~F~~] for a period that should not exceed 12 hours. 5

In Condition ~~D~~ [~~F~~ E], individual redundancy is lost in both the offsite electrical power system and the onsite AC electrical power system. Since power system redundancy is provided by two diverse sources of power, however, the reliability of the power systems in this Condition may appear higher than that in Condition ~~C~~ [D ~~E~~] (loss of both ~~required~~ offsite circuits). This difference in reliability is offset by the susceptibility of this power system configuration to a single bus or switching failure. The 12 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 5

~~INSERT 12~~

F ~~J~~

~~E~~.1

With ~~Train A and Train B DGs~~ [one or more Train A DG(s) and one or more Train B DG(s)] inoperable, there are ~~no remaining~~ [insufficient] standby AC sources [available to power an entire load group]. Thus, with an assumed loss of offsite electrical power, insufficient standby AC sources are available to power the minimum required ESF functions. Since the offsite electrical power system is the only source of AC power for this level of degradation, the risk associated with continued operation for a very short time could be less than that associated with an immediate controlled shutdown (the immediate shutdown could cause grid instability, which could result in a total loss of AC power). Since any inadvertent generator trip could also result in a 5

5

~~INSERT 12~~

G.1 and H.1

In Conditions G and H, individual redundancy is lost in the offsite electrical power system for one unit and the onsite AC electrical power system for the other unit. Since Conditions B and C are entered concurrent with entry into Condition G, and Conditions A and D are entered concurrent with entry into Condition H, the Required Actions of Conditions B and C (or Conditions A and D) provide the appropriate compensatory measures to ensure the onsite and offsite power sources are either restored to an OPERABLE status, or the associated required features are declared inoperable, thereby requiring entry into the appropriate Conditions associated with the associated feature's LCO. The Completion Times of Required Actions G.1 and H.1 are consistent with the Completion Times of Required Actions C.3 and D.4. If, while in Condition G or H, a redundant required feature is determined to be inoperable, the required feature(s) would be declared inoperable at the Completion Times specified in Conditions A, B, C, or D, as applicable.

I.1 and I.2

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Actions of Condition I are modified by a Note to indicate that when Condition I is entered with no AC source to 6.9 kV Shutdown Board 1A-A or 1B-B, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows Condition I to provide requirements for the loss of one offsite power source and one DG, without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized 6.9 kV Shutdown Board.

In Condition I, individual redundancy is lost in the offsite electrical power system and the onsite AC electrical power system. Concurrent with entry into Condition I, entry into Condition C (inoperable offsite power source) and Condition D (inoperable DG) are required. The Required Actions of Conditions C and D ensure the remaining offsite circuit and DGs are OPERABLE and that required features with no offsite or onsite power sources are declared inoperable when its redundant required feature is inoperable within the Completion Times of Required Actions C.2 and D.2.

ACTIONS (continued)

total loss of offsite AC power, however, the time allowed for continued operation is severely restricted. The intent here is to avoid the risk associated with an immediate controlled shutdown and to minimize the risk associated with this level of degradation.

In this Condition,

~~According to Reference 6, with both DGs inoperable~~, operation may continue for a period that should not exceed 2 hours, 5

, consistent with the guidance provided in Reference 6 5

~~[F.1~~ 5

~~The sequencer(s) is an essential support system to [both the offsite circuit and the DG associated with a given ESF bus]. [Furthermore, the sequencer is on the primary success path for most major AC electrically powered safety systems powered from the associated ESF bus.] Therefore, loss of an [ESF bus sequencer] affects every major ESF system in the [division]. The [12] hour Completion Time provides a period of time to correct the problem commensurate with the importance of maintaining sequencer OPERABILITY. This time period also ensures that the probability of an accident (requiring sequencer OPERABILITY) occurring during periods when the sequencer is inoperable is minimal.~~

~~This Condition is preceded by a Note that allows the Condition to be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads under any conditions. Implicit in this Note is the concept that the Condition must be retained if any sequencer failure mode results in the inability to start all or part of the safety loads when required, regardless of power availability, or results in overloading the offsite power circuit to a safety bus during an event and thereby causes its failure. Also implicit in the Note, is that the Condition is not applicable to any train that does not have a sequencer.]~~

G G ~~K~~ ~~K~~

~~G~~.1 and ~~G~~.2 5

If the inoperable AC electric power sources cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

BASES

ACTIONS (continued)

H I

L.1 and M.1

~~H~~.1

H and I

s L and M

Condition ~~H~~ correspond~~s~~ to a level of degradation in which ~~all~~ redundancy in the AC electrical power supplies cannot be assured ~~has been lost~~. At this severely degraded level, any further losses in the AC electrical power system will cause a loss of function. Therefore, no additional time is justified for continued operation. The unit is required by LCO 3.0.3 to commence a controlled shutdown. 5

SURVEILLANCE REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function, in accordance with 10 CFR 50, Appendix A, GDC 18 (Ref. 8). Periodic component tests are supplemented by extensive functional tests during refueling outages (under simulated accident conditions). The SRs for demonstrating the OPERABILITY of the DGs are in accordance with the recommendations of Regulatory Guide 1.9 (Ref. 3)~~,~~ and Regulatory Guide 1.108 (Ref. 9)~~, and Regulatory Guide 1.137 (Ref. 10), as addressed in the FSAR~~. 1

Where the SRs discussed herein specify voltage and frequency tolerances, the following is applicable. The minimum steady state output voltage of 5940 ~~[3740]~~ V is 90% of the nominal 6900 ~~4160~~ V output voltage. This value, which is specified in ANSI C84.1 (Ref. 10 ~~11~~), allows for voltage drop to the terminals of 6600 ~~4000~~ V motors whose minimum operating voltage is specified as 90% or 6210 ~~3600~~ V. It also allows for voltage drops to motors and other equipment down through the 120 V level where minimum operating voltage is also usually specified as 90% of name plate rating. The specified maximum steady state output voltage of 7260 ~~[4756]~~ V is equal to the maximum operating voltage specified for 6600 ~~4000~~ V motors. It ensures that for a lightly loaded distribution system, the voltage at the terminals of 6600 ~~4000~~ V motors is no more than the maximum rated operating voltages. The specified minimum and maximum frequencies of the DG are 58.8 Hz and 61.2 Hz, respectively. These values are equal to ± 2% of the 60 Hz nominal frequency and are derived from the recommendations given in Regulatory Guide 1.9 (Ref. 3). 2 1 1 1 2 1 1

SR 3.8.1.1

This SR ensures proper circuit continuity for the offsite AC electrical power supply to the onsite distribution network and availability of offsite AC electrical power. The breaker alignment verifies that each breaker is in its correct position to ensure that distribution buses and loads are connected to their preferred power source, and that appropriate independence of offsite circuits is maintained. ~~[The 7 day Frequency is~~ 7

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.1, AC SOURCES - OPERATING

10 CFR 50.92 EVALUATION
FOR
LESS RESTRICTIVE CHANGE L01

SQN is converting to the Improved Technical Specifications (ITS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." The proposed change involves making the Current Technical Specifications (CTS) less restrictive. Below are the descriptions of this less restrictive change and the determination of No Significant Hazards Considerations for conversion to NUREG-1431.

CTS 3.8.1.1 ACTION a provides actions for one inoperable offsite circuit and allows 72 hours to restore the inoperable offsite circuit to OPERABLE status before requiring the unit to be shut down and cooled down. ~~CTS 3.8.1.1 ACTION b provides actions for one or both DGs in a train inoperable and allows 7 days to restore the inoperable DG(s) to OPERABLE status before requiring the unit to be shut down and cooled down.~~ CTS 3.8.1.1 ACTION c provides actions for one inoperable offsite circuit and one inoperable DG and allows 12 hours to restore at least one of the inoperable AC sources to OPERABLE status before requiring the unit to be shut down and cooled down. ~~CTS 3.8.1.1 ACTION d provides actions for two inoperable offsite circuits and allows 24 hours to restore at least one of the inoperable offsite circuits to OPERABLE status before requiring the unit to be shut down. CTS 3.8.1.1 ACTION e provides actions for one or two inoperable DGs in both trains and allows 2 hours to restore the inoperable DG(s) in one train to OPERABLE status before requiring the unit to be shut down and cooled down. CTS 3.8.1.1 ACTION f states LCO 3.0.4.b is not applicable to DGs. The ITS ACTIONS are modified by a Note stating LCO 3.0.4.b is not applicable to DGs.~~ ITS 3.8.1 ACTION A provides actions for one inoperable offsite circuit for reasons other than Condition C, and allows 72 hours to restore the inoperable offsite power source to OPERABLE status. ~~ITS 3.8.1 ACTION B provides actions for one inoperable associated unit's DG or both DGs in one train inoperable, and allows 7 days to restore the inoperable DG(s) to OPERABLE status.~~ ITS 3.8.1 ACTION C provides actions for one offsite circuit inoperable solely due to an inoperable offsite power source to an opposite unit's 6.9 kV Shutdown Board, and re□uires□□□□erfor□ance of I□□ □R □□□□□ for the OPERABLE offsite circuit in □ hour and once □er □ hours thereafter, □□dec□aration that the affected re□uired feature□s□□ith no offsite □o□er a□ai□a□e are ino□era□e □hen its redundant re□uired feature is ino□era□e in □□ hours, and □□restoration of the offsite circuit to OPERABLE status in 7 days□ ~~requires declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours. Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the offsite circuit cannot be restored to an OPERABLE status. ITS 3.8.1 ACTION D requires declaration that the affected required feature(s) with no OPERABLE DG are inoperable when its redundant required feature is inoperable in 4 hours. Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the DG cannot be restored to an OPERABLE status. ITS 3.8.1 ACTION E requires declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 12 hours. Otherwise, one offsite circuit is required to be restored to an OPERABLE status in 24 hours.~~ ITS 3.8.1 ACTION F E provides actions for one associated unit's offsite circuit inoperable concurrent with one associated unit's DG inoperable, and allows 12 hours to restore one of the inoperable AC sources to OPERABLE status. ~~ITS ACTION G requires declaring the required feature(s) on the opposite unit's 6.9 kV Shutdown Board with no offsite power available inoperable in 7 days. ITS ACTION H requires declaring the required feature(s) on the opposite unit's 6.9 kV Shutdown Board with no DG available inoperable in 7 days. ITS ACTION I provides actions for one offsite circuit inoperable solely due to an inoperable offsite power source to an opposite unit's 6.9 kV Shutdown Board concurrent with one opposite unit's DG inoperable, and allows 7 days~~

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~~to restore one of the inoperable AC sources to OPERABLE status. In addition, a Note~~

For the condition of one offsite circuit inoperable solely due to an inoperable power source to an opposite unit's [illegible] Shutdown Board concurrent with an inoperable DG (similar to [illegible] Action c.[illegible]), Conditions B and [illegible] would be entered concurrently [illegible] ACTIONS B and [illegible] require, in part, restoration of the inoperable AC sources (circuit and DG) to an OPERABLE status in 7 days. This changes the CTS by providing a new ITS 3.8.1 ACTION C to allow 7 days to restore an inoperable offsite circuit to an OPERABLE status, if the offsite circuit is inoperable solely due to an inoperable power source to an opposite unit's Shutdown Board (e.g., for Unit 1 an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B is inoperable).

The purpose of the CTS 3.8.1.1 ACTIONS is to limit the time the unit can remain operating with different combinations of inoperable offsite circuits and DGs. The onsite Class 1E AC Electrical Distribution System supplies electrical power to two power trains shared between the two units. The core cooling and containment cooling system loads (e.g., Safety Injection (SI) pumps, Auxiliary Feedwater (AFW) pumps, Residual Heat Removal (RHR) pumps, Centrifugal Charging pumps, Containment Spray pumps, and Air Return System (ARS) fans) are unitized to the respective unit's 6.9 kV Shutdown Boards. However, some safety-related systems (e.g., Essential Raw Cooling Water (ERCW), Component Cooling (CCS), Emergency Gas Treatment (EGTS), Auxiliary Building Gas Treatment, (ABGTS), Control Room Emergency Ventilation (CREVs), and Control Room HVAC (CRACS)) are shared between the units. The AC sources for the shared loads are distributed across both unit's shutdown boards. Therefore, two qualified offsite circuits and four DGs capable of supplying the onsite Class 1E AC Electrical Distribution System are required to be OPERABLE. However, the impacts of an inoperable offsite power source or DG on an opposite unit's 6.9 kV Shutdown Board differ from the impacts of an inoperable offsite power source or DG on an associated unit's 6.9 kV Shutdown Board, due to the loads powered from the respective board.

For example, with SQN Unit 1 in MODES 1, 2, 3, and 4, 6.9 kV Shutdown Boards 1A-A and 1B-B, and the associated offsite power sources and DGs are required to be OPERABLE to provide electrical power to the ESF systems powered from those boards. Additionally, 6.9 kV Shutdown Boards 2A-A and 2B-B and associated offsite power sources and DGs are required to be OPERABLE to provide electrical power to any required shared components required for Unit 1. If it is necessary to de-energize 6.9 kV Shutdown Board 2A-A or 2B-B, the redundant shared systems can be aligned prior to de-energizing the shutdown board to ensure no loss of safety function will occur. Upon removing the shutdown board from service, the applicable Conditions and Required Actions for the affected shared system LCOs will be entered and tracked and either the offsite power source or the DG is required to be restored to an OPERABLE status in 7 days.

In the event of an unplanned loss of an offsite power source to an opposite unit's 6.9 kV Shutdown Board, the proposed actions require declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours, and restoration of the offsite circuit to OPERABLE status in 7 days. ~~Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the offsite power source cannot be restored to an OPERABLE status. Similarly, in~~ In the event of an unplanned loss of a DG to an opposite unit 6.9 kV Shutdown Board, the proposed actions require declaration that the affected required feature(s) with no OPERABLE DG are inoperable when its redundant required feature is inoperable in 4 hours, and restoration of the DG to OPERABLE status in 7 days. ~~Otherwise, the affected required feature(s) are declared~~

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ITS 3.8.1, AC SOURCES - OPERATING

~~inoperable in 7 days, if the DG cannot be restored to an OPERABLE status~~. In both cases, the ACTIONS require performance of SR 3.8.1.1 for the required OPERABLE offsite circuit(s) within 1 hour and once per 8 hours thereafter.

ITS 3.8.1 ACTION G is entered and the unit is required to be shut down to MODE 3 in 6 hours and MODE 5 in 36 hours.

The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. These changes are acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation, while providing time to repair inoperable features. If the necessary repairs cannot be made within the established Completion Time, ~~the associated required features are declared inoperable and the applicable Conditions and Required Actions for the affected shared system LCOs are entered and tracked~~. This change is acceptable because the provided ACTIONS effect restoration of the opposite unit's ~~AC sources~~ offsite circuit commensurate with the importance of maintaining th~~ese AC sources~~ offsite circuit capable of supporting the associated unit's required feature(s). This change is designated as less restrictive, because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

Tennessee Valley Authority (TVA) has evaluated whether or not a significant hazards consideration is involved with these proposed Technical Specification changes by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of any accident previously evaluated?

Response: No.

The proposed change relaxes the Required Actions for the opposite unit's offsite AC power sources ~~and DGs~~. The opposite unit's offsite AC power sources ~~and DGs~~ are required to be OPERABLE to support the associated unit's required features. This change will not affect the probability of an accident, since the offsite AC circuits ~~and DGs~~ are not initiators of any accident sequence analyzed in the Updated Final Safety Analysis Report (UFSAR). Rather, offsite AC power sources ~~and DGs~~ support equipment used to mitigate accidents. The consequences of an analyzed accident will not be significantly increased since the minimum requirements for AC power sources will be maintained to ensure the availability of the required power to mitigate accidents assumed in the UFSAR. Operation in accordance with the proposed TS will ensure that sufficient onsite and offsite AC power sources are OPERABLE as required to support the unit's required features. Therefore, the mitigating functions supported by the onsite and offsite AC power sources will continue to provide the protection assumed by the accident analysis. The integrity of fission product barriers, plant configuration, and operating procedures as described in the UFSAR will not be affected by the proposed changes. Thus, the consequences of previously analyzed accidents will not increase by implementing these changes. Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

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2. Does the proposed change create the possibility of a new or different kind of accident from any previously evaluated?

Response: No

The proposed change relaxes the Required Actions for the opposite unit's offsite AC power sources ~~and DGs~~. The opposite unit's offsite AC power sources ~~and DGs~~ are required to be OPERABLE to support the associated unit's required features. This change will not physically alter the plant (no new or different type of equipment will be installed). The proposed changes will maintain the minimum requirements for AC power sources to ensure the availability of the equipment required to mitigate accidents assumed in the UFSAR. Therefore, operation of the facility in accordance with this proposed change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in the margin of safety?

Response: No.

The proposed change relaxes the Required Actions for the opposite unit's offsite AC power sources ~~and DGs~~. The opposite unit's offsite AC power sources ~~and DGs~~ are required to be OPERABLE to support the associated unit's required features. The margin of safety is not affected by this change because the minimum requirements for AC power sources will be maintained to ensure the availability of the required power to shutdown the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. Therefore, the proposed changes do not involve a significant reduction in a margin of safety

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Licensee Response/NRC Response/NRC Question Closure

Id	**449**
NRC Question Number	**VKG026**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 for RAI VKG026 Supplemental Response Final.pdf** (4MB)
Attachment 2	
Response Statement	

This response supplements the initial response to RAI VKG026 based on discussion with the NRC staff during a public meeting on April 22, 2015.

ISTS 3.8.1, AC Sources-Operating, Required Action D (ITS 3.8.1, Required Action E), NOTE states, "Enter applicable Conditions and Required Actions of LCO 3.8.9, 'Distribution Systems - Operating,' when Condition D is entered with no AC power source to any train." The Bases for ISTS 3.8.1, Required Action D states, "Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Actions of Condition D are modified by a Note to indicate that when Condition D is entered with no AC source to any train, the Conditions and Required Actions for LCO 3.8.9, 'Distribution Systems - Operating,' must be immediately entered. This allows Condition D to provide requirements for the loss of one offsite circuit and one DG, without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized train."

In ITS 3.8.1, the complete de-energization of a shutdown board could be represented by entry into ITS 3.8.1 Condition E or, as an example, concurrent entries into ITS 3.8.1, Conditions B (one or more Train A or one or more Train B DG(s) inoperable) and C (one offsite circuit inoperable solely due to an offsite power source to the opposite unit's shutdown board). ITS 3.8.1,

Conditions B and C do not have a NOTE to state that entry into the applicable Conditions and Required Actions of LCO 3.8.9 is required when Conditions are entered that result in no AC power source to any shutdown board. Therefore, the Note referring to LCO 3.8.9 in ITS 3.8.1, Required Action E will be removed from Required Action E, modified for clarification, and added as ITS 3.8.1 ACTIONS NOTE 2. ITS 3.8.1 ACTIONS NOTE 2 will state, "Enter applicable Conditions and Required Actions of LCO 3.8.9, 'Distribution Systems - Operating,' when any Condition (s) is entered with no AC power source to any shutdown board resulting in a de-energized shutdown board." This will ensure that entry into a Condition or a combination of Conditions that result in the complete de-energization of a shutdown board requires entry into the applicable Conditions and Required Actions of LCO 3.8.9.

As a result of the change discussed above the following changes are required:

1. **The CTS 3.8.1.1 markups will be revised to reflect the addition of ITS 3.8.1, ACTIONS NOTE 2 and the addition of associated Discussion of Change (DOC) A03 indicators. (Pages 5 and 13 of Enclosure 2, Volume 13)**
2. **The CTS 3.8.1.1 markups will be revised to reflect the deletion of the insert regarding the addition of the proposed ACTION F Note and the deletion of the associated DOC A03 indicators. (Pages 6 and 14 of Enclosure 2, Volume 13)**
3. **DOC A03 will be revised to reflect the addition of ITS 3.8.1, ACTIONS NOTE 2. (Page 22 of Enclosure 2, Volume 13)**
4. **ISTS 3.8.1 ACTIONS will be revised to add ACTIONS NOTE 2. (Pages 47 and 71 of Enclosure 2, Volume 13) Conforming changes will be made to the ISTS 3.8.1 Bases. (Pages 107 and 157 of Enclosure 2, Volume 13)**

5. **ISTS 3.8.1 Condition D will be revised to delete the Required Action D NOTE. (Pages 51 and 75 of Enclosure 2, Volume 13) Conforming changes will be made to the ISTS Bases (Pages 118 and 168 of Enclosure 2, Volume 13)**
6. **Justification for Deviation (JFD) 7 indicators will be added where changes are made to ISTS 3.8.1 concerning the relocation and modification of the ACTIONS Note. Additionally, a new JFD 7 will be added to the Justification for Deviations Section for ITS 3.8.1. (Pages 47, 51, 71, 75, 95 and Insert JFD 7 of Enclosure 2, Volume 13)**

See Attachment 1 for the draft revised CTS and ISTS markups, DOC A03, and the addition of JFD 7.

Response Date/Time	**5/10/2015 12:20 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**5/10/2015 11:20 AM**
Date Modified	
Modified By	

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.8.1 — 3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

LCO 3.8.1.a — a. Two ~~physically independent~~ qualified circuits between the offsite transmission network and the onsite Class 1E distribution system~~@~~, and LA01 A02

LCO 3.8.1.b — b. Four ~~separate and independent~~ diesel generator sets each with: LA01

1. ~~Two diesels driving a common generator~~

SR 3.8.1.4 — 2. Two engine-mounted fuel tanks containing a minimum volume of 250 gallons of fuel, per tank

3. A separate fuel storage system containing a minimum volume of 62,000 gallons of fuel, — See ITS 3.8.3

SR 3.8.1.6 — 4. A separate fuel transfer pump, and

5. A separate 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger. — See ITS 3.8.4 and 3.8.9

Applicability — APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION: — Add proposed ACTIONS NOTE 2 — A03

Add proposed Condition A — L01

ACTION A — a. ~~With one offsite A.C. circuit of the above required A.C. electrical power source inoperable,~~ demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter. Restore ~~at least two~~ offsite circuit~~s~~ to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. — L01 L02

ACTION ~~K~~ G

STET — ~~Add proposed Condition B~~ — ~~L01~~

ACTION B — b.~~#~~ ~~With diesel generator set(s) 1A-A and/or 2A-A or 1B-B and/or 2B-B of the above required A.C. electrical power sources inoperable,~~* demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter, and determining OPERABLE diesel generator sets are not inoperable due to common cause failure or performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours; restore ~~at least four~~ diesel generator set~~s~~ to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. — ~~L01~~ STET

ACTION ~~K~~ G

Add proposed ACTION~~S~~ C ~~and D~~ — L01

~~# Required actions, to verify OPERABLE diesel generator sets are not inoperable due to common cause failure or perform SR 4.8.1.1.2.a.4, shall be completed if this action is entered.~~ — L02

SR 3.8.1.3 Note 3 — * No more than one diesel generator may be made simultaneously inoperable on a pre-planned basis for ~~maintenance, modifications, or~~ surveillance testing. — L03

~~@ Offsite circuits utilizing USST 2A and USST 2B as the normal power sources require CSST A and CSST C to be available as the alternate power sources via automatic transfer at the associated 6.9 kV Unit Boards. (CSST B can be substituted for CSST A or CSST C.) This Note remains in effect until November 30, 2013, or until the USST modifications are implemented on Units 1 and 2, whichever occurs first.~~ — A02

ITS | A01 | ITS 3.8.1

ELECTRICAL POWER SYSTEMS

ACTION (Continued)

~~Add proposed ACTION F Note~~ A03

Add proposed Condition ~~F~~ E L01

ACTION ~~F~~ E
ACTION A, ACTION B, ACTION ~~F~~ E
ACTION ~~K~~ G

c. ~~With one offsite circuit and one diesel generator set of the above required A.C. electrical power sources inoperable~~, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter, and Surveillance Requirement 4.8.1.1.2.a.4 within ~~8~~ 24 hours; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. L04

ACTION ~~E~~ D
ACTION ~~K~~ G

d. With two of the above required offsite A.C. circuits inoperable, ~~demonstrate the OPERABILITY of 4 diesel generator sets by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours, unless the diesel generator sets are already operating~~; restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and MODE 5 within 36 hours L05 M01

ACTION ~~J~~ F
ACTION B
ACTION ~~J~~ F
ACTION ~~K~~ G

e. With either diesel generator sets 1A-A and/or 2A-A inoperable simultaneous with 1B-B and/or 2B-B, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least 1) 1A-A and 2A-A or 2) 1B-B and 2B-B to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. ~~L01~~

~~Add proposed ACTIONS G, H, and I~~ ~~L01~~

ACTIONS Note

f. LCO 3.0.4.b is not applicable to diesel generators.

Add proposed ACTIONS ~~L~~ H and ~~M~~ I A04

SURVEILLANCE REQUIREMENTS

SR 3.8.1.1 4.8.1.1.1 Each of the above required ~~independent~~ circuits between the offsite transmission network and the onsite Class 1E distribution system shall be: LA01

SR 3.8.1.1 a. Determined OPERABLE ~~at least once per 7 days~~ by verifying correct breaker alignments and indicated power availability.

In accordance with the Surveillance Frequency Control Program LA02

SR 3.8.1.8 b. Demonstrated OPERABLE ~~at least once per 18 months~~# by manually and automatically transferring the power supply to each 6.9 kV Unit Board## from the normal supply to the alternate supply.

SR 3.8.1.8 Note 1 # For the 1A, 1B, 1C and 1D 6.9 kV Unit Boards, this Surveillance shall not be performed in MODES 1 and 2.

Add proposed SR 3.8.1.8 Note 1, second and third sentences. L06

SR 3.8.1.8 Note 2 ## Transfer capability is only required to be met for 6.9 kV Unit Boards that require normal and alternate power supplies.

ITS

A01

ITS 3.8.1

3/4 LIMITING CONDITIONS FOR OPEATION AND SURVEILLANCE REQUIREMENTS

3/4.0 APPLICABILITY

LIMITING CONDITION FOR OPERATION

3.0.1 Compliance with the Limiting Conditions for Operation contained in the succeeding Specifications is required during the OPERATIONAL MODES or other conditions specified therein; except that upon failure to meet the Limiting Conditions for Operation, the associated ACTION requirements shall be met and as provided in LCO 3.0.7.

3.0.2 Noncompliance with a Specification shall exist when the requirements of the Limiting Condition for Operation and associated ACTION requirements are not met within the specified time intervals. If the Limiting Conditions for Operation is restored prior to expiration of the specified time intervals, completion of the ACTION requirements is not required.

3.0.3 When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within one hour action shall be initiated to place the unit in a MODE in which the Specification does not apply by placing it, as applicable, in:

1. At least HOT STANDBY within the next 6 hours,
2. At least HOT SHUTDOWN within the following 6 hours, and
3. At least COLD SHUTDOWN within the subsequent 24 hours.

See ITS 3.0

Where corrective measures are completed that permit operation under the ACTION requirements, the ACTION may be taken in accordance with the specified time limits as measured from the time of failure to meet the Limiting Condition for Operation. Exceptions to these requirements are stated in the individual Specifications.

3.0.4 When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made:

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time;

b. After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate; exceptions to this Specification are stated in the individual Specifications, or

c. When an allowance is stated in the individual value, parameter, or other Specification.

This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

Required Actions A.2, B.2, ~~E.1~~, and associated Completion Times

C.2, D.1

3.0.5 When a system, subsystem, train, component or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of its applicable Limiting Condition for Operation, provided: (1) its corresponding normal or emergency power source is OPERABLE; and (2) all of its redundant system(s), subsystem(s), train(s), component(s) and device(s) are OPERABLE, or likewise satisfy the requirements of this Specification. Unless both

ITS A01 ITS 3.8.1

APPLICABILITY

LIMITING CONDITION FOR OPERATION (Continued)

, C.2

24 hours for Required Action A.2
4 hours for Required Action B.2
12 hours for Required Action ~~E~~.1

D

3.0.5 (Continued)

conditions (1) and (2) are satisfied, within ~~2 hours~~ ~~action shall be initiated to place the unit in a MODE in which the applicable Limiting Condition for Operation does not apply by placing it as applicable in~~:

L20

~~1. At least HOT STANDBY within the next 6 hours,~~
~~2. At least HOT SHUTDOWN within the following 6 hours, and~~ Declare required features inoperable.
~~3. At least COLD SHUTDOWN within the subsequent 24 hours.~~

~~This Specification is not applicable in MODES 5 or 6.~~ A08

3.0.6 Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.1 and 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

3.0.7 When one or more required snubbers are unable to perform their associated support function(s), any affected supported LCO(s) are not required to be declared not met solely for this reason if risk is assessed and managed, and:

a. the snubbers not able to perform their associated support function(s) are associated with only one train or subsystem of a multiple train or subsystem supported system or are associated with a single train or subsystem supported system and are able to perform their associated support function within 72 hours; or

b. the snubbers not able to perform their associated support function(s) are associated with more than one train or subsystem of a multiple train or subsystem supported system and are able to perform their associated support function within 12 hours.

At the end of the specified period the required snubbers must be able to perform their associated support function(s), or the affected supported system LCO(s) shall be declared not met.

See ITS 3.0

SURVEILLANCE REQUIREMENTS

4.0.1 Surveillance Requirements shall be met during the MODES or other specified conditions in the Applicability for individual Limiting Condition for Operation, unless otherwise stated in the individual Surveillance Requirement. Failure to meet a Surveillance Requirement, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the Limiting Condition for Operation. Failure to perform a Surveillance within the specified surveillance interval shall be failure to meet the Limiting Conditions for Operation except as provided in Specification 4.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.

4.0.2 Each Surveillance Requirement shall be performed within the specified surveillance interval with a maximum allowable extension not to exceed 25 percent of the specified surveillance interval.

4.0.3 If it is discovered that a Surveillance was not performed within its specified surveillance interval (including the allowed extension per Specification 4.0.2), then compliance with the requirement to declare the Limiting Condition for Operation not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified surveillance interval, whichever is greater. This delay period is permitted to allow performance of the Surveillance. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours and the risk impact shall be managed.

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ITS A01 ITS 3.8.1

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.8.1 3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE: LA01

LCO 3.8.1.a a. Two ~~physically independent~~ qualified circuits between the offsite transmission network and the onsite Class 1E distribution system~~@~~, and A02

LCO 3.8.1.b b. Four ~~separate and independent~~ diesel generator sets each with: LA01

1. ~~Two diesels driving a common generator~~

SR 3.8.1.4 2. Two engine-mounted fuel tanks containing a minimum volume of 250 gallons of fuel, per tank

3. A separate fuel storage system containing a minimum volume of 62,000 gallons of fuel, See ITS 3.8.3

SR 3.8.1.6 4. A separate fuel transfer pump, and

5. A separate 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger. See ITS 3.8.4 and 3.8.9

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION: Add proposed ACTIONS NOTE 2 A03

Add proposed Condition A L01

ACTION A a. ~~With one offsite A.C. circuit of the above required A.C. electrical power sources inoperable,~~ demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter. Restore ~~at least two~~ offsite circuit~~s~~ to OPERABLE status within 72 hours L01 or be in

G ACTION ~~K~~ at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. L02

~~Add proposed Condition B~~ ~~L01~~

STET b.~~#~~ ~~With diesel generator set(s) 1A-A and/or 2A-A or 1B-B and/or 2B-B of the above required A.C. electrical power sources inoperable,~~* demonstrate the OPERABILITY of the remaining

ACTION B A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter, and determining OPERABLE diesel generator sets are not inoperable due to common cause failure or performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours; restore ~~at least four~~ diesel generator set~~s~~ to OPERABLE ~~L01~~ STET status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD

G ACTION ~~K~~ SHUTDOWN within the following 30 hours.

Add proposed ACTIONS C ~~and D~~ L01

~~# Required actions, to verify OPERABLE diesel generator sets are not inoperable due to common cause failure or perform SR 4.8.1.1.2.a.4, shall be completed if this action is entered.~~ L02

SR 3.8.1.3 Note 3 * No more than one diesel generator may be made simultaneously inoperable on a pre-planned basis for ~~maintenance, modifications, or~~ surveillance testing. L03

~~@ Offsite circuits utilizing USST 2A and USST 2B as the normal power sources require CSST A and CSST C to be available as the alternate power sources via automatic transfer at the associated 6.9 kV Unit Boards. (CSST B can be substituted for CSST A or CSST C.) This Note remains in effect until November 30, 2013, or until the USST modifications are implemented on Units 1 and 2, whichever occurs first.~~ A02

ITS | A01 | ITS 3.8.1

ELECTRICAL POWER SYSTEMS

ACTION (Continued)

Add proposed ACTION F Note — A03

Add proposed Condition F — L01

ACTION F — E

c. ~~With one offsite circuit and one diesel generator set of the above required A.C. electrical power sources inoperable,~~ demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter, and Surveillance Requirement 4.8.1.1.2.a.4 within ~~8~~ 24 hours; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. — L04

ACTION A, ACTION B, ACTION F — E; ACTION K — G

ACTION F — D; ACTION K — G

d. With two of the above required offsite A.C. circuits inoperable, ~~demonstrate the OPERABILITY of 4 diesel generator sets by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours, unless the diesel generator sets are already operating~~; restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and MODE 5 within 36 hours — L05, M01

ACTION J — F; ACTION B; ACTION J — F; ACTION K — G

e. With either diesel generator sets 1A-A and/or 2 A-A inoperable simultaneous with 1B-B and/or 2B-B, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least 1) 1A-A and 2A-A or 2) 1B-B and 2B-B to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. — ~~L01~~

~~Add proposed ACTIONS G, H, and I~~ — ~~L01~~

ACTIONS Note

f. LCO 3.0.4.b is not applicable to diesel generators.

Add proposed ACTIONS ~~L~~ H and ~~M~~ I — A04

SURVEILLANCE REQUIREMENTS

SR 3.8.1.1

4.8.1.1.1 Each of the above required ~~independent~~ circuits between the offsite transmission network and the onsite Class 1E distribution system shall be: — LA01

SR 3.8.1.1

a. Determined OPERABLE ~~at least once per 7 days~~ by verifying correct breaker alignments and indicated power availability.

In accordance with the Surveillance Frequency Control Program — LA02

SR 3.8.1.8

b. Demonstrated OPERABLE ~~at least once per 18 months~~# by manually and automatically transferring the power supply to each 6.9 kV Unit Board ## from the normal supply to the alternate supply.

SR 3.8.1.8 Note 1

\# For the 2A, 2B, 2C and 2D 6.9 kV Unit Boards this Surveillance shall not be performed in MODES 1 and 2. — Add proposed SR 3.8.1.8 Note 1, second and third sentences. — L06

SR 3.8.1.8 Note 2

\## Transfer capability is only required to be met for 6.9 kV Unit Boards that require normal and alternate power supplies.

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

3/4.0 APPLICABILITY

LIMITING CONDITION FOR OPERATION

3.0.1 Compliance with the Limiting Conditions for Operation contained in the succeeding Specifications is required during the OPERATIONAL MODES or other conditions specified therein; except that upon failure to meet the Limiting Conditions for Operation, the associated ACTION requirements shall be met and as provided in LCO 3.0.7.

3.0.2 Noncompliance with a Specification shall exist when the requirements of the Limiting Condition for Operation and associated ACTION requirements are not met within the specified time intervals. If the Limiting Conditions for Operation is restored prior to expiration of the specified time intervals, completion of the ACTION requirements is not required.

3.0.3 When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within one hour action shall be initiated to place the unit in a MODE in which the Specification does not apply by placing it, as applicable, in:

1. At least HOT STANDBY within the next 6 hours,
2. At least HOT SHUTDOWN within the following 6 hours, and
3. At least COLD SHUTDOWN within the subsequent 24 hours.

Where corrective measures are completed that permit operation under the ACTION requirements, the ACTION may be taken in accordance with the specified time limits as measured from the time of failure to meet the Limiting Condition for Operation. Exceptions to these requirements are stated in the individual Specifications.

See ITS 3.0

3.0.4 When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made:

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time;

b. After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate; exceptions to this Specification are stated in the individual Specifications, or

c. When an allowance is stated in the individual value, parameter, or other Specification.

This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

Required Actions A.2, B.2, ~~E.1,~~ and associated Completion Times

C.2, D.1

3.0.5 When a system, subsystem, train, component or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of its applicable Limiting Condition for Operation, provided: (1) its corresponding normal or emergency power source is OPERABLE; and (2) all of its redundant system(s), subsystem(s), train(s), component(s) and device(s) are OPERABLE, or likewise satisfy the requirements of this Specification. Unless both

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ITS

A01

ITS 3.8.1

APPLICABILITY

LIMITING CONDITION FOR OPERATION

, C.2

24 hours for Required Action A.2
4 hours for Required Action B.2
12 hours for Required Action ~~E~~.1

D

3.0.5 (Continued)

conditions (1) and (2) are satisfied, within ~~2 hours~~ ~~action shall be initiated to place the unit in a MODE in which the applicable Limiting Condition for Operation does not apply by placing it as applicable in:~~

~~1. At least HOT STANDBY within the next 6 hours~~
~~2. At least HOT SHUTDOWN within the following 6 hours, and~~
~~3. At least COLD SHUTDOWN within the subsequent 24 hours.~~

Declare required features inoperable.

L20

~~This Specification is not applicable in MODES 5 or 6.~~

A08

3.0.6 Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.1 and 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

3.0.7 When one or more required snubbers are unable to perform their associated support function(s), any affected supported LCO(s) are not required to be declared not met solely for this reason if risk is assessed and managed, and:

a. the snubbers not able to perform their associated support function(s) are associated with only one train or subsystem of a multiple train or subsystem supported system or are associated with a single train or subsystem supported system and are able to perform their associated support function within 72 hours; or

b. the snubbers not able to perform their associated support function(s) are associated with more than one train or subsystem of a multiple train or subsystem supported system and are able to perform their associated support function within 12 hours.

At the end of the specified period the required snubbers must be able to perform their associated support function(s), or the affected supported system LCO(s) shall be declared not met.

See ITS 3.0

SURVEILLANCE REQUIREMENTS

4.0.1 Surveillance Requirements shall be met during the MODES or other specified conditions in the Applicability for individual Limiting Condition for Operation, unless otherwise stated in the individual Surveillance Requirement. Failure to meet a Surveillance Requirement, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the Limiting Condition for Operation. Failure to perform a Surveillance within the specified surveillance interval shall be failure to meet the Limiting Conditions for Operation except as provided in Specification 4.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.

4.0.2 Each Surveillance Requirement shall be performed within the specified surveillance interval with a maximum allowable extension not to exceed 25 percent of the specified surveillance interval.

4.0.3 If it is discovered that a Surveillance was not performed within its specified surveillance interval (including the allowed extension per Specification 4.0.2), then compliance with the requirement to declare the Limiting Condition for Operation not met may be delayed, from the time of discovery,

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ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.8.1.1.a Note @ has an expiration date of November 30, 2013. As it is anticipated that the SQN ITS Conversion License Amendment Request will not be approved by the NRC before this date, Note @ has been deleted. As such, these changes are administrative.

A03 CTS 3.8.1.1 ACTION c applies when one offsite circuit and one diesel generator (DG) are inoperable. In this condition, one or more required electrical boards may be de-energized. CTS 3.8.2.1 provides an ACTION for a de-energized required electrical board. ITS 3.8.1 ~~ACTION F Note in the Required Actions column~~ ACTIONS NOTE 2 states, "Enter applicable Conditions and Required Action of LCO 3.8.9, "Distribution System - Operating," when ~~Condition F~~ any Condition(s) is entered with no AC power source to ~~any train~~ any shutdown board resulting in a de-energized shutdown board." This changes the CTS by specifically requiring the compensatory actions for Distribution System - Operating to be taken, if a ~~distribution train~~ shutdown board is made inoperable and de-energized by inoperable AC Sources.

This change is acceptable because no changes are made to CTS requirements. CTS 3.0.1 requires the associated ACTION requirements to be met when an LCO is not met. With the addition of ITS LCO 3.0.6, an exception to ITS LCO 3.0.2 (CTS 3.0.1) was created, whereby ACTION requirements associated with an unmet LCO are not required to be met. Therefore, in the event AC Sources are inoperable such that a distribution subsystem is de-energized, ITS LCO 3.0.6 would allow taking only the AC Sources ACTIONS; taking exception to complying with the Distribution System ACTIONS. Since the AC Sources ACTIONS may not be sufficiently conservative in the event of an entire train without power, specific direction to take appropriate ACTIONS for the Distribution System is added (ITS 3.8.1, ~~Note to ACTION F~~ ACTIONS NOTE 2) for the condition of no power for any shutdown board ~~a train~~. This format and construction implements the existing treatment of this condition within the framework of the ITS methods. This change is designated as administrative because it does not result in a technical change to the CTS.

A04 CTS 3.8.1.1 does not contain an ACTION for multiple offsite circuits and DGs inoperable. Having multiple offsite circuits and DGs inoperable requires entering CTS LCO 3.0.3. ITS 3.8.1 ACTION ~~L~~ H requires entering LCO 3.0.3 immediately, if two offsite circuits are inoperable concurrent with one or more inoperable Train A or Train B DG(s). ITS 3.8.1 ACTION ~~M~~ I requires entering LCO 3.0.3 immediately, if one offsite circuit is inoperable concurrent with one or more inoperable Train A and Train B DGs. This changes the CTS by adding specific ACTIONS requiring entry into LCO 3.0.3.

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specific CTS DG loading requirement with a statement that DG loadings may include gradual loading as recommended by the manufacturer. This change is consistent with the recommendations of Generic Letter (GL) 93-05, "Line- Item Technical Specifications Improvements to Reduce Surveillance Requirements for Testing During Power Operation." GL 93-05, Section 10.1, states that DGs "should be loaded in accordance with vendor recommendations for all test purposes other than the refueling outage LOOP tests." The change is acceptable, because it will ensure the DGs will continue to be operated consistent with manufacturer recommendations. This change is designated as administrative, because it does not result in a technical change to the CTS.

A07 CTS 4.8.1.1.2.d.5 requires verification that on an ESF actuation test signal (without loss of offsite power), each DG starts and operates for at least 5 minutes. ITS SR 3.8.1.12 requires a similar test, but does not specify that the DG auto-start on an ESF actuation test signal is "without loss of offsite power." This changes the CTS by not specifying the DG auto-start on an ESF actuation test signal is without a loss of offsite power signal.

The purpose of CTS 4.8.1.1.2.d.5 is to demonstrate that each DG automatically starts on an ESF actuation test signal. The requirements of this Surveillance are retained in the ITS as SR 3.8.1.12. The purpose of CTS 4.8.1.1.2.d.6.b) is to verify that each DG starts on a loss of offsite power concurrent with an ESF actuation test signal. The requirements of this Surveillance are retained in the ITS as SR 3.8.1.18. This change is acceptable, because it is understood that the CTS 4.8.1.1.2.d.5 required DG start on an ESF actuation test signal is without a loss of offsite power signal. Therefore, it is unnecessary to provide this information in ITS SR 3.8.1.12. This change is designated as administrative, because it does not result in a technical change to the CTS.

A08 CTS 3.0.5 states that it is not applicable in MODE 5 or 6. CTS 3.0.5 has been incorporated into the ACTIONS of ITS 3.8.1. This changes the CTS by incorporating the allowances of CTS 3.0.5 in ITS 3.8.1.

This change is acceptable because ITS 3.8.1 is only applicable in MODES 1, 2, 3, and 4. Therefore, the statement in CTS 3.0.5, that states that the Specification is not applicable in MODE 5 or 6, is no longer necessary and is deleted. This change is designated as administrative, because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.8.1.1 ACTION d specifies the compensatory actions for two inoperable offsite circuits. The action requires restoration of at least one of the offsite sources within 24 hours, and if it is not restored within the allowed time, the unit is required to be in at least HOT STANDBY within the next 6 hours. ITS 3.8.1
D ACTION ~~E~~ requires restoration of at least one offsite circuit to OPERABLE status G
within 24 hours, otherwise ITS 3.8.1 ACTION ~~K~~ requires the unit to be in MODE 3 within 6 hours and MODE 5 within 36 hours. This changes the CTS by adding the requirement to be in MODE 5 within 36 hours.

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LA06 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.8.1.1.2.g.1 requires verification of each DG's capability to reject a load of greater than or equal to 600 kW while maintaining voltage and frequency within specified ranges. ITS SR 3.8.1.9 requires a similar verification, but does not specify the value of the single largest post-accident load to reject. This changes the CTS by moving the detail of the single largest load to the ITS Bases.

The removal of these details related to system design from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS retains the requirement to verify that each DG is capable of maintaining voltage and frequency within specified ranges upon reject of the single largest post-accident load. The removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change, because information relating to system design is being removed from the Technical Specifications.

<u>LESS RESTRICTIVE CHANGES</u>

L01 CTS 3.8.1.1 ACTION a provides actions for one inoperable offsite circuit and allows 72 hours to restore the inoperable offsite circuit to OPERABLE status before requiring the unit to be shut down and cooled down. ~~CTS 3.8.1.1 ACTION b provides actions for one or both DGs in a train inoperable and allows 7 days to restore the inoperable DG(s) to OPERABLE status before requiring the unit to be shut down and cooled down.~~ CTS 3.8.1.1 ACTION c provides actions for one inoperable offsite circuit and one inoperable DG and allows 12 hours to restore at least one of the inoperable AC sources to OPERABLE status before requiring the unit to be shut down and cooled down. ~~CTS 3.8.1.1 ACTION d provides actions for two inoperable offsite circuits and allows 24 hours to restore at least one of the inoperable offsite circuits to OPERABLE status before requiring the unit to be shut down. CTS 3.8.1.1 ACTION e provides actions for one or two inoperable DGs in both trains and allows 2 hours to restore the inoperable DG(s) in one train to OPERABLE status before requiring the unit to be shut down and cooled down. CTS 3.8.1.1 ACTION f states LCO 3.0.4.b is not applicable to DGs. The ITS ACTIONS are modified by a Note stating LCO 3.0.4.b is not applicable to DGs.~~ ITS 3.8.1 ACTION A provides actions for one inoperable offsite circuit for reasons other than Condition C, and allows 72 hours to restore the inoperable offsite power source to OPERABLE status. ~~ITS 3.8.1 ACTION B provides actions for one inoperable associated unit's DG or both DGs in one train inoperable, and allows 7 days to restore the inoperable DG(s) to OPERABLE status.~~ ITS 3.8.1 ACTION C provides actions for one offsite circuit inoperable solely due to an inoperable offsite power source to an opposite unit's 6.9 kV Shutdown Board, and ~~requires declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours. Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the offsite circuit cannot be~~

requires: 1) performance of ITS SR 3.8.1.1 for the OPERABLE offsite circuit in 1 hour and once per 8 hours thereafter, 2) declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours, and 3) restoration of the offsite circuit to OPERABLE status in 7 days.

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~~restored to an OPERABLE status. ITS 3.8.1 ACTION D requires declaration that the affected required feature(s) with no OPERABLE DG are inoperable when its redundant required feature is inoperable in 4 hours. Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the DG cannot be restored to an OPERABLE status.~~ ~~ITS 3.8.1 ACTION E requires declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 12 hours. Otherwise, one offsite circuit is required to be restored to an OPERABLE status in 24 hours.~~ ITS 3.8.1 ACTION ~~F~~ E provides actions for one associated unit's offsite circuit inoperable concurrent with one associated unit's DG inoperable, and allows 12 hours to restore one of the inoperable AC sources to OPERABLE status. For the condition of one offsite circuit inoperable solely due to an inoperable power source to an opposite unit's 6.9 kV Shutdown Board concurrent with an inoperable DG (similar to CTS 3.8.1.1 Action c), ITS 3.8.1 Conditions B and C would be entered concurrently. ITS 3.8.1 ACTIONS B and C require, in part, restoration of the inoperable AC sources (circuit and DG) to an OPERABLE status in 7 days. This changes the CTS by providing a new ITS 3.8.1 ACTION C to allow 7 days to restore an inoperable offsite circuit to an OPERABLE status, if the offsite circuit is inoperable solely due to an inoperable power source to an opposite unit's Shutdown Board (e.g., for Unit 1 an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B is inoperable). ~~ITS ACTION G requires declaring the required feature(s) on the opposite unit's 6.9 kV Shutdown Board with no offsite power available inoperable in 7 days.~~ ~~ITS ACTION H requires declaring the required feature(s) on the opposite unit's 6.9 kV~~

~~more Train B DGs inoperable and allows 2 hours to restore one Train of DGs to OPERABLE status. ITS 3.8.1 ACTION K requires the unit to be shut down and cooled down if a Required Action and associated Completion Time of Condition A, B, E, F, I, or J is not met.~~ ~~These changes to the CTS provide separate ACTIONS to declare the required features powered from the opposite unit's Class 1E AC Electrical Power Distribution System inoperable as the remedial measures for the inoperable AC sources.~~

The purpose of the CTS 3.8.1.1 ACTIONS is to limit the time the unit can remain operating with different combinations of inoperable offsite circuits and DGs. The onsite Class 1E AC Electrical Distribution System supplies electrical power to two power trains shared between the two units. The core cooling and containment cooling system loads (e.g., Safety Injection (SI) pumps, Auxiliary Feedwater (AFW) pumps, Residual Heat Removal (RHR) pumps, Centrifugal Charging pumps, Containment Spray pumps, and Air Return System (ARS) fans) are unitized to the respective unit's 6.9 kV Shutdown Boards. However, some safety-related systems (e.g., Essential Raw Cooling Water (ERCW), Component Cooling (CCS), Emergency Gas Treatment (EGTS), Auxiliary Building Gas Treatment, (ABGTS), Control Room Emergency Ventilation (CREVs), and Control Room HVAC (CRACS)) are shared between the units. The AC sources for the shared loads are distributed across both unit's shutdown boards. Therefore, two qualified offsite circuits and four DGs capable of supplying the onsite Class 1E AC Electrical Distribution System are required to be OPERABLE. However, the impacts of an inoperable offsite power source or DG on an opposite unit's 6.9 kV Shutdown Board differ from the impacts of an inoperable offsite power source or DG on an associated unit's 6.9 kV Shutdown Board, due to the loads powered from the respective board.

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For example, with SQN Unit 1 in MODES 1, 2, 3, and 4, 6.9 kV Shutdown Boards 1A-A and 1B-B, and the associated offsite power sources and DGs are required to be OPERABLE to provide electrical power to the ESF systems powered from those boards. Additionally, 6.9 kV Shutdown Boards 2A-A and 2B-B and associated offsite power sources and DGs are required to be OPERABLE to provide electrical power to any required shared components required for Unit 1. If it is necessary to de-energize 6.9 kV Shutdown Board 2A-A or 2B-B, the redundant shared systems can be aligned prior to de-energizing the shutdown board to ensure no loss of safety function will occur. Upon removing the shutdown board from service, the applicable Conditions and Required Actions for the affected shared system LCOs will be entered and tracked and either the offsite power source or the DG is required to be restored to an OPERABLE status in 7 days.

In the event of an unplanned loss of an offsite power source to an opposite unit's 6.9 kV Shutdown Board, the proposed actions require declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours, and restoration of the offsite circuit to OPERABLE status in 7 days. ~~Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the offsite power source cannot be restored to an OPERABLE status.~~ ~~Similarly, in~~ In the event of an unplanned loss of a DG ~~to an opposite unit 6.9 kV Shutdown Board~~, the proposed actions require declaration that the affected required feature(s) with no OPERABLE DG are inoperable when its redundant required feature is inoperable in 4 hours, and restoration of the DG to OPERABLE status in 7 days. ~~Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the DG cannot be restored to an OPERABLE status.~~ In both cases, the ACTIONS require performance of SR 3.8.1.1 for the required OPERABLE offsite circuit(s) within 1 hour and once per 8 hours thereafter.

The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. These changes are acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation, while providing time to repair inoperable features. If the necessary repairs cannot be made within the established Completion Time, ITS 3.8.1 ACTION G is entered and the unit is required to be shut down to MODE 3 in 6 hours and MODE 5 in 36 hours. ~~the associated required features are declared inoperable and the applicable Conditions and Required Actions for the affected shared system LCOs are entered and tracked~~. This change is acceptable because the provided ACTIONS effect restoration of the opposite unit's ~~AC sources~~ offsite circuit commensurate with the importance of maintaining these ~~AC sources~~ offsite circuit capable of supporting the associated unit's required feature(s). This change is designated as less restrictive, because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L02 *(Category 4 – Relaxation of Required Action)* CTS 3.8.1.1 ACTION b requires with DG set(s) 1A-A and/or 2A-A or 1B-B and/or 2B-B inoperable, determination that OPERABLE DGs are not inoperable due to common cause failure or through performance of CTS 4.8.1.1.2.a.4. This ACTION is modified by Note #, requiring completion of the required action once the ACTION is entered. ITS 3.8.1

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ACTION B requires that with ~~an associated unit's DG inoperable (or with both~~ any DGs in a train inoperable~~)~~, determination that OPERABLE DGs are not inoperable due to common cause failure or through performance of SR 3.8.1.2. However, ITS does not specify completion of the ACTIONS if the Condition is exited. This changes the CTS by removing a requirement to complete the ACTIONS once the ACTION is entered.

The purpose of CTS 3.8.1.1 ACTION b is to provide compensatory measures to be taken in response to inoperable DG set(s), including demonstration that the OPERABLE DGs are not inoperable. The Note requiring completion of the actions to verify the remaining DGs are OPERABLE once the ACTION is entered was added to the CTS with License Amendments 205 (Unit 1) and 195 (Unit 2), dated June 29, 1995 (ADAMS Accession No. ML013320017). TVA license amendment request TS 94-19, submitted on April 6, 1995, stated that the addition of this Note was being made to align with the requirements contained in NUREG-1431, LCO 3.8.1. On April 7, 1995, NUREG-1431, Rev. 1 was issued. The Note modifying LCO 3.8.1 ACTION B that required completion of Required Actions B.3.1 and B.3.2 (demonstration of DG OPERABILITY) was removed from NUREG-1431 in Revision 1. The requirement to complete the actions to demonstrate the OPERABLE DGs are not inoperable is an exception to ITS LCO 3.0.2 (CTS LCO 3.0.2). Completing the ACTIONS to verify the OPERABILITY of the remaining OPERABLE DGs is not required to restore compliance with the LCO. This change is acceptable because completion of the ACTIONS to evaluate the possibility of a DG common cause failure will be tracked as an item in the corrective action program. This change is designated as less restrictive, because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L03 *(Category 4 – Relaxation of Required Action)* CTS 3.8.1.1 ACTION b provides actions for one or both DGs in a train inoperable. ACTION b is modified by Note * stating that no more than one DG may be made simultaneously inoperable on a pre-planned basis for maintenance, modifications, or surveillance testing. ITS SR 3.8.1.3 verifies each DG can be started, synchronized, loaded, and operated for at least 60 minutes. SR 3.8.1.3 is modified by Note 3 stating the Surveillance shall be conducted on only one DG at a time. This changes the CTS by deleting the restriction for not making more than one DG simultaneously inoperable on a pre-planned basis, with the exception of the performance of SR 3.8.1.3.

The purpose of CTS 3.8.1.1 ACTION b is to provide required actions for one or both DGs in a train inoperable. The purpose of Note * is to ensure pre-planned activities that may result in an inoperable DG (i.e., maintenance, modifications, or surveillance testing) are not performed on both DGs in a train at the same time. The proposed required actions do not include the restriction for limiting pre-planned activities to one DG at a time. The control of pre-planned maintenance, modifications, or surveillance testing is an issue for procedures and scheduling. This change is designated as less restrictive, because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L04 *(Category 3 – Relaxation of Completion Time)* CTS 3.8.1.1 ACTION b requires, in part, with one or both DG(s) in a train inoperable to demonstrate the

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OPERABILITY of the remaining DGs by performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours. CTS 3.8.1.1 ACTION c requires, in part, with one offsite circuit and one DG inoperable to demonstrate the OPERABILITY of the remaining DGs by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours. ITS 3.8.1 ACTION B requires with one or both DG(s) in a train inoperable to perform SR 3.8.1.2 for OPERABLE DGs within 24 hours. This changes the CTS by extending the time allowed to demonstrate the OPERABILITY of the OPERABLE DGs with one offsite circuit and one DG inoperable from 8 hours to 24 hours.

The purpose of the CTS 3.8.1.1 ACTIONS b and c is to ensure that the OPERABLE DGs are not inoperable as a result of a similar, yet undetected, failure (i.e., due to a common mode failure). CTS 3.0.1 states that upon failure to meet an LCO, the associated ACTION requirements shall be met. In the instance of one offsite circuit and one DG inoperable, the condition of one inoperable DG also exists. Therefore, in addition to meeting the requirements of CTS 3.8.1.1 ACTION c, the requirements of CTS 3.8.1.1 ACTION b are required to be met. However, this results in conflicting time requirements for performing CTS 4.8.1.1.2.a.4 on the OPERABLE DGs. A 24 hour Completion Time for performing DG common mode failure checks is consistent with the guidance provided in Generic Letter 84-15. This change is acceptable, since the vast majority of DG start tests demonstrate that the DG is OPERABLE. This change is designated as less restrictive, because additional time is allowed to demonstrate the OPERABILITY of the OPERABLE DGs for the condition of one offsite circuit and one DG inoperable under the ITS than under the CTS.

L05 *(Category 4 – Relaxation of Required Action)* CTS 3.8.1.1 ACTION d states, in part, with two offsite circuits inoperable demonstrate the OPERABILITY of the DGs by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours, unless the DGs are already operating. CTS 4.8.1.1.2.a.4 requires verification that each DG starts and achieves voltage and frequency within established ranges within
D
10 seconds. ITS 3.8.1 ACTION ~~E~~ does not contain this requirement. This changes the CTS by deleting the requirement to test each DG when two offsite circuits are inoperable.

The purpose of the CTS 4.8.1.1.2.a.4 requirement in CTS 3.8.1.1 ACTION c is to ensure that the DGs are OPERABLE in the case of a loss of offsite power. Since the DGs are tested on monthly basis, there is no reason to suspect that they would not perform their intended safety function. Furthermore, the inoperability of two offsite circuits does not affect the OPERABILITY of the DGs, since the DGs are independent of the offsite circuits. Therefore, there is no need to subject the DGs to additional testing. This change is designated as less restrictive because the CTS requirement to perform testing on the DGs when both offsite circuits are inoperable is not being retained in the ITS.

L06 *(Category 8 – Deletion of Surveillance Requirement Shutdown Performance Requirements)* CTS 4.8.1.1.1.b requires the demonstration of a manual and automatic transfer of the power supply to each 6.9 kV Unit Board from the normal to alternate once per 18 months. Note # specifies that the Surveillance shall not be performed on the associated unit's 6.9 kV Unit Boards in MODES 1 and 2. This test has been incorporated in ITS SR 3.8.1.8. ITS SR 3.8.1.8 includes a

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L19 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.8.1.1.2.g.4 requires demonstration of a DG hot restart and verification following energization that steady state voltage and frequency are maintained ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz during this test. ITS SR 3.8.1.15 requires demonstration of a DG hot restart and requires verification that within 10 seconds, voltage ≥ 6800 V and frequency ≥ 58.8 Hz, and steady state voltage ≥ 6800 V and ≤ 7260 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz. This changes the CTS by specifying a minimum voltage and frequency limit to be achieved within 10 seconds instead of a voltage and frequency range.

The purpose of CTS 4.8.1.1.2.g.4 is to test the ability of each DG to restart on an accident signal under hot conditions and achieve the appropriate voltage and frequency. This changes the CTS by specifying a minimum voltage and frequency limit to be achieved within 10 seconds instead of a voltage and frequency range. This effectively allows the upper voltage and frequency limits to be exceeded during DG acceleration and stabilization. As stated above, the proposed Surveillance will require the establishment of the minimum frequency (58.8 Hz) and voltage (6800 V) within the given time frame. The accident analyses require that the DGs be capable of being loaded within 10 seconds. This can be accomplished at 58.8 Hz and 6800 V. While the upper level requirement regarding the frequency and voltage acceptance criterion is being eliminated, the requirement to establish a steady state voltage and frequency has been retained. Verification that the minimum voltage and frequency limits are met within the proper time is sufficient to ensure the DG can perform its design function. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L20 *(Category 3 – Relaxation of Completion Time)* CTS 3.0.5 allows a system, subsystem, train, component, or device to be considered OPERABLE with an inoperable emergency or normal power source provided its corresponding normal or emergency power source is OPERABLE and its redundant system(s), subsystem(s), train(s), component(s), and device(s) are OPERABLE. CTS 3.0.5 requires a unit shut down to start within two hours with these requirements not met. CTS 3.0.5 also provides an explicit time period to be in HOT STANDBY (MODE 3), HOT SHUTDOWN (MODE 4), and COLD SHUTDOWN (MODE 5). ITS 3.8.1 ACTION A (one associated unit offsite source inoperable) and ACTION C (one opposite unit offsite source inoperable) require ~~requires~~ the declaration of required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable. The Completion Time allowed by Required Actions A.2 and C.2 ~~the Required Action A.2~~ is 24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s). ITS 3.8.1 ACTION B (one ~~associated unit DG~~ or both DGs in a train inoperable) requires the declaration of required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable. The Completion Time allowed by the Required Action B.2 is 4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s). ITS 3.8.1 ACTION D ~~E~~ (two offsite circuits inoperable) requires the declaration of required feature(s) inoperable when its redundant required feature(s) is inoperable. The Completion Time allowed by the Required Action D ~~E~~.1 is 12 hours from discovery of Condition D ~~E~~ concurrent with inoperability of redundant required features. This changes the CTS by allowing more time to restore inoperable equipment and

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replaces the explicit times to be in MODE 3, MODE 4, and MODE 5 with a requirement to declare the affected features inoperable (and thus to take the ACTIONS required by the individual system LCO, including possible shut down of the unit).

This change is acceptable because the Completion Time is consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the allowed Completion Time. This change allows more time to restore inoperable equipment when required AC Sources are inoperable concurrent with inoperabilities of redundant required features and deletes the explicit times to be in MODE 3, MODE 4, and MODE 5. By declaring the affected supported equipment inoperable, and as a result, taking the Technical Specifications ACTIONS of the affected supported equipment, unit operation is maintained within the bounds of the Technical Specifications and approved ACTIONS. Since the AC Sources support the OPERABILITY of the affected equipment, it is appropriate that the proper action, in this condition, would be to declare that affected supported equipment inoperable. CTS 3.0.5 is overly restrictive, in that if the associated supported equipment were inoperable for other reasons and the redundant equipment was also inoperable, a restoration time is sometimes provided, in other CTS sections. The 24 hour Completion Time when one associated unit offsite circuit is inoperable is acceptable because: a) the redundant counterpart to the inoperable required feature is still OPERABLE although single failure protection may have been lost; b) the capacity and capability of the remaining AC Sources is still available; c) a reasonable time for repairs is provided for restoration before the unit is subjected to transients associated with shut down; and d) the low probability of a DBA occurring during this period. The 12 hour Completion Time when two offsite circuits are inoperable is acceptable because Regulatory Guide 1.93 allows a Completion Time of 24 hours for two offsite circuits inoperable. When a concurrent redundant required function is inoperable, a shorter Completion Time of 12 hours is appropriate. The 4 hour Completion Time with one ~~associated unit~~ DG inoperable takes into account the component OPERABILITY of the redundant counterpart to the inoperable required feature and is considered to be less of a risk than subjecting the unit to transients associated with shut down. Additionally, the 4 hour Completion Time takes into account the capacity and capability of the remaining AC Sources, reasonable time for repairs, and low probability of a DBA occurring during this period. This change is designated as less restrictive because additional time is allowed to restore equipment to OPERABLE status and the change deletes the explicit times to reach MODE 3, MODE 4, and MODE 5.

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3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources - Operating

3.8.1.1 LCO 3.8.1 The following AC electrical sources shall be OPERABLE:

3.8.1.1.a a. Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System~~,~~ ; and 1 2

3.8.1.1.b b. ~~Two~~ Four diesel generators (DGs) capable of supplying the onsite Class 1E AC Electrical power distribution ~~sub~~system~~(s), and~~ . 1 2 1

~~[c. Automatic load sequencers for Train A and Train B.]~~ 3

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

S

2. Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when any Condition(s) is entered with no AC power source to any shutdown board resulting in a de-energized shutdown board.

--NOTE--

ACTION f
DOC A03

1. LCO 3.0.4.b is not applicable to DGs. 7

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION a ACTION c — A. One ~~[required]~~ offsite circuit inoperable for reasons other than Condition C.	A.1 Perform SR 3.8.1.1 for ~~[required]~~ OPERABLE offsite circuit. AND	1 hour AND Once per 8 hours thereafter 4 5
DOC L20	A.2 Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable. AND	24 hours from discovery of no offsite power to ~~one train~~ 6.9 kV Shutdown Board 1A-A or 1B-B concurrent with inoperability of redundant required feature(s) 5

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
ACTION a		A.3	Restore ~~[required]~~ offsite circuit to OPERABLE status.	72 hours	4
ACTIONS b, c, and e	B. ~~One [required] DG inoperable.~~ INSERT 1 ~~1A-A~~	B.1	Perform SR 3.8.1.1 for the ~~[required]~~ offsite circuit~~(s)~~.	1 hour AND Once per 8 hours thereafter	4 ~~5~~
		AND			
DOC L20		B.2	Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)	
		AND			
ACTION b		B.3.1	Determine OPERABLE DG~~(s)~~ ~~is~~ are not inoperable due to common cause failure.	~~[~~24~~]~~ hours	4 1
		OR			
ACTION b ACTION c		B.3.2	Perform SR 3.8.1.2 for OPERABLE DG~~(s)~~.	~~[~~24~~]~~ hours	4 1
		AND			
ACTION b		B.4	Restore ~~[required]~~ DG(s) to OPERABLE status.	~~72 hours~~ 7 days	4 1

INSERT 2 5

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~~5~~ 4

INSERT 1

~~DOC L01~~

~~OR~~

~~DG 1B-B inoperable.~~

~~OR~~

~~DGs 1A-A and 2A-A inoperable.~~

One or more Train A DG(s) inoperable.

OR

One or more Train B DG(s) inoperable.

~~OR~~

~~DGs 1B-B and 2B-B inoperable.~~

5

INSERT 2

DOC L01

DOC L20

C. One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B inoperable.	C.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit. AND C.2 Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable. AND C.3 ~~Declare associated required feature(s) inoperable.~~ Restore offsite circuit to OPERABLE status.	1 hour AND Once per 8 hours thereafter 24 hours from discovery of no offsite power to 6.9 kV Shutdown Board 2A-A or 2B-B concurrent with inoperability of redundant required feature(s) 7 days

Insert Page 3.8.1-2a

5

INSERT 2 (Continued)

D. DG 2A-A or 2B-B inoperable.	D.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit(s).	1 hour AND Once per 8 hours thereafter
	AND	
	D.2 Declare required feature(s) supported by the inoperable DG inoperable when its redundant required feature(s) is inoperable.	4 hours from discovery of Condition D concurrent with inoperability of redundant required feature(s)
	AND	
	D.3.1 Determine OPERABLE DGs are not inoperable due to common cause failure.	24 hours
	OR	
	D.3.2 Perform SR 3.8.1.2 for OPERABLE DGs.	24 hours
	AND	
	D.4 Declare associated required feature(s) inoperable.	7 days

Insert Page 3.8.1-2b

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION d DOC L20	~~C~~ ~~E~~ D. Two ~~[required]~~ offsite circuits inoperable.	~~C~~ ~~E~~ D.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable.	12 hours from discovery of Condition ~~C~~ ~~E~~ D concurrent with inoperability of redundant required features	5
		AND		
ACTION d		~~C~~ ~~E~~ D.2 Restore one ~~[required]~~ offsite circuit to OPERABLE status.	24 hours	5 4
ACTION c ~~DOC A03~~	~~D~~ ~~F~~ E. One ~~[required]~~ offsite circuit inoperable for reasons other than Condition C. AND	~~-------------------NOTE-------------------~~ ~~Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition ~~D~~ ~~F~~ is entered with no AC power source to ~~any train~~ ~~6.9 kV Shutdown Board 1A-A or 1B-B~~.~~ ~~---~~		7 5
ACTION c	~~One [required]~~ DG 1A-A or 1B-B inoperable.			4
ACTION c		~~D~~ ~~F~~ E.1 Restore ~~[required]~~ offsite circuit to OPERABLE status.	12 hours	
		OR		
	~~INSERT 3~~	~~D~~ ~~F~~ E.2 Restore ~~[required]~~ DG to OPERABLE status.	12 hours	5 4
ACTION e	~~E~~ ~~J~~ F. ~~Two [required]~~ One or more Train A DG~~s~~(s) inoperable. INSERT 4	~~E~~ ~~J~~ F.1 Restore one ~~[required]~~ train of DG(s) to OPERABLE status.	2 hours	5

5

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5 ~~INSERT 3~~

~~DOC L01~~	G. One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B inoperable. AND DG 1A-A or 1B-B inoperable.	G.1	Declare required feature(s) on associated Unit 2 6.9 kV Shutdown Board inoperable.	7 days
~~DOC L01~~	H. One offsite circuit inoperable for reasons other than Condition C. AND DG 2A-A or 2B-B inoperable.	H.1	Declare required feature(s) on associated Unit 2 6.9 kV Shutdown Board inoperable.	7 days

Insert Page 3.8.1-3a

5 ~~**INSERT 3 (continued)**~~

~~DOC L01~~ I. One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B inoperable. AND DG 2A-A or 2B-B inoperable.	--------------------NOTE------------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition I is entered with no AC power source to 6.9 kV Shutdown Board 2A-A or 2B-B. --- I.1 Restore offsite circuit to OPERABLE status. OR I.2 Restore DG to OPERABLE status.	 7 days 7 days

5 **INSERT 4**

ACTION e

AND

One or more Train B DG(s) inoperable.

Insert Page 3.8.1-3b

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME	
~~-----REVIEWER'S NOTE----- This Condition may be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads following a loss of offsite power independent of, or coincident with, a Design Basis Event.~~ ~~-----------------------------------~~ ~~F. [One [required] [automatic load sequencer] inoperable.~~	~~F.1 Restore [required] [automatic load sequencer] to OPERABLE status.~~	~~[12] hours]~~	3
ACTIONS a, b, c, d, e — G ~~K~~ ~~G~~. Required Action and associated Completion Time of Condition A, B, C, D, E, or F ~~A, B, C, D~~, E, or ~~[F]~~ ~~F, I,~~ ~~J~~ not met. DOC M01	G ~~K~~ ~~G~~.1 Be in MODE 3. AND G ~~K~~ ~~G~~.2 Be in MODE 5.	6 hours 36 hours	3 5
INSERT 5 ~~H. Three or more [required] AC sources inoperable.~~	~~H.1 Enter LCO 3.0.3.~~	~~Immediately~~	5

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.8.1.1 4.8.1.1.1.a	SR 3.8.1.1 Verify correct breaker alignment and indicated power availability for each ~~[required]~~ offsite circuit.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	4 6 6

5 **INSERT 5**

DOC A04 ~~L~~. H Two offsite circuits inoperable. <u>AND</u> One or more Train A DG(s) inoperable. <u>OR</u> One or more Train B DG(s) inoperable.	~~L~~.1 H Enter LCO 3.0.3.	Immediately
DOC A04 ~~M~~. I One offsite circuit inoperable. <u>AND</u> One or more Train A DG(s) inoperable. <u>AND</u> One or more Train B DG(s) inoperable.	~~M~~.1 I Enter LCO 3.0.3.	Immediately

CTS

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources - Operating

3.8.1.1 LCO 3.8.1 The following AC electrical sources shall be OPERABLE:

3.8.1.1.a a. Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System~~,~~ ; and 1 2

3.8.1.1.b b. ~~Two~~ Four diesel generators (DGs) capable of supplying the onsite Class 1E AC Electrical power distribution ~~sub~~system~~(s), and~~ . 1 2 1

~~[c. Automatic load sequencers for Train A and Train B.]~~ 3

DOC L01

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

-----NOTE----- S

ACTION f
DOC A03

1. LCO 3.0.4.b is not applicable to DGs.

2. Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when any Condition(s) is entered with no AC power source to any shutdown board resulting in a de-energized shutdown board. 7

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION a ACTION c A. One ~~[required]~~ offsite circuit inoperable for reasons other than Condition C.	A.1 Perform SR 3.8.1.1 for ~~[required]~~ OPERABLE offsite circuit.	1 hour AND Once per 8 hours thereafter 4 5
	AND	
DOC L20	A.2 Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable.	24 hours from discovery of no offsite power to ~~one train~~ 6.9 kV Shutdown Board 2A-A or 2B-B concurrent with inoperability of redundant required feature(s) 5
	AND	

CTS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION a		A.3 Restore ~~[required]~~ offsite circuit to OPERABLE status.	72 hours	4
ACTIONS b, c, and e	B. ~~One [required] DG inoperable.~~ ~~2A-A~~ INSERT 1	B.1 Perform SR 3.8.1.1 for the ~~[required]~~ offsite circuit~~(s)~~.	1 hour AND Once per 8 hours thereafter	4 ~~5~~
		AND		
DOC L20		B.2 Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)	
		AND		
ACTION b		B.3.1 Determine OPERABLE DG~~(s)~~ ~~is~~ are not inoperable due to common cause failure.	~~[~~24~~]~~ hours	4 1
		OR		
ACTION b ACTION c		B.3.2 Perform SR 3.8.1.2 for OPERABLE DG~~(s)~~.	~~[~~24~~]~~ hours	4 1
		AND		
ACTION b		B.4 Restore ~~[required]~~ DG(s) to OPERABLE status.	~~72 hours~~ 7 days	4 1

INSERT 2 5

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~~5~~ 4 **INSERT 1**

~~DOC L01~~

~~OR~~

~~DG 2B-B inoperable.~~

~~OR~~

~~DGs 1A-A and 2A-A inoperable.~~

One or more Train A DG(s) inoperable.

OR

One or more Train B DG(s) inoperable.

~~OR~~

~~DGs 1B-B and 2B-B inoperable.~~

5 **INSERT 2**

DOC L01

DOC L20

C. One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 1A-A or 1B-B inoperable.	C.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit.	1 hour AND Once per 8 hours thereafter
	AND	
	C.2 Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable.	24 hours from discovery of no offsite power to 6.9 kV Shutdown Board 1A-A or 1B-B concurrent with inoperability of redundant required feature(s)
	AND	
	C.3 ~~Declare associated required feature(s) inoperable.~~ Restore offsite circuit to OPERABLE status.	7 days

5

INSERT 2 (Continued)

D. DG 1A-A or 1B-B inoperable.	D.1	Perform SR 3.8.1.1 for OPERABLE offsite circuit(s).	1 hour AND Once per 8 hours thereafter
	AND		
	D.2	Declare required feature(s) supported by the inoperable DG inoperable when its redundant required feature(s) is inoperable.	4 hours from discovery of Condition D concurrent with inoperability of redundant required feature(s)
	AND		
	D.3.1	Determine OPERABLE DGs are not inoperable due to common cause failure.	24 hours
	OR		
	D.3.2	Perform SR 3.8.1.2 for OPERABLE DGs.	24 hours
	AND		
	D.4	Declare associated required feature(s) inoperable.	7 days

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION d DOC L20	~~C~~ E D. Two ~~[required]~~ offsite circuits inoperable.	~~C~~ ~~E~~ D.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable.	12 hours from discovery of Condition ~~C~~ ~~E~~ D concurrent with inoperability of redundant required features	5
		AND		
ACTION d		~~C~~ ~~E~~ D.2 Restore one ~~[required]~~ offsite circuit to OPERABLE status.	24 hours	5 4
ACTION c ~~DOC A03~~	~~D~~ ~~F~~ E. One ~~[required]~~ offsite circuit inoperable for reasons other than Condition C. AND ~~One [required]~~ DG 2A-A or 2B-B inoperable.	~~-------------------NOTE------------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition D F is entered with no AC power source to any train 6.9 kV Shutdown Board 2A-A or 2B-B. ---~~		7 5 4
ACTION c		~~D~~ ~~F~~ E.1 Restore ~~[required]~~ offsite circuit to OPERABLE status.	12 hours	
		OR		
ACTION c	~~INSERT 3~~	~~D~~ ~~F~~ E.2 Restore ~~[required]~~ DG to OPERABLE status.	12 hours	5 4
ACTION e	~~E~~ ~~J~~ F. One or more Train A ~~Two [required]~~ DG(s) ~~s~~ inoperable. INSERT 4	~~E~~ ~~J~~ F.1 Restore one train of ~~[required]~~ DGs to OPERABLE status.	2 hours	5

5

5 ~~**INSERT 3**~~

~~DOC L01~~	G. One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 1A-A or 1B-B inoperable. AND DG 2A-A or 2B-B inoperable.	G.1 Declare required feature(s) on associated Unit 1 6.9 kV Shutdown Board inoperable.	7 days
~~DOC L01~~	H. One offsite circuit inoperable for reasons other than Condition C. AND DG 1A-A or 1B-B inoperable.	H.1 Declare required feature(s) on associated Unit 1 6.9 kV Shutdown Board inoperable.	7 days

Insert Page 3.8.1-3a

5 ~~**INSERT 3 (continued)**~~

~~DOC L01~~

I. One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 1A-A or 1B-B inoperable. AND DG 1A-A or 1B-B inoperable.	--------------------NOTE------------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition I is entered with no AC power source to 6.9 kV Shutdown Board 1A-A or 1B-B. --- I.1 Restore offsite circuit to OPERABLE status. OR I.2 Restore DG to OPERABLE status.	 7 days 7 days

5 **INSERT 4**

ACTION e

AND

One or more Train B DG(s) inoperable.

CTS

AC Sources - Operating
3.8.1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~-----REVIEWER'S NOTE----- This Condition may be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads following a loss of offsite power independent of, or coincident with, a Design Basis Event. -----~~ ~~F. [One [required] [automatic load sequencer] inoperable.~~	~~F.1 Restore [required] [automatic load sequencer] to OPERABLE status.~~	~~[12] hours]~~ 3
ACTIONS a, b, c, d, e G ~~K~~ ~~G~~. Required Action and associated Completion Time of Condition ~~A, B, C, D~~ A, B, C, D, E, or F, E, ~~or~~ ~~F, I,~~ ~~[F]~~ ~~J~~ not met. DOC M01	~~G~~ ~~K~~ G.1 Be in MODE 3. AND ~~G~~ ~~K~~ G.2 Be in MODE 5.	6 hours 36 hours 3 5
INSERT 5 ~~H. Three or more [required] AC sources inoperable.~~	~~H.1 Enter LCO 3.0.3.~~	~~Immediately~~ 5

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.8.1.1 4.8.1.1.1.a SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each ~~[required]~~ offsite circuit.	~~[7 days~~ 4 6 ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 6

5 **INSERT 5**

DOC A04	~~L~~ H. Two offsite circuits inoperable. AND One or more Train A DG(s) inoperable. OR One or more Train B DG(s) inoperable.	~~L~~ H.1 Enter LCO 3.0.3.	Immediately
DOC A04	~~M~~ I. One offsite circuit inoperable. AND One or more Train A DG(s) inoperable. AND One or more Train B DG(s) inoperable.	~~M~~ I.1 Enter LCO 3.0.3.	Immediately

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.1, AC SOURCES - OPERATING

1. Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. The punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

3. ISTS LCO 3.8.1.c and ISTS 3.8.1 ACTION F have been deleted since SQN Units 1 and 2 do not use load sequencers. Each load or load block is sequenced with the use of its associated time delay relay. Each major ESF component has individual time delay relays that operate individual components, not all ESF components. Thus, if a single time delay relay fails, only the individual component and the DG could be affected. Subsequent Conditions and Required Actions have been renumbered, as applicable. ISTS SR 3.8.1.11 (ITS SR 3.8.1.11), ISTS SR 3.8.1.12 (ITS SR 3.8.1.12), ISTS SR 3.8.1.18 (ITS SR 3.8.1.17), and ISTS SR 3.8.1.19 (ITS SR 3.8.1.18) have been revised to reflect the use of time delay relays.

4. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

5. ~~Changes were made to ISTS LCO 3.8.1 to ensure the appropriate AC power sources are OPERABLE during unit operation in MODES 1, 2, 3 and 4 to satisfy the design requirements. This modification was necessary due to shared systems between Units 1 and 2. This is an exception that is intended to allow taking the ACTIONS associated with inoperable shared equipment in lieu of requiring the opposite unit AC sources to be restored to OPERABLE status within a specified Completion Time. This exception is acceptable since, with the opposite unit equipment inoperable and the associated ACTIONS entered, the opposite unit AC Sources provide no additional assurance of meeting the safety criteria of the given unit's AC power sources.~~ INSERT JFD 5

   SR Notes associated with ISTS SR 3.8.1.8 (ITS SR 3.8.1.8), ISTS SR 3.8.1.9 (ITS SR 3.8.1.9), ISTS SR 3.8.1.10 (ITS SR 3.8.1.10), ISTS SR 3.8.1.11 (ITS SR 3.8.1.11), ISTS SR 3.8.1.12 (ITS SR 3.8.1.12), ISTS SR 3.8.1.13 (ITS SR 3.8.1.13), ISTS SR 3.8.1.14 (ITS SR 3.8.1.14), ISTS SR 3.8.1.16 (ITS SR 3.8.1.16), ISTS SR 3.8.1.18 (ITS SR 3.8.1.17), and ISTS SR 3.8.1.19 (ITS SR 3.8.1.18) have been revised to allow performance of the affected SR on opposite unit shutdown board or DGs when the given unit is in a restricted MODE.

6. ISTS SR 3.8.1.1 (ITS SR 3.8.1.1), ISTS SR 3.8.1.2 (ITS SR 3.8.1.2), ISTS SR 3.8.1.3 (ITS SR 3.8.1.3), ISTS SR 3.8.1.4 (ITS SR 3.8.1.4), ISTS SR 3.8.1.5 (ITS SR 3.8.1.5), ISTS SR 3.8.1.6 (ITS SR 3.8.1.6), ISTS SR 3.8.1.7 (ITS SR 3.8.1.7), ISTS SR 3.8.1.8 (ITS SR 3.8.1.8), ISTS SR 3.8.1.9 (ITS SR 3.8.1.9), ISTS SR 3.8.1.10 (ITS SR 3.8.1.10), ISTS SR 3.8.1.11 (ITS SR 3.8.1.11), ISTS SR 3.8.1.12 (ITS SR 3.8.1.12), ISTS SR 3.8.1.13 (ITS SR 3.8.1.13), ISTS SR 3.8.1.14 (ITS SR 3.8.1.14), ISTS SR 3.8.1.15 (ITS SR 3.8.1.15), ISTS SR 3.8.1.16 (ITS SR 3.8.1.16), ISTS SR 3.8.1.18 (ITS SR 3.8.1.17), ISTS SR 3.8.1.19 (ITS SR 3.8.1.18), and ISTS SR 3.8.1.20 (ITS SR 3.8.1.19) provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the

INSERT JFD 7

INSERT JFD 5

Changes were made to the ISTS to reflect the interaction between an operating unit's AC power sources and those credited features needing AC power from the opposite unit's associated AC power sources. ITS 3.8.1 ACTION C has been added to address the condition when the offsite circuit is inoperable solely due to an inoperable power source to the opposite unit's 6.9 kV Shutdown Board (e.g., for Unit 1 an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B is inoperable), and requires, in part, restoration of the inoperable offsite circuit within 7 days. ISTS 3.8.1 ACTIONS A and D have been revised to address conditions when the offsite circuit is inoperable for reasons other than ITS 3.8.1 Condition C. ITS 3.8.1 ACTION A requires restoration of the inoperable offsite circuit in 72 hours. ITS 3.8.1 ACTION E requires restoration of an inoperable AC source in 12 hours. This change reflects a restoration Completion Time commensurate with the importance of maintaining the AC power source capable of supporting the affected shared systems. With the addition of ITS 3.8.1 ACTION C, subsequent ISTS ACTIONS have been renumbered.

INSERT JFD 7

ISTS 3.8.1, AC Sources - Operating, Required Action D contains a NOTE which states, “Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition D is entered with no AC power source to any train." In ITS 3.8.1, the complete de-energization of a shutdown board could be represented by entry into ITS 3.8.1 Condition E or, as an example, concurrent entries into ITS 3.8.1 Conditions B (one or more Train A or one or more Train B DG(s) inoperable) and C (one offsite circuit inoperable solely due to an offsite power source to the opposite unit's shutdown board). ITS 3.8.1 Conditions B and C do not have a NOTE to state that entry into the applicable Conditions and Required Actions of LCO 3.8.9 is required when Conditions are entered that result in no AC power sources to any shutdown board. Therefore, the Note referring to LCO 3.8.9 in ISTS 3.8.1, Required Action D has been removed from Required Action D, modified for clarification, and added as ITS 3.8.1 ACTIONS NOTE 2. ITS 3.8.1 ACTIONS NOTE 2 states, “Enter applicable Conditions and Required Actions of LCO 3.8.9, `Distribution Systems - Operating,' when any Condition(s) is entered with no AC power source to any shutdown board resulting in a de-energized shutdown board.” This will ensure that entry into a Condition or a combination of Conditions that result in the complete de-energization of a shutdown board requires entry into the applicable Conditions and Required Actions of LCO 3.8.9.

BASES

APPLICABILITY

The AC sources ~~[and sequencers]~~ are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that: 2

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients and

b. Adequate core cooling is provided and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

The AC power requirements for MODES 5 and 6 are covered in LCO 3.8.2, "AC Sources - Shutdown."

ACTIONS

The ACTIONS are modified by a Note that ~~A Note~~ prohibits the application of LCO 3.0.4.b to an inoperable DG. There is an increased risk associated with entering a MODE or other specified condition in the Applicability with an inoperable DG and the provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance. 5

A second Note provides the appropriate restrictions for a de-energized shutdown board. Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the ACTIONS are modified by a Note to indicate that when any Condition(s) is entered with no AC power source to any shutdown board resulting in a de-energized shutdown board, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows LCO 3.8.1 Conditions to provide requirements for the loss of any combination of AC Sources, without regard to whether a shutdown board is de-energized and LCO 3.8.9 to provide the appropriate restrictions for a de-energized shutdown board. 5

A.1

To ensure a highly reliable power source remains with one offsite circuit inoperable for reasons other than Condition C, it is necessary to verify the OPERABILITY of the remaining required offsite circuit on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action not met. However, if a second required circuit fails SR 3.8.1.1, the second offsite circuit is inoperable, and Condition ~~C~~ ~~E~~ D, for two offsite circuits inoperable, is entered. 5 5

~~-----REVIEWER'S NOTE-----~~ 6

~~The turbine driven auxiliary feedwater pump is only required to be considered a redundant required feature, and, therefore, required to be determined OPERABLE by this Required Action, if the design is such that the remaining OPERABLE motor or turbine driven auxiliary feedwater pump(s) is not by itself capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.~~

~~--------------------------------~~

ACTIONS (continued)

A.3

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition A for a period that should not exceed 72 hours. With one offsite circuit inoperable, the reliability of the offsite system is degraded, and the potential for a loss of offsite power is increased, with attendant potential for a challenge to the unit safety systems. In this Condition, however, the remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the onsite Class 1E AC Electrical Power Distribution System. 1

The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

B.1

To ensure a highly reliable power source remains with ~~an~~ INSERT 9 inoperable ~~DG~~, it is necessary to verify the availability of the offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must then be entered. 5

~~REVIEWER'S NOTE~~ 6

~~The turbine driven auxiliary feedwater pump is only required to be considered a redundant required feature, and, therefore, required to be determined OPERABLE by this Required Action, if the design is such that the remaining OPERABLE motor or turbine driven auxiliary feedwater pump(s) is not by itself capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.~~

B.2

Required Action B.2 is intended to provide assurance that a loss of offsite power, during the period that a DG(s) is inoperable, does not result in a complete loss of safety function of critical systems. These features are designed with redundant safety related trains. This includes motor driven auxiliary feedwater pumps. Single train systems, such as turbine driven auxiliary feedwater pumps, are not included. Redundant required feature failures consist of inoperable features associated with a train, redundant to the train that has an inoperable DG(s). 5 5

5

INSERT 9

~~DG 1A-A, DG 1B-B, DGs 1A-A and 2A-A, or DGs 1B-B and 2B-B~~

one or more Train A DGs, or one or more Train B DGs

ACTIONS (continued)

The Completion Time for Required Action B.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. An inoperable DG exists and

b. A required feature on the other train ~~(Train A or Train B)~~ is inoperable. 5

If at any time during the existence of this Condition (one or more DGs in a train ~~DG~~ inoperable) a required feature subsequently becomes inoperable, this Completion Time would begin to be tracked. 5

Discovering one or more DGs in a train ~~required DG~~ inoperable coincident with one or more inoperable required support or supported features, or both, that are associated with the OPERABLE DG, results in starting the Completion Time for the Required Action. Four hours from the discovery of these events existing concurrently is acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown. 5 4

In this Condition, the remaining OPERABLE DGs and offsite circuits are adequate to supply electrical power to the onsite Class 1E AC Electrical Power Distribution System. Thus, on a component basis, single failure protection for the required feature's function may have been lost; however, function has not been lost. The 4 hour Completion Time takes into account the OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 4 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 1 5

<u>B.3.1 and B.3.2</u>

Required Action B.3.1 provides an allowance to avoid unnecessary testing of OPERABLE DG(s). If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG, SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on other DG~~(~~s~~)~~, the other DG~~(~~s~~)~~ would be declared inoperable upon discovery and Condition F ~~E~~ of LCO 3.8.1 would be entered. INSERT 10 Once the failure is repaired, the common cause failure no longer exists, and Required Action B.3.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DG~~(s)~~, performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of that DG. 5

5 **INSERT 10**

if one or more DG(s) in Train A and Train B are inoperable

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ACTIONS (continued)

(s)
In the event the inoperable DG is restored to OPERABLE status prior to completing either B.3.1 or B.3.2, the ~~[plant~~ corrective action program~~]~~ will continue to evaluate the common cause possibility. This continued evaluation, however, is no longer under the 24 hour constraint imposed while in Condition B. 5 2

According to Generic Letter 84-15 (Ref. 7), ~~[~~24~~]~~ hours is reasonable to confirm that the OPERABLE DG(s) is not affected by the same problem as the inoperable DG. 2

B.4

~~According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition B for a period that should not exceed 72 hours.~~

(s) AC Electrical Power
In Condition B, the remaining OPERABLE DG and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. The 7 day ~~72 hour~~ Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 5

INSERT 11 5

D D D
~~C~~ E .1 and ~~C~~ E .2 5

Required Action ~~C~~ E .1, which applies when two offsite circuits are inoperable, is intended to provide assurance that an event with a coincident single failure will not result in a complete loss of redundant required safety functions. The Completion Time for this failure of redundant required features is reduced to 12 hours from that allowed for one train without offsite power (Required Action A.2). The rationale for the reduction to 12 hours is that Regulatory Guide 1.93 (Ref. 6) allows a Completion Time of 24 hours for two required offsite circuits inoperable, based upon the assumption that two complete safety trains are OPERABLE. When a concurrent redundant required feature failure exists, this assumption is not the case, and a shorter Completion Time of 12 hours is appropriate. These features are powered from redundant AC safety trains. This includes motor driven auxiliary feedwater pumps. Single train features, such as turbine driven auxiliary pumps, are not included in the list.

5

INSERT 11

C.1, C.2, and C.3

Condition C is entered for an offsite circuit inoperable solely due to an inoperable power source to 6.9 kV Shutdown Board 2A-A or 2B-B. Required Action C.1 verifies the OPERABILITY of the remaining offsite circuit within an hour of the inoperability and every 8 hours thereafter. Since the Required Action only specifies "perform," a failure of the SR 3.8.1.1 acceptance criteria does not result in a Required Action not met.

The Completion Time for Required Action C.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. 6.9 kV Shutdown Board 2A-A or 2B-B has no offsite power; and
b. A required feature on the other train is inoperable.

If at any time during the existence of Condition C a redundant required feature subsequently becomes inoperable, this Completion Time begins to be tracked.

A Completion Time of 24 hours is acceptable, because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown. The remaining OPERABLE offsite circuit and DGs are adequate to support these functions. The Completion Time takes into account the component OPERABILITY of the remaining redundant feature(s), a reasonable time for repairs, and the low probability of a DBA occurring during this period.

Operation may continue in Condition C for a period of 7 days. With one offsite circuit inoperable, the reliability of the functions is degraded. The potential for the loss of offsite power to the redundant feature(s) is increased, with the attendant potential for a challenge to their safety functions.

The required offsite circuit must be returned to OPERABLE status within 7 days~~, or the support function for the associated required feature is considered inoperable. At that time, the required feature must be declared inoperable and the appropriate Conditions must be entered~~. The 7 days Completion Time takes into account the capacity and capability of the remaining AC sources providing electrical power to the required feature(s), a reasonable time for repairs and the low probability of a DBA occurring during this period of time.

5

INSERT 11 (Continued)

D.1, D.2, D.3 and D.4

To ensure a highly reliable power source remains with an inoperable DG to a Unit 2 6.9 kV Shutdown Board, it is necessary to verify the availability of the required offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. Required Action D.1 verifies the OPERABILITY of the required offsite sources within an hour of the inoperability and every 8 hours thereafter. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must be entered.

Required Action D.2 is intended to provide assurance that a loss of offsite power, during the period that an LCO 3.8.1.d DG is inoperable, does not result in a complete loss of the safety functions.

The Completion Time for Required Action D.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. An inoperable DG to 6.9 kV Shutdown Board 2A-A or 2B-B exists; and
b. A redundant feature in the same system is inoperable.

If at any time during the existence of Condition D (one DG to 6.9 kV Shutdown Board 2A-A or 2B-B) a redundant feature in the same system subsequently becomes inoperable, this Completion Time begins to be tracked. The four hour Completion Time is acceptable, because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown.

The remaining OPERABLE offsite circuits and DGs are adequate to support the functions. The 4 hour Completion Time takes into account the component OPERABILITY of the remaining redundant feature(s), a reasonable time for repairs, and the low probability of a DBA occurring during this period.

D.3.1 and D.3.2

Required Action D.3.1 provides an allowance to avoid unnecessary testing of OPERABLE DG(s). If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG(s), SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on another DG, the other DG would be declared inoperable, and upon discovery, Condition J of LCO 3.8.1 would be entered, if one or more DG(s) in Train A and Train B are inoperable. Otherwise, if the inoperability exists on the other DG in the same train, the other DG would be declared inoperable upon discovery, Condition B would be entered. Once the failure is repaired, the common cause failure no longer exists, and Required Action D.3.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DGs, performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of that DG.

5

INSERT 11 (Continued)

~~Operation may continue in Condition D for a period of 7 days. With one Unit 2 DG inoperable, the reliability of the respective function is degraded. The potential for the loss of a DG to the redundant feature(s) is increased, with the attendant potential for a challenge to respective safety function.~~

~~The required DG must be returned to OPERABLE status within 7 days, or the support function for the associated required feature is considered inoperable. At that time, the required feature must be declared inoperable and the appropriate Conditions must be entered. The 7 day Completion Time takes into account the capacity and capability of the remaining AC sources providing electrical power to the required feature(s), a reasonable time for repairs and the low probability of a DBA occurring during this period of time.~~

ACTIONS (continued)

D

The Completion Time for Required Action ~~C~~ E.1 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action the Completion Time only begins on discovery that both: 5

a. All required offsite circuits are inoperable and

b. A required feature is inoperable.

D

If at any time during the existence of Condition ~~C~~ E (two offsite circuits inoperable) a required feature becomes inoperable, this Completion Time begins to be tracked. 5

D

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition ~~C~~ E for a period that should not exceed 24 hours. This level of degradation means that the offsite electrical power system does not have the capability to effect a safe shutdown and to mitigate the effects of an accident; however, the onsite AC sources have not been degraded. This level of degradation generally corresponds to a total loss of the immediately accessible offsite power sources. 5

Because of the normally high availability of the offsite sources, this level of degradation may appear to be more severe than other combinations of two AC sources inoperable that involve one or more DGs inoperable. However, two factors tend to decrease the severity of this level of degradation:

a. The configuration of the redundant AC electrical power system that remains available is not susceptible to a single bus or switching failure and

b. The time required to detect and restore an unavailable offsite power source is generally much less than that required to detect and restore an unavailable onsite AC source.

With both ~~of the required~~ offsite circuits inoperable, sufficient onsite AC sources are available to maintain the unit in a safe shutdown condition in the event of a DBA or transient. In fact, a simultaneous loss of offsite AC sources, a LOCA, and a worst case single failure were postulated as a part of the design basis in the safety analysis. Thus, the 24 hour Completion Time provides a period of time to effect restoration of one of the offsite circuits commensurate with the importance of maintaining an AC electrical power system capable of meeting its design criteria. 5

BASES

ACTIONS (continued)

According to Reference 6, with the available offsite AC sources, two less than required by the LCO, operation may continue for 24 hours. If two offsite sources are restored within 24 hours, unrestricted operation may continue. If only one offsite source is restored within 24 hours, power operation continues in accordance with Condition A or Condition C, as applicable. 5

E ~~F~~ E ~~F~~

~~D~~.1 and ~~D~~.2 5

~~Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Actions of Condition D F are modified by a Note to indicate that when Condition D F is entered with no AC source to any train 6.9 kV Shutdown Board 1A-A or 1B-B, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows Condition D F to provide requirements for the loss of one offsite circuit and one DG to 6.9 kV Shutdown Board 1A-A or 1B-B, without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized train.~~ 5

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition ~~D~~ E ~~F~~ for a period that should not exceed 12 hours. 5

In Condition ~~D~~ E ~~F~~, individual redundancy is lost in both the offsite electrical power system and the onsite AC electrical power system. Since power system redundancy is provided by two diverse sources of power, however, the reliability of the power systems in this Condition may appear higher than that in Condition ~~C~~ D ~~E~~ (loss of both ~~required~~ offsite circuits). This difference in reliability is offset by the susceptibility of this power system configuration to a single bus or switching failure. The 12 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 5

~~INSERT 12~~

F ~~J~~

~~E~~.1 5

With ~~Train A and Train B DGs~~ one or more Train A DG(s) and one or more Train B DG(s) inoperable, there are ~~no remaining~~ insufficient standby AC sources available to power an entire load group. Thus, with an assumed loss of offsite electrical power, insufficient standby AC sources are available to power the minimum required ESF functions. Since the offsite electrical power system is the only source of AC power for this level of degradation, the risk associated with continued operation for a very short time could be less than that associated with an immediate controlled shutdown (the immediate shutdown could cause grid instability, which could result in a total loss of AC power). Since any inadvertent generator trip could also result in a

5 ~~INSERT 12~~

G.1 and H.1

In Conditions G and H, individual redundancy is lost in the offsite electrical power system for one unit and the onsite AC electrical power system for the other unit. Since Conditions B and C are entered concurrent with entry into Condition G, and Conditions A and D are entered concurrent with entry into Condition H, the Required Actions of Conditions B and C (or Conditions A and D) provide the appropriate compensatory measures to ensure the onsite and offsite power sources are either restored to an OPERABLE status, or the associated required features are declared inoperable, thereby requiring entry into the appropriate Conditions associated with the associated feature's LCO. The Completion Times of Required Actions G.1 and H.1 are consistent with the Completion Times of Required Actions C.3 and D.4. If, while in Condition G or H, a redundant required feature is determined to be inoperable, the required feature(s) would be declared inoperable at the Completion Times specified in Conditions A, B, C, or D, as applicable.

I.1 and I.2

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Actions of Condition I are modified by a Note to indicate that when Condition I is entered with no AC source to 6.9 kV Shutdown Board 2A-A or 2B-B, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows Condition I to provide requirements for the loss of one offsite power source and one DG, without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized 6.9 kV Shutdown Board.

In Condition I, individual redundancy is lost in the offsite electrical power system and the onsite AC electrical power system. Concurrent with entry into Condition I, entry into Condition C (inoperable offsite power source) and Condition D (inoperable DG) are required. The Required Actions of Conditions C and D ensure the remaining offsite circuit and DGs are OPERABLE and that required features with no offsite or onsite power sources are declared inoperable when its redundant required feature is inoperable within the Completion Times of Required Actions C.2 and D.2.

ACTIONS (continued)

total loss of offsite AC power, however, the time allowed for continued operation is severely restricted. The intent here is to avoid the risk associated with an immediate controlled shutdown and to minimize the risk associated with this level of degradation.

In this Condition,

~~According to Reference 6, with both DGs inoperable,~~ operation may continue for a period that should not exceed 2 hours, consistent with the guidance provided in Reference 6. 5

, consistent with the guidance provided in Reference 6 5

~~[F.1~~ 5

~~The sequencer(s) is an essential support system to [both the offsite circuit and the DG associated with a given ESF bus]. [Furthermore, the sequencer is on the primary success path for most major AC electrically powered safety systems powered from the associated ESF bus.] Therefore, loss of an [ESF bus sequencer] affects every major ESF system in the [division]. The [12] hour Completion Time provides a period of time to correct the problem commensurate with the importance of maintaining sequencer OPERABILITY. This time period also ensures that the probability of an accident (requiring sequencer OPERABILITY) occurring during periods when the sequencer is inoperable is minimal.~~

~~This Condition is preceded by a Note that allows the Condition to be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads under any conditions. Implicit in this Note is the concept that the Condition must be retained if any sequencer failure mode results in the inability to start all or part of the safety loads when required, regardless of power availability, or results in overloading the offsite power circuit to a safety bus during an event and thereby causes its failure. Also implicit in the Note, is that the Condition is not applicable to any train that does not have a sequencer.]~~

G ~~K~~ ~~K~~ G

~~G~~.1 and ~~G~~.2 5

If the inoperable AC electric power sources cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

BASES

ACTIONS (continued)

H

I

L.1 and M.1

~~H.1~~

H and I

s

L and M

5

Condition ~~H~~ corresponds to a level of degradation in which ~~all~~ redundancy in the AC electrical power supplies ~~has been lost~~ cannot be assured. At this severely degraded level, any further losses in the AC electrical power system will cause a loss of function. Therefore, no additional time is justified for continued operation. The unit is required by LCO 3.0.3 to commence a controlled shutdown.

SURVEILLANCE REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function, in accordance with 10 CFR 50, Appendix A, GDC 18 (Ref. 8). Periodic component tests are supplemented by extensive functional tests during refueling outages (under simulated accident conditions). The SRs for demonstrating the OPERABILITY of the DGs are in accordance with the recommendations of Regulatory Guide 1.9 (Ref. 3)~~,~~ and Regulatory Guide 1.108 (Ref. 9)~~, and Regulatory Guide 1.137 (Ref. 10), as addressed in the FSAR~~. 1

Where the SRs discussed herein specify voltage and frequency tolerances, the following is applicable. The minimum steady state output voltage of ~~[3740]~~ 6210 V is 90% of the nominal ~~4160~~ 6900 V output voltage. This value, which is specified in ANSI C84.1 (Ref. ~~11~~ 10), allows for voltage drop to the terminals of ~~4000~~ 6600 V motors whose minimum operating voltage is specified as 90% or ~~3600~~ 5940 V. It also allows for voltage drops to motors and other equipment down through the 120 V level where minimum operating voltage is also usually specified as 90% of name plate rating. The specified maximum steady state output voltage of ~~[4756]~~ 7260 V is equal to the maximum operating voltage specified for ~~4000~~ 6600 V motors. It ensures that for a lightly loaded distribution system, the voltage at the terminals of ~~4000~~ 6600 V motors is no more than the maximum rated operating voltages. The specified minimum and maximum frequencies of the DG are 58.8 Hz and 61.2 Hz, respectively. These values are equal to ± 2% of the 60 Hz nominal frequency and are derived from the recommendations given in Regulatory Guide 1.9 (Ref. 3). 2 1 1 1 2 1 1

SR 3.8.1.1

This SR ensures proper circuit continuity for the offsite AC electrical power supply to the onsite distribution network and availability of offsite AC electrical power. The breaker alignment verifies that each breaker is in its correct position to ensure that distribution buses and loads are connected to their preferred power source, and that appropriate independence of offsite circuits is maintained. ~~[The 7 day Frequency is~~ 7

BASES

APPLICABILITY

The AC sources ~~[and sequencers]~~ are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that: 2

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients and

b. Adequate core cooling is provided and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

The AC power requirements for MODES 5 and 6 are covered in LCO 3.8.2, "AC Sources - Shutdown."

ACTIONS

The ACTIONS are modified by a Note that ~~A Note~~ prohibits the application of LCO 3.0.4.b to an inoperable DG. There is an increased risk associated with entering a MODE or other specified condition in the Applicability with an inoperable DG and the provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance. 5

A second Note provides the appropriate restrictions for a de-energized shutdown board. Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the ACTIONS are modified by a Note to indicate that when any Condition(s) is entered with no AC power source to any shutdown board resulting in a de-energized shutdown board, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows LCO 3.8.1 Conditions to provide requirements for the loss of any combination of AC Sources, without regard to whether a shutdown board is de-energized and LCO 3.8.9 to provide the appropriate restrictions for a de-energized shutdown board. 5

A.1

To ensure a highly reliable power source remains with one offsite circuit inoperable for reasons other than Condition C, it is necessary to verify the OPERABILITY of the remaining required offsite circuit on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action not met. However, if a second required circuit fails SR 3.8.1.1, the second offsite circuit is inoperable, and Condition ~~C~~ ~~E~~ D, for two offsite circuits inoperable, is entered. 5 5

~~-----REVIEWER'S NOTE-----~~ 6
~~The turbine driven auxiliary feedwater pump is only required to be considered a redundant required feature, and, therefore, required to be determined OPERABLE by this Required Action, if the design is such that the remaining OPERABLE motor or turbine driven auxiliary feedwater pump(s) is not by itself capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.~~

BASES

ACTIONS (continued)

A.3

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition A for a period that should not exceed 72 hours. With one offsite circuit inoperable, the reliability of the offsite system is degraded, and the potential for a loss of offsite power is increased, with attendant potential for a challenge to the unit safety systems. In this Condition, however, the remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the onsite Class 1E AC Electrical Power Distribution System. 1

The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

B.1

To ensure a highly reliable power source remains with ~~an~~ INSERT 9 inoperable ~~DG~~, it is necessary to verify the availability of the offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must then be entered. 5

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~ 6
~~The turbine driven auxiliary feedwater pump is only required to be considered a redundant required feature, and, therefore, required to be determined OPERABLE by this Required Action, if the design is such that the remaining OPERABLE motor or turbine driven auxiliary feedwater pump(s) is not by itself capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.~~
~~---~~

B.2

Required Action B.2 is intended to provide assurance that a loss of offsite power, during the period that a DG(s) is inoperable, does not result in a complete loss of safety function of critical systems. These features are designed with redundant safety related trains. This includes motor driven auxiliary feedwater pumps. Single train systems, such as turbine driven auxiliary feedwater pumps, are not included. Redundant required feature failures consist of inoperable features associated with a train, redundant to the train that has an inoperable DG(s). 5

5

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5 **INSERT 9**

~~DG 1A-A, DG 1B-B, DGs 1A-A and 2A-A, or DGs 1B-B and 2B-B~~

one or more Train A DGs, or one or more Train B DGs

BASES

ACTIONS (continued)

The Completion Time for Required Action B.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. An inoperable DG exists and

b. A required feature on the other train ~~(Train A or Train B)~~ is inoperable. 5

or more DGs in a train

If at any time during the existence of this Condition (one ~~DG~~ inoperable) a required feature subsequently becomes inoperable, this Completion Time would begin to be tracked. 5

or more DGs in a train

Discovering one ~~required DG~~ inoperable coincident with one or more inoperable required support or supported features, or both, that are associated with the OPERABLE DG, results in starting the Completion Time for the Required Action. Four hours from the discovery of these events existing concurrently is Acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown. 5 4

s AC Electrical Power

In this Condition, the remaining OPERABLE DG and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. Thus, on a component basis, single failure protection for the required feature's function may have been lost; however, function has not been lost. The 4 hour Completion Time takes into account the OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 4 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 1 5

B.3.1 and B.3.2

Required Action B.3.1 provides an allowance to avoid unnecessary testing of OPERABLE DG(s). If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG, SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on other DG~~(s)~~, the other DG~~(s)~~ would be declared inoperable upon discovery and Condition ~~E~~ J of LCO 3.8.1 would be entered. INSERT 10 Once the failure is repaired, the common cause failure no longer exists, and Required Action B.3.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DG~~(s)~~, performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of that DG. F 5

5 **INSERT 10**

if one or more DG(s) in Train A and Train B are inoperable

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BASES

ACTIONS (continued)

(s)

In the event the inoperable DG is restored to OPERABLE status prior to completing either B.3.1 or B.3.2, the ~~[plant~~ corrective action program~~]~~ will continue to evaluate the common cause possibility. This continued evaluation, however, is no longer under the 24 hour constraint imposed while in Condition B. 5 2

According to Generic Letter 84-15 (Ref. 7), ~~[~~24~~]~~ hours is reasonable to confirm that the OPERABLE DG(s) is not affected by the same problem as the inoperable DG. 2

B.4

~~According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition B for a period that should not exceed 72 hours.~~

(s) AC Electrical Power

In Condition B, the remaining OPERABLE DG and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. The 7 day ~~72 hour~~ Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 5

INSERT 11 5

D D D

~~C~~ ~~E~~ D.1 and ~~C~~ ~~E~~ D.2 5

Required Action ~~C~~ ~~E~~ D.1, which applies when two offsite circuits are inoperable, is intended to provide assurance that an event with a coincident single failure will not result in a complete loss of redundant required safety functions. The Completion Time for this failure of redundant required features is reduced to 12 hours from that allowed for one train without offsite power (Required Action A.2). The rationale for the reduction to 12 hours is that Regulatory Guide 1.93 (Ref. 6) allows a Completion Time of 24 hours for two required offsite circuits inoperable, based upon the assumption that two complete safety trains are OPERABLE. When a concurrent redundant required feature failure exists, this assumption is not the case, and a shorter Completion Time of 12 hours is appropriate. These features are powered from redundant AC safety trains. This includes motor driven auxiliary feedwater pumps. Single train features, such as turbine driven auxiliary pumps, are not included in the list.

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5 **INSERT 11**

C.1, C.2, and C.3

Condition C is entered for an offsite circuit inoperable solely due to an inoperable power source to 6.9 kV Shutdown Board 1A-A or 1B-B. Required Action C.1 verifies the OPERABILITY of the remaining offsite circuit within an hour of the inoperability and every 8 hours thereafter. Since the Required Action only specifies "perform," a failure of the SR 3.8.1.1 acceptance criteria does not result in a Required Action not met.

The Completion Time for Required Action C.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. 6.9 kV Shutdown Board 1A-A or 1B-B has no offsite power; and
b. A required feature on the other train is inoperable.

If at any time during the existence of Condition C a redundant required feature subsequently becomes inoperable, this Completion Time begins to be tracked.

A Completion Time of 24 hours is acceptable, because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown. The remaining OPERABLE offsite circuit and DGs are adequate to support these functions. The Completion Time takes into account the component OPERABILITY of the remaining redundant feature(s), a reasonable time for repairs, and the low probability of a DBA occurring during this period.

Operation may continue in Condition C for a period of 7 days. With one offsite circuit inoperable, the reliability of the functions is degraded. The potential for the loss of offsite power to the redundant feature(s) is increased, with the attendant potential for a challenge to their safety functions.

The required offsite circuit must be returned to OPERABLE status within 7 days~~, or the support function for the associated required feature is considered inoperable. At that time, the required feature must be declared inoperable and the appropriate Conditions must be entered~~. The 7 days Completion Time takes into account the capacity and capability of the remaining AC sources providing electrical power to the required feature(s), a reasonable time for repairs and the low probability of a DBA occurring during this period of time.

5

INSERT 11 (Continued)

D.1, D.2, D.3, and D.4

To ensure a highly reliable power source remains with an inoperable DG to a Unit 1 6.9 kV Shutdown Board, it is necessary to verify the availability of the required offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. Required Action D.1 verifies the OPERABILITY of the required offsite sources within an hour of the inoperability and every 8 hours thereafter. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must be entered.

Required Action D.2 is intended to provide assurance that a loss of offsite power, during the period that an LCO 3.8.1.d DG is inoperable, does not result in a complete loss of the safety functions.

The Completion Time for Required Action D.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. An inoperable DG to 6.9 kV Shutdown Board 1A-A or 1B-B exists; and
b. A redundant feature in the same system is inoperable.

If at any time during the existence of Condition D (one DG to 6.9 kV Shutdown Board 1A-A or 1B-B) a redundant feature in the same system subsequently becomes inoperable, this Completion Time begins to be tracked. The four hour Completion Time is acceptable, because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown.

The remaining OPERABLE offsite circuits and DGs are adequate to support the functions. The 4 hour Completion Time takes into account the component OPERABILITY of the remaining redundant feature(s), a reasonable time for repairs, and the low probability of a DBA occurring during this period.

D.3.1 and D.3.2

Required Action D.3.1 provides an allowance to avoid unnecessary testing of OPERABLE DG(s). If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG(s), SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on another DG, the other DG would be declared inoperable, and upon discovery, Condition J of LCO 3.8.1 would be entered, if one or more DG(s) in Train A and Train B are inoperable. Otherwise, if the inoperability exists on the other DG in the same train, the other DG would be declared inoperable upon discovery, Condition B would be entered. Once the failure is repaired, the common cause failure no longer exists, and Required Action D.3.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DGs, performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of that DG.

5

INSERT 11 (Continued)

~~Operation may continue in Condition D for a period of 7 days. With one Unit 2 DG inoperable, the reliability of the respective function is degraded. The potential for the loss of a DG to the redundant feature(s) is increased, with the attendant potential for a challenge to respective safety function.~~

~~The required DG must be returned to OPERABLE status within 7 days, or the support function for the associated required feature is considered inoperable. At that time, the required feature must be declared inoperable and the appropriate Conditions must be entered. The 7 day Completion Time takes into account the capacity and capability of the remaining AC sources providing electrical power to the required feature(s), a reasonable time for repairs and the low probability of a DBA occurring during this period of time.~~

ACTIONS (continued)

The Completion Time for Required Action ~~C~~ E.1 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action the Completion Time only begins on discovery that both: 5

a. All required offsite circuits are inoperable and

b. A required feature is inoperable.

If at any time during the existence of Condition ~~C~~ E (two offsite circuits inoperable) a required feature becomes inoperable, this Completion Time begins to be tracked. 5

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition ~~C~~ E for a period that should not exceed 24 hours. This level of degradation means that the offsite electrical power system does not have the capability to effect a safe shutdown and to mitigate the effects of an accident; however, the onsite AC sources have not been degraded. This level of degradation generally corresponds to a total loss of the immediately accessible offsite power sources. 5

Because of the normally high availability of the offsite sources, this level of degradation may appear to be more severe than other combinations of two AC sources inoperable that involve one or more DGs inoperable. However, two factors tend to decrease the severity of this level of degradation:

a. The configuration of the redundant AC electrical power system that remains available is not susceptible to a single bus or switching failure and

b. The time required to detect and restore an unavailable offsite power source is generally much less than that required to detect and restore an unavailable onsite AC source.

With both ~~of the required~~ offsite circuits inoperable, sufficient onsite AC sources are available to maintain the unit in a safe shutdown condition in the event of a DBA or transient. In fact, a simultaneous loss of offsite AC sources, a LOCA, and a worst case single failure were postulated as a part of the design basis in the safety analysis. Thus, the 24 hour Completion Time provides a period of time to effect restoration of one of the offsite circuits commensurate with the importance of maintaining an AC electrical power system capable of meeting its design criteria. 5

BASES

ACTIONS (continued)

According to Reference 6, with the available offsite AC sources, two less than required by the LCO, operation may continue for 24 hours. If two offsite sources are restored within 24 hours, unrestricted operation may continue. If only one offsite source is restored within 24 hours, power operation continues in accordance with Condition A or Condition C, as applicable. 5

E ~~F~~ E ~~F~~

~~D~~.1 and ~~D~~.2 5

~~Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Actions of Condition D~~ ~~F~~ ~~are modified by a Note to indicate that when Condition D~~ ~~F~~ ~~is entered with no AC source to any train~~ ~~6.9 kV Shutdown Board 2A-A or 2B-B~~~~, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows Condition D~~ ~~F~~ ~~to provide requirements for the loss of one offsite circuit and one DG~~ ~~to 6.9 kV Shutdown Board 2A-A or 2B-B~~~~, without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized train.~~ 5

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition ~~D~~ E ~~F~~ for a period that should not exceed 12 hours. 5

In Condition ~~D~~ E ~~F~~, individual redundancy is lost in both the offsite electrical power system and the onsite AC electrical power system. Since power system redundancy is provided by two diverse sources of power, however, the reliability of the power systems in this Condition may appear higher than that in Condition ~~C~~ D ~~E~~ (loss of both ~~required~~ offsite circuits). This difference in reliability is offset by the susceptibility of this power system configuration to a single bus or switching failure. The 12 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 5

~~INSERT 12~~

~~E~~ F ~~J~~.1 5

With ~~Train A and Train B DGs~~ one or more Train A DG(s) and one or more Train B DG(s) inoperable, there are ~~no remaining~~ insufficient standby AC sources available to power an entire load group. Thus, with an assumed loss of offsite electrical power, insufficient standby AC sources are available to power the minimum required ESF functions. Since the offsite electrical power system is the only source of AC power for this level of degradation, the risk associated with continued operation for a very short time could be less than that associated with an immediate controlled shutdown (the immediate shutdown could cause grid instability, which could result in a total loss of AC power). Since any inadvertent generator trip could also result in a

5 **~~INSERT 12~~**

G.1 and H.1

In Conditions G and H, individual redundancy is lost in the offsite electrical power system for one unit and the onsite AC electrical power system for the other unit. Since Conditions B and C are entered concurrent with entry into Condition G, and Conditions A and D are entered concurrent with entry into Condition H, the Required Actions of Conditions B and C (or Conditions A and D) provide the appropriate compensatory measures to ensure the onsite and offsite power sources are either restored to an OPERABLE status, or the associated required features are declared inoperable, thereby requiring entry into the appropriate Conditions associated with the associated feature's LCO. The Completion Times of Required Actions G.1 and H.1 are consistent with the Completion Times of Required Actions C.3 and D.4. If, while in Condition G or H, a redundant required feature is determined to be inoperable, the required feature(s) would be declared inoperable at the Completion Times specified in Conditions A, B, C, or D, as applicable.

I.1 and I.2

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Actions of Condition ~~I~~ are modified by a Note to indicate that when Condition I is entered with no AC source to 6.9 kV Shutdown Board 1A-A or 1B-B, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows Condition I to provide requirements for the loss of one offsite power source and one DG, without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized 6.9 kV Shutdown Board.

In Condition I, individual redundancy is lost in the offsite electrical power system and the onsite AC electrical power system. Concurrent with entry into Condition I, entry into Condition C (inoperable offsite power source) and Condition D (inoperable DG) are required. The Required Actions of Conditions C and D ensure the remaining offsite circuit and DGs are OPERABLE and that required features with no offsite or onsite power sources are declared inoperable when its redundant required feature is inoperable within the Completion Times of Required Actions C.2 and D.2.

BASES

ACTIONS (continued)

total loss of offsite AC power, however, the time allowed for continued operation is severely restricted. The intent here is to avoid the risk associated with an immediate controlled shutdown and to minimize the risk associated with this level of degradation.

In this Condition,

~~According to Reference 6, with both DGs inoperable~~, operation may continue for a period that should not exceed 2 hours, consistent with the guidance provided in Reference 6. 5

5

~~[F.1~~ 5

~~The sequencer(s) is an essential support system to [both the offsite circuit and the DG associated with a given ESF bus]. [Furthermore, the sequencer is on the primary success path for most major AC electrically powered safety systems powered from the associated ESF bus.] Therefore, loss of an [ESF bus sequencer] affects every major ESF system in the [division]. The [12] hour Completion Time provides a period of time to correct the problem commensurate with the importance of maintaining sequencer OPERABILITY. This time period also ensures that the probability of an accident (requiring sequencer OPERABILITY) occurring during periods when the sequencer is inoperable is minimal.~~

~~This Condition is preceded by a Note that allows the Condition to be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads under any conditions. Implicit in this Note is the concept that the Condition must be retained if any sequencer failure mode results in the inability to start all or part of the safety loads when required, regardless of power availability, or results in overloading the offsite power circuit to a safety bus during an event and thereby causes its failure. Also implicit in the Note, is that the Condition is not applicable to any train that does not have a sequencer.]~~

G ~~K~~ ~~K~~ G

~~G~~.1 and ~~G~~.2 5

If the inoperable AC electric power sources cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

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BASES

ACTIONS (continued)

H I

L.1 and M.1

~~H~~.1 5

Condition s L and M ~~H~~ correspond~~s~~ to a level of degradation in which ~~all~~ redundancy in the AC electrical power supplies cannot be assured ~~has been lost~~. At this severely degraded level, any further losses in the AC electrical power system will cause a loss of function. Therefore, no additional time is justified for continued operation. The unit is required by LCO 3.0.3 to commence a controlled shutdown.

H and I

SURVEILLANCE REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function, in accordance with 10 CFR 50, Appendix A, GDC 18 (Ref. 8). Periodic component tests are supplemented by extensive functional tests during refueling outages (under simulated accident conditions). The SRs for demonstrating the OPERABILITY of the DGs are in accordance with the recommendations of Regulatory Guide 1.9 (Ref. 3)~~,~~ and Regulatory Guide 1.108 (Ref. 9)~~, and Regulatory Guide 1.137 (Ref. 10), as addressed in the FSAR~~. 1

Where the SRs discussed herein specify voltage and frequency tolerances, the following is applicable. The minimum steady state output voltage of 6210 ~~[3740]~~ V is 90% of the nominal 6900 ~~4160~~ V output voltage. This value, which is specified in ANSI C84.1 (Ref. 10 ~~11~~), allows for voltage drop to the terminals of 6600 ~~4000~~ V motors whose minimum operating voltage is specified as 90% or 5940 ~~3600~~ V. It also allows for voltage drops to motors and other equipment down through the 120 V level where minimum operating voltage is also usually specified as 90% of name plate rating. The specified maximum steady state output voltage of 7260 ~~[4756]~~ V is equal to the maximum operating voltage specified for 6600 ~~4000~~ V motors. It ensures that for a lightly loaded distribution system, the voltage at the terminals of 6600 ~~4000~~ V motors is no more than the maximum rated operating voltages. The specified minimum and maximum frequencies of the DG are 58.8 Hz and 61.2 Hz, respectively. These values are equal to ± 2% of the 60 Hz nominal frequency and are derived from the recommendations given in Regulatory Guide 1.9 (Ref. 3). 2 1 1 1 2 1 1

SR 3.8.1.1

This SR ensures proper circuit continuity for the offsite AC electrical power supply to the onsite distribution network and availability of offsite AC electrical power. The breaker alignment verifies that each breaker is in its correct position to ensure that distribution buses and loads are connected to their preferred power source, and that appropriate independence of offsite circuits is maintained. ~~[The 7 day Frequency is~~ 7

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DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.1, AC SOURCES - OPERATING

10 CFR 50.92 EVALUATION
FOR
LESS RESTRICTIVE CHANGE L01

SQN is converting to the Improved Technical Specifications (ITS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." The proposed change involves making the Current Technical Specifications (CTS) less restrictive. Below are the descriptions of this less restrictive change and the determination of No Significant Hazards Considerations for conversion to NUREG-1431.

CTS 3.8.1.1 ACTION a provides actions for one inoperable offsite circuit and allows 72 hours to restore the inoperable offsite circuit to OPERABLE status before requiring the unit to be shut down and cooled down. ~~CTS 3.8.1.1 ACTION b provides actions for one or both DGs in a train inoperable and allows 7 days to restore the inoperable DG(s) to OPERABLE status before requiring the unit to be shut down and cooled down.~~ CTS 3.8.1.1 ACTION c provides actions for one inoperable offsite circuit and one inoperable DG and allows 12 hours to restore at least one of the inoperable AC sources to OPERABLE status before requiring the unit to be shut down and cooled down. ~~CTS 3.8.1.1 ACTION d provides actions for two inoperable offsite circuits and allows 24 hours to restore at least one of the inoperable offsite circuits to OPERABLE status before requiring the unit to be shut down. CTS 3.8.1.1 ACTION e provides actions for one or two inoperable DGs in both trains and allows 2 hours to restore the inoperable DG(s) in one train to OPERABLE status before requiring the unit to be shut down and cooled down. CTS 3.8.1.1 ACTION f states LCO 3.0.4.b is not applicable to DGs. The ITS ACTIONS are modified by a Note stating LCO 3.0.4.b is not applicable to DGs.~~ ITS 3.8.1 ACTION A provides actions for one inoperable offsite circuit for reasons other than Condition C, and allows 72 hours to restore the inoperable offsite power source to OPERABLE status. ~~ITS 3.8.1 ACTION B provides actions for one inoperable associated unit's DG or both DGs in one train inoperable, and allows 7 days to restore the inoperable DG(s) to OPERABLE status.~~ ITS 3.8.1 ACTION C provides actions for one offsite circuit inoperable solely due to an inoperable offsite power source to an opposite unit's 6.9 kV Shutdown Board, and ~~requires declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours. Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the offsite circuit cannot be restored to an OPERABLE status. ITS 3.8.1 ACTION D requires declaration that the affected required feature(s) with no OPERABLE DG are inoperable when its redundant required feature is inoperable in 4 hours. Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the DG cannot be restored to an OPERABLE status. ITS 3.8.1 ACTION E requires declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 12 hours. Otherwise, one offsite circuit is required to be restored to an OPERABLE status in 24 hours.~~ ITS 3.8.1 ACTION F provides actions for one associated unit's offsite circuit inoperable concurrent with one associated unit's DG inoperable, and allows 12 hours to restore one of the inoperable AC sources to OPERABLE status. ~~ITS ACTION G requires declaring the required feature(s) on the opposite unit's 6.9 kV Shutdown Board with no offsite power available inoperable in 7 days. ITS ACTION H requires declaring the required feature(s) on the opposite unit's 6.9 kV Shutdown Board with no DG available inoperable in 7 days. ITS ACTION I provides actions for one offsite circuit inoperable solely due to an inoperable offsite power source to an opposite unit's 6.9 kV Shutdown Board concurrent with one opposite unit's DG inoperable, and allows 7 days~~

E

requires: 1) performance of ITS SR 3.8.1.1 for the OPERABLE offsite circuit in 1 hour and once per 8 hours thereafter, 2) declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours, and 3) restoration of the offsite circuit to OPERABLE status in 7 days.

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
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~~to restore one of the inoperable AC sources to OPERABLE status. In addition, a Note~~

□or the condition of one offsite circuit inoperable solely due to an inoperable power source to an opposite unit□s □.□ □□Shutdown Board concurrent with an inoperable □□ (similar to □TS 3.8.1.1 Action c), ITS 3.8.1 □onditions B and □ would be entered concurrently. ITS 3.8.1 A□TIO□S B and □ require, in part, restoration of the inoperable A□ sources (circuit and □□) to an OPERABLE status in 7 days. This changes the CTS by providing a new ITS 3.8.1 ACTION C to allow 7 days to restore an inoperable offsite circuit to an OPERABLE status, if the offsite circuit is inoperable solely due to an inoperable power source to an opposite unit's Shutdown Board (e.g., for Unit 1 an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B is inoperable).

The purpose of the CTS 3.8.1.1 ACTIONS is to limit the time the unit can remain operating with different combinations of inoperable offsite circuits and DGs. The onsite Class 1E AC Electrical Distribution System supplies electrical power to two power trains shared between the two units. The core cooling and containment cooling system loads (e.g., Safety Injection (SI) pumps, Auxiliary Feedwater (AFW) pumps, Residual Heat Removal (RHR) pumps, Centrifugal Charging pumps, Containment Spray pumps, and Air Return System (ARS) fans) are unitized to the respective unit's 6.9 kV Shutdown Boards. However, some safety-related systems (e.g., Essential Raw Cooling Water (ERCW), Component Cooling (CCS), Emergency Gas Treatment (EGTS), Auxiliary Building Gas Treatment, (ABGTS), Control Room Emergency Ventilation (CREVs), and Control Room HVAC (CRACS)) are shared between the units. The AC sources for the shared loads are distributed across both unit's shutdown boards. Therefore, two qualified offsite circuits and four DGs capable of supplying the onsite Class 1E AC Electrical Distribution System are required to be OPERABLE. However, the impacts of an inoperable offsite power source or DG on an opposite unit's 6.9 kV Shutdown Board differ from the impacts of an inoperable offsite power source or DG on an associated unit's 6.9 kV Shutdown Board, due to the loads powered from the respective board.

For example, with SQN Unit 1 in MODES 1, 2, 3, and 4, 6.9 kV Shutdown Boards 1A-A and 1B-B, and the associated offsite power sources and DGs are required to be OPERABLE to provide electrical power to the ESF systems powered from those boards. Additionally, 6.9 kV Shutdown Boards 2A-A and 2B-B and associated offsite power sources and DGs are required to be OPERABLE to provide electrical power to any required shared components required for Unit 1. If it is necessary to de-energize 6.9 kV Shutdown Board 2A-A or 2B-B, the redundant shared systems can be aligned prior to de-energizing the shutdown board to ensure no loss of safety function will occur. Upon removing the shutdown board from service, the applicable Conditions and Required Actions for the affected shared system LCOs will be entered and tracked and either the offsite power source or the DG is required to be restored to an OPERABLE status in 7 days.

In the event of an unplanned loss of an offsite power source to an opposite unit's 6.9 kV Shutdown Board, the proposed actions require declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours, and restoration of the offsite circuit to OPERABLE status in 7 days. ~~Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the offsite power source cannot be restored to an OPERABLE status. Similarly, in~~ In the event of an unplanned loss of a DG to an opposite unit 6.9 kV Shutdown Board, the proposed actions require declaration that the affected required feature(s) with no OPERABLE DG are inoperable when its redundant required feature is inoperable in 4 hours, and restoration of the □□ to OPERABLE status in 7 days. ~~Otherwise, the affected required feature(s) are declared~~

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.1, AC SOURCES - OPERATING

~~inoperable in 7 days, if the DG cannot be restored to an OPERABLE status~~. In both cases, the ACTIONS require performance of SR 3.8.1.1 for the required OPERABLE offsite circuit(s) within 1 hour and once per 8 hours thereafter.

ITS 3.8.1 ACTION G is entered and the unit is required to be shut down to MODE 3 in 6 hours and MODE 5 in 36 hours.

The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. These changes are acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation, while providing time to repair inoperable features. If the necessary repairs cannot be made within the established Completion Time, ~~the associated required features are declared inoperable and the applicable Conditions and Required Actions for the affected shared system LCOs are entered and tracked~~. This change is acceptable because the provided ACTIONS effect restoration of the opposite unit's ~~AC sources~~ offsite circuit commensurate with the importance of maintaining th~~ese AC sources~~ offsite circuit capable of supporting the associated unit's required feature(s). This change is designated as less restrictive, because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

Tennessee Valley Authority (TVA) has evaluated whether or not a significant hazards consideration is involved with these proposed Technical Specification changes by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of any accident previously evaluated?

Response: No.

The proposed change relaxes the Required Actions for the opposite unit's offsite AC power sources ~~and DGs~~. The opposite unit's offsite AC power sources ~~and DGs~~ are required to be OPERABLE to support the associated unit's required features. This change will not affect the probability of an accident, since the offsite AC circuits ~~and DGs~~ are not initiators of any accident sequence analyzed in the Updated Final Safety Analysis Report (UFSAR). Rather, offsite AC power sources ~~and DGs~~ support equipment used to mitigate accidents. The consequences of an analyzed accident will not be significantly increased since the minimum requirements for AC power sources will be maintained to ensure the availability of the required power to mitigate accidents assumed in the UFSAR. Operation in accordance with the proposed TS will ensure that sufficient onsite and offsite AC power sources are OPERABLE as required to support the unit's required features. Therefore, the mitigating functions supported by the onsite and offsite AC power sources will continue to provide the protection assumed by the accident analysis. The integrity of fission product barriers, plant configuration, and operating procedures as described in the UFSAR will not be affected by the proposed changes. Thus, the consequences of previously analyzed accidents will not increase by implementing these changes. Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

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2. Does the proposed change create the possibility of a new or different kind of accident from any previously evaluated?

Response: No

The proposed change relaxes the Required Actions for the opposite unit's offsite AC power sources ~~and DGs~~. The opposite unit's offsite AC power sources ~~and DGs~~ are required to be OPERABLE to support the associated unit's required features. This change will not physically alter the plant (no new or different type of equipment will be installed). The proposed changes will maintain the minimum requirements for AC power sources to ensure the availability of the equipment required to mitigate accidents assumed in the UFSAR. Therefore, operation of the facility in accordance with this proposed change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in the margin of safety?

Response: No.

The proposed change relaxes the Required Actions for the opposite unit's offsite AC power sources ~~and DGs~~. The opposite unit's offsite AC power sources ~~and DGs~~ are required to be OPERABLE to support the associated unit's required features. The margin of safety is not affected by this change because the minimum requirements for AC power sources will be maintained to ensure the availability of the required power to shutdown the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. Therefore, the proposed changes do not involve a significant reduction in a margin of safety

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Licensee Response/NRC Response/NRC Question Closure

Id	**453**
NRC Question Number	**VKG026**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**5/14/2015**
Notification	**Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**5/14/2015 3:11 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**197**
NRC Question Number	**VKG027**
Category	**Technical**
ITS Section	**3.8**
ITS Number	**3.8.1**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

ITS 3.8.1 (for Unit 1), Condition C, "One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B inoperable," Action C.3 requires, "Declare associated required feature(s) inoperable," within 7 days. While Unit 2 will be required to shutdown after 72 hours if the Shutdown Board is not restored, Unit 1 can remain in operational mode unless some other LCO Action statement requires Unit 1 to shutdown or restore the inoperable circuit to the operable status.

CTS requires both Units to shutdown after 72 hours when an offsite circuit becomes inoperable. However, based on response to RAI # VKG004 (similar to the response to RAI # VKG007), the ITS would allow one of the Units to remain in operational mode for 10 to 14 days. Staff is concerned that the Unit in operation would not be able to safely shutdown in case of "Loss of Onsite power (only Offsite power available from remaining Offsite circuits), LOCA, <u>and worst case single failure</u> in one of the safety-related systems (GDC 17, GDC 34, and GDC 35 requirements)" during the extended period of the one of Offsite circuits inoperability. CTS accepts this risk for 3 days, but ITS is extending this risk for an additional 7 or 11 days. Although, the Commission allows single failure not to be

considered during an LCO Action statement, the staff is concerned regarding the extended Offsite circuit inoperability. Typically, according to standard TS and Regulatory Guide 1.93, the inoperability of an Offsite circuit is limited to 72 hours.

The above staff concerns are also applicable to Condition G, in which an offsite circuit impacting the opposite Unit shutdown board becomes inoperable. ITS 3.8.1.G does not require the Offsite circuit to be restored; only the associated required features are to be declared inoperable.

Please provide the technical basis for the relaxation of Completion Times described above or revise ITS 3.8.1 Conditions C and G appropriately for both Units (i.e., to be consistent with the current licensing basis).

Attach File 1	
Attach File 2	
Issue Date	**11/18/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**11/18/2014 5:38 PM**
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**433**
NRC Question Number	**VKG027**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 for RAI VKG027 with VKG027 Indicators.pdf** (3MB)
Attachment 2	
Response Statement	

In response to RAI VKG027, ITS 3.8.1 Required Action C.3 will be revised to reflect the requirement to restore an offsite circuit that is inoperable solely due to an inoperable offsite power source to an opposite unit's 6.9 kV shutdown board to an OPERABLE status in 7 days.

On December 16, 1998, NRC issued Technical Specification Amendments for SQN, Units 1 and 2 (TAC Nos. M96600 and M96601)(TS 96-08)(ADAMS Accession No. 9812210233). The amendments revised the SQN Technical Specifications by extending the allowed outage time (AOT) for the SQN emergency diesel generators (EDG) from 72 hours to 7 days. Although SQN had demonstrated, based on a probabilistic risk assessment (PRA) basis, that the extended EDG AOT would result in no significant increase in risk, the staff also reviewed the submittal from a deterministic approach. Based on the Staff's review, it was determined that a 7 day AOT was acceptable. Regulatory Guide 1.93, Rev. 0 states that "a general distinction does not appear to be warranted for operating restrictions associated with the loss of an offsite source and those restrictions associated with the loss of an onsite a.c. supply." Regulatory Guide 1.93, Rev. 1, Section C. "Regulatory Position" discusses the seven levels of degradation of the electric power system in order of increasing degradation. The lowest level of degradation listed is "The available offsite ac power sources are one less than the LCO." The second lowest level of degradation listed is "The available onsite ac power sources are one less than the LCO." Both of these levels of degradation have the same AOT, which is consistent with the statement made in Rev. 0 of Regulatory Guide 1.93. The revision to ITS 3.8.1 Condition C will align the AOT for an inoperable offsite power source to an <u>opposite</u> unit's 6.9 kV shutdown board to correspond to the AOT for an inoperable onsite (EDG) power source.

As stated in UFSAR Section 3.1.2, SQN fully meets the requirements of General Design Criteria (GDC) 17, 34, and 35. The proposed extension of the AOT for an inoperable offsite circuit to the opposite unit 6.9 kV shutdown board does not modify the electrical power, residual heat removal, or emergency core cooling systems. Each of these systems will continue to be capable of performing their intended design function. Therefore, SQN will continue to meet the requirements of GDC 17, 34, and 35 with the extension of the AOT.

At SQN, the majority of the loads necessary to mitigate design basis accidents (DBAs) are powered from the <u>associated</u> unit's two trained 6.9 kV shutdown boards that each have an offsite and onsite (EDG) power source. Consistent with Regulatory Guide 1.93 and ISTS 3.8.1, a loss of the offsite power source to their respective train for the <u>associated</u> unit will require entry into a Condition and Required Action Completion Time of 72 hours. However, there are shared loads that are powered from the opposite unit's trained power supply. The systems that are shared between Unit 1 and Unit 2 and powered from Unit 1 are the Emergency Gas Treatment System (EGTS), Essential Raw Cooling Water (ERCW) System, Component Cooling Water System (CCS), Control Room Emergency Ventilation System (CREVS), Control Room Air-Conditioning System (CRACS), and the 125V Vital DC System. The shared systems powered from Unit 2 are the Auxiliary Building Gas Treatment System (ABGTS), the Auxiliary Control Air System (ACAS), Essential Raw Cooling Water (ERCW) System, Component Cooling Water System (CCS), and the 125V Vital DC System. In ITS 3.8.1, a loss of an offsite power source to an <u>opposite</u> unit shutdown board would require verification of the breaker alignment and indicated power availability for the OPERABLE offsite circuit within 1 hour, verification that the required features with no offsite power available have OPERABLE redundant features, otherwise declare the required feature inoperable, and entry into a Condition and Required Action Completion Time of 7 days to restore the offsite circuit to OPERABLE status. With a single inoperable offsite power source to an opposite unit shutdown board, all required features remain OPERABLE with redundancy. For a loss of safety function to occur, a complete loss of onsite power along with the offsite power to the redundant train on the opposite unit would have to occur.

SQN has maintenance activities that need to be performed on the

shutdown boards. The entire maintenance activity cannot be performed under the current AOT of 72 hours. The extension of the AOT for an inoperable offsite circuit to an opposite unit shutdown board would allow the maintenance activities to be performed during a scheduled outage on the opposite unit. The increased AOT will not increase the probability or consequences of any accident previously evaluated. The power sources are required to be OPERABLE to support the associated unit's required features. Because the offsite circuit is not an initiator of any accident sequence, inoperability of the circuit will not affect the probability of an accident occurring. The consequences of any accident previously evaluated will not be increased. The steam line break (SLB), steam generator tube rupture (SGTR), small break loss of coolant accident (SBLOCA), large break LOCA (LBLOCA), and main feedwater pipe rupture (MFWPR) events are sensitive to the availability of the onsite and offsite power sources. For a SLB and SGTR, the limiting analyses assume that a loss of offsite power occurs. With an offsite circuit already made inoperable, the resultant analyses for SLB and SGTR will, therefore, not be impacted. For the SBLOCA, the analysis assumes that a loss of offsite power occurs, which will trip the reactor coolant pumps (RCPs). A delay in tripping the RCPs can potentially produce more limiting results. Therefore, with an offsite circuit already made inoperable, there is no impact on the analysis for a SBLOCA. For the LBLOCA, transient calculations were performed, both with and without a loss of offsite power. As stated in UFSAR Section 15.4.1.4, the most limiting case producing the highest peak clad temperature (PCT), occurs with offsite power available. Table 15.4.1-2 indicates that offsite power was available for the limiting case and the RCPs do not trip. Because the most limiting case for the LBLOCA is having offsite power available, removing an offsite circuit would have no impact on the limiting case LBLOCA. The MFWPR event produced similar results for cases with or without offsite power. Therefore, the loss of one offsite power source will not impact the existing main feedwater pipe break analysis.

Recent modifications to the offsite power system and Technical Specification change TS−SQN−12−01 has increased the number of qualified circuits that can be used to provide offsite power to the onsite power distribution system. The unit station service transformers (USSTs) now qualify as an offsite power circuit. Additionally, SQN has never experienced a complete loss of offsite power event during commercial operation.

Increasing the AOT from 72 hours to 7 days for an inoperable offsite power supply to an opposite unit's 6.9 kV shutdown board is considered acceptable due to the limited amount of equipment that is powered from the opposite unit's shutdown board, no impact on the probability of occurrence or consequences of accidents previously evaluated, the increase in qualified circuits for providing offsite power, the fact that SQN has never experienced a loss of offsite power event, and would make the Required Action Completion Time consistent with the loss of an onsite power source.

See Attachment 1 for the draft CTS 3.8.1.1 markup, DOC, ITS 3.8.1 markup, JFD, and ITS 3.8.1 Bases markup changes based on the discussion above. Changes associated with RAI VKG027 are illustrated as such, all other changes on Attachment 1 are associated with the response to RAI VKG026.

Response Date/Time	**4/9/2015 2:30 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**4/9/2015 1:26 PM**
Date Modified	
Modified By	

ITS A01 ITS 3.8.1

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.8.1 3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

LCO 3.8.1.a a. Two ~~physically independent~~ qualified circuits between the offsite transmission network and the onsite Class 1E distribution system~~@~~, and LA01 A02

LCO 3.8.1.b b. Four ~~separate and independent~~ diesel generator sets each with: LA01

1. ~~Two diesels driving a common generator~~

SR 3.8.1.4 2. Two engine-mounted fuel tanks containing a minimum volume of 250 gallons of fuel, per tank

3. A separate fuel storage system containing a minimum volume of 62,000 gallons of fuel, See ITS 3.8.3

SR 3.8.1.6 4. A separate fuel transfer pump, and

5. A separate 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger. See ITS 3.8.4 and 3.8.9

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Add proposed Condition A L01

ACTION A a. ~~With one offsite A.C. circuit of the above required A.C. electrical power source inoperable,~~ demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter. Restore ~~at least two~~ offsite circuit~~s~~ to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. L01 L02

ACTION ~~K~~ G

~~Add proposed Condition B~~ ~~L01~~

STET

ACTION B b.~~#~~ ~~With diesel generator set(s) 1A-A and/or 2A-A or 1B-B and/or 2B-B of the above required A.C. electrical power sources inoperable,~~* demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter, and determining OPERABLE diesel generator sets are not inoperable due to common cause failure or performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours; restore ~~at least four~~ diesel generator set~~s~~ to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. ~~L01~~ STET

ACTION ~~K~~ G

Add proposed ACTION~~S~~ C ~~and D~~ L01

~~# Required actions, to verify OPERABLE diesel generator sets are not inoperable due to common cause failure or perform SR 4.8.1.1.2.a.4, shall be completed if this action is entered.~~ L02

SR 3.8.1.3 Note 3 * No more than one diesel generator may be made simultaneously inoperable on a pre-planned basis for ~~maintenance, modifications, or~~ surveillance testing. L03

~~@ Offsite circuits utilizing USST 2A and USST 2B as the normal power sources require CSST A and CSST C to be available as the alternate power sources via automatic transfer at the associated 6.9 kV Unit Boards. (CSST B can be substituted for CSST A or CSST C.) This Note remains in effect until November 30, 2013, or until the USST modifications are implemented on Units 1 and 2, whichever occurs first.~~ A02

ITS | ITS 3.8.1

A01

ELECTRICAL POWER SYSTEMS

Add proposed ACTION F Note — E — A03

ACTION (Continued)

Add proposed Condition F — E — L01

ACTION F — E
c. ~~With one offsite circuit and one diesel generator set of the above required A.C. electrical power sources inoperable~~, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter, and Surveillance Requirement 4.8.1.1.2.a.4 within ~~8~~ 24 hours; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION A, ACTION B, ACTION F — E; ACTION K — G; L04

ACTION E — D
d. With two of the above required offsite A.C. circuits inoperable, ~~demonstrate the OPERABILITY of 4 diesel generator sets by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours, unless the diesel generator sets are already operating~~; restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and MODE 5 within 36 hours

ACTION K — G; L05; M01

ACTION J — F; ACTION B; ACTION J — F; ACTION K — G
e. With either diesel generator sets 1A-A and/or 2A-A inoperable simultaneous with 1B-B and/or 2B-B, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least 1) 1A-A and 2A-A or 2) 1B-B and 2B-B to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

~~L01~~

~~Add proposed ACTIONS G, H, and I~~ — ~~L01~~

ACTIONS Note
f. LCO 3.0.4.b is not applicable to diesel generators.

Add proposed ACTIONS ~~L~~ and ~~M~~ — H — I — A04

SURVEILLANCE REQUIREMENTS

SR 3.8.1.1
4.8.1.1.1 Each of the above required ~~independent~~ circuits between the offsite transmission network and the onsite Class 1E distribution system shall be: — LA01

SR 3.8.1.1
a. Determined OPERABLE ~~at least once per 7 days~~ by verifying correct breaker alignments and indicated power availability.

In accordance with the Surveillance Frequency Control Program — LA02

SR 3.8.1.8
b. Demonstrated OPERABLE ~~at least once per 18 months~~# by manually and automatically transferring the power supply to each 6.9 kV Unit Board## from the normal supply to the alternate supply.

SR 3.8.1.8 Note 1
\# For the 1A, 1B, 1C and 1D 6.9 kV Unit Boards, this Surveillance shall not be performed in MODES 1 and 2.

Add proposed SR 3.8.1.8 Note 1, second and third sentences. — L06

SR 3.8.1.8 Note 2
\## Transfer capability is only required to be met for 6.9 kV Unit Boards that require normal and alternate power supplies.

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ITS

A01

ITS 3.8.1

3/4 LIMITING CONDITIONS FOR OPEATION AND SURVEILLANCE REQUIREMENTS

3/4.0 APPLICABILITY

LIMITING CONDITION FOR OPERATION

3.0.1 Compliance with the Limiting Conditions for Operation contained in the succeeding Specifications is required during the OPERATIONAL MODES or other conditions specified therein; except that upon failure to meet the Limiting Conditions for Operation, the associated ACTION requirements shall be met and as provided in LCO 3.0.7.

3.0.2 Noncompliance with a Specification shall exist when the requirements of the Limiting Condition for Operation and associated ACTION requirements are not met within the specified time intervals. If the Limiting Conditions for Operation is restored prior to expiration of the specified time intervals, completion of the ACTION requirements is not required.

3.0.3 When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within one hour action shall be initiated to place the unit in a MODE in which the Specification does not apply by placing it, as applicable, in:

1. At least HOT STANDBY within the next 6 hours,
2. At least HOT SHUTDOWN within the following 6 hours, and
3. At least COLD SHUTDOWN within the subsequent 24 hours.

See ITS 3.0

Where corrective measures are completed that permit operation under the ACTION requirements, the ACTION may be taken in accordance with the specified time limits as measured from the time of failure to meet the Limiting Condition for Operation. Exceptions to these requirements are stated in the individual Specifications.

3.0.4 When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made:

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time;

b. After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate; exceptions to this Specification are stated in the individual Specifications, or

c. When an allowance is stated in the individual value, parameter, or other Specification.

This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

Required Actions A.2, B.2, ~~E.1~~, and associated Completion Times

C.2, ~~D.1~~

VKG027

3.0.5 When a system, subsystem, train, component or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of its applicable Limiting Condition for Operation, provided: (1) its corresponding normal or emergency power source is OPERABLE; and (2) all of its redundant system(s), subsystem(s), train(s), component(s) and device(s) are OPERABLE, or likewise satisfy the requirements of this Specification. Unless both

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ITS

A01

ITS 3.8.1

VKG027

APPLICABILITY

LIMITING CONDITION FOR OPERATION (Continued)

, C.2

24 hours for Required Action A.2
4 hours for Required Action B.2
12 hours for Required Action ~~E~~.1

D

3.0.5 (Continued)

conditions (1) and (2) are satisfied, within ~~2 hours~~ ~~action shall be initiated to place the unit in a MODE in which the applicable Limiting Condition for Operation does not apply by placing it as applicable in~~:

L20

~~1. At least HOT STANDBY within the next 6 hours,~~
~~2. At least HOT SHUTDOWN within the following 6 hours, and~~
~~3. At least COLD SHUTDOWN within the subsequent 24 hours.~~

Declare required features inoperable.

~~This Specification is not applicable in MODES 5 or 6.~~

A08

3.0.6 Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.1 and 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

3.0.7 When one or more required snubbers are unable to perform their associated support function(s), any affected supported LCO(s) are not required to be declared not met solely for this reason if risk is assessed and managed, and:

a. the snubbers not able to perform their associated support function(s) are associated with only one train or subsystem of a multiple train or subsystem supported system or are associated with a single train or subsystem supported system and are able to perform their associated support function within 72 hours; or

b. the snubbers not able to perform their associated support function(s) are associated with more than one train or subsystem of a multiple train or subsystem supported system and are able to perform their associated support function within 12 hours.

At the end of the specified period the required snubbers must be able to perform their associated support function(s), or the affected supported system LCO(s) shall be declared not met.

See ITS 3.0

SURVEILLANCE REQUIREMENTS

4.0.1 Surveillance Requirements shall be met during the MODES or other specified conditions in the Applicability for individual Limiting Condition for Operation, unless otherwise stated in the individual Surveillance Requirement. Failure to meet a Surveillance Requirement, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the Limiting Condition for Operation. Failure to perform a Surveillance within the specified surveillance interval shall be failure to meet the Limiting Conditions for Operation except as provided in Specification 4.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.

4.0.2 Each Surveillance Requirement shall be performed within the specified surveillance interval with a maximum allowable extension not to exceed 25 percent of the specified surveillance interval.

4.0.3 If it is discovered that a Surveillance was not performed within its specified surveillance interval (including the allowed extension per Specification 4.0.2), then compliance with the requirement to declare the Limiting Condition for Operation not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified surveillance interval, whichever is greater. This delay period is permitted to allow performance of the Surveillance. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours and the risk impact shall be managed.

ITS A01 ITS 3.8.1

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.8.1 3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

qualified LA01

LCO 3.8.1.a a. Two ~~physically independent~~ circuits between the offsite transmission network and the onsite Class 1E distribution system~~@~~, and A02

LCO 3.8.1.b b. Four ~~separate and independent~~ diesel generator sets each with: LA01

1. ~~Two diesels driving a common generator~~

SR 3.8.1.4 2. Two engine-mounted fuel tanks containing a minimum volume of 250 gallons of fuel, per tank

3. A separate fuel storage system containing a minimum volume of 62,000 gallons of fuel, See ITS 3.8.3

SR 3.8.1.6 4. A separate fuel transfer pump, and

5. A separate 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger. See ITS 3.8.4 and 3.8.9

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Add proposed Condition A L01

ACTION A a. ~~With one offsite A.C. circuit of the above required A.C. electrical power sources inoperable,~~ demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter. Restore ~~at least two~~ offsite circuit~~s~~ to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. L01 L02

G ACTION ~~K~~

~~Add proposed Condition B~~ ~~L01~~

STET

ACTION B b.~~#~~ ~~With diesel generator set(s) 1A-A and/or 2A-A or 1B-B and/or 2B-B of the above required A.C. electrical power sources inoperable,~~* demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter, and determining OPERABLE diesel generator sets are not inoperable due to common cause failure or performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours; restore ~~at least four~~ diesel generator set~~s~~ to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. ~~L01~~ STET

G ACTION ~~K~~

Add proposed ACTIONS C ~~and D~~ L01

~~# Required actions, to verify OPERABLE diesel generator sets are not inoperable due to common cause failure or perform SR 4.8.1.1.2.a.4, shall be completed if this action is entered.~~ L02

SR 3.8.1.3 Note 3 * No more than one diesel generator may be made simultaneously inoperable on a pre-planned basis for ~~maintenance, modifications, or~~ surveillance testing. L03

~~@ Offsite circuits utilizing USST 2A and USST 2B as the normal power sources require CSST A and CSST C to be available as the alternate power sources via automatic transfer at the associated 6.9 kV Unit Boards. (CSST B can be substituted for CSST A or CSST C.) This Note remains in effect until November 30, 2013, or until the USST modifications are implemented on Units 1 and 2, whichever occurs first.~~ A02

ITS A01 ITS 3.8.1

ELECTRICAL POWER SYSTEMS

ACTION (Continued)

Add proposed ACTION ~~F~~ E Note A03

Add proposed Condition ~~F~~ E L01

ACTION ~~F~~ E — c. ~~With one offsite circuit and one diesel generator set of the above required A.C. electrical power sources inoperable,~~ demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter, and Surveillance Requirement 4.8.1.1.2.a.4 within ~~8~~ 24 hours; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. L04

ACTION A, ACTION B, ACTION ~~F~~ E, ACTION ~~K~~ G

ACTION ~~E~~ D — d. With two of the above required offsite A.C. circuits inoperable, ~~demonstrate the OPERABILITY of 4 diesel generator sets by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours, unless the diesel generator sets are already operating~~; restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and MODE 5 within 36 hours L05 M01

ACTION ~~K~~ G

ACTION ~~J~~ F, ACTION B, ACTION ~~J~~ F, ACTION ~~K~~ G — e. With either diesel generator sets 1A-A and/or 2 A-A inoperable simultaneous with 1B-B and/or 2B-B, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least 1) 1A-A and 2A-A or 2) 1B-B and 2B-B to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. ~~L01~~

~~Add proposed ACTIONS G, H, and I~~ ~~L01~~

ACTIONS Note — f. LCO 3.0.4.b is not applicable to diesel generators.

Add proposed ACTIONS ~~L~~ H and ~~M~~ I A04

SURVEILLANCE REQUIREMENTS

SR 3.8.1.1 — 4.8.1.1.1 Each of the above required ~~independent~~ circuits between the offsite transmission network and the onsite Class 1E distribution system shall be: LA01

SR 3.8.1.1 — a. Determined OPERABLE ~~at least once per 7 days~~ by verifying correct breaker alignments and indicated power availability.

In accordance with the Surveillance Frequency Control Program LA02

SR 3.8.1.8 — b. Demonstrated OPERABLE ~~at least once per 18 months~~# by manually and automatically transferring the power supply to each 6.9 kV Unit Board ## from the normal supply to the alternate supply.

SR 3.8.1.8 Note 1 — # For the 2A, 2B, 2C and 2D 6.9 kV Unit Boards this Surveillance shall not be performed in MODES 1 and 2.

Add proposed SR 3.8.1.8 Note 1, second and third sentences. L06

SR 3.8.1.8 Note 2 — ## Transfer capability is only required to be met for 6.9 kV Unit Boards that require normal and alternate power supplies.

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

3/4.0 APPLICABILITY

LIMITING CONDITION FOR OPERATION

3.0.1 Compliance with the Limiting Conditions for Operation contained in the succeeding Specifications is required during the OPERATIONAL MODES or other conditions specified therein; except that upon failure to meet the Limiting Conditions for Operation, the associated ACTION requirements shall be met and as provided in LCO 3.0.7.

3.0.2 Noncompliance with a Specification shall exist when the requirements of the Limiting Condition for Operation and associated ACTION requirements are not met within the specified time intervals. If the Limiting Conditions for Operation is restored prior to expiration of the specified time intervals, completion of the ACTION requirements is not required.

3.0.3 When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within one hour action shall be initiated to place the unit in a MODE in which the Specification does not apply by placing it, as applicable, in:

1. At least HOT STANDBY within the next 6 hours,
2. At least HOT SHUTDOWN within the following 6 hours, and
3. At least COLD SHUTDOWN within the subsequent 24 hours.

Where corrective measures are completed that permit operation under the ACTION requirements, the ACTION may be taken in accordance with the specified time limits as measured from the time of failure to meet the Limiting Condition for Operation. Exceptions to these requirements are stated in the individual Specifications.

See ITS 3.0

3.0.4 When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made:

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time;

b. After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate; exceptions to this Specification are stated in the individual Specifications, or

c. When an allowance is stated in the individual value, parameter, or other Specification.

This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

Required Actions A.2, B.2, ~~E.1,~~ C.2, B.1 and associated Completion Times

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3.0.5 When a system, subsystem, train, component or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of its applicable Limiting Condition for Operation, provided: (1) its corresponding normal or emergency power source is OPERABLE; and (2) all of its redundant system(s), subsystem(s), train(s), component(s) and device(s) are OPERABLE, or likewise satisfy the requirements of this Specification. Unless both

ITS

A01

ITS 3.8.1

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APPLICABILITY

LIMITING CONDITION FOR OPERATION

, C.2

24 hours for Required Action A.2
4 hours for Required Action B.2
12 hours for Required Action ~~E~~.1

D

3.0.5 (Continued)

conditions (1) and (2) are satisfied, within ~~2 hours~~ ~~action shall be initiated to place the unit in a MODE in which the applicable Limiting Condition for Operation does not apply by placing it as applicable in:~~

L20

~~1. At least HOT STANDBY within the next 6 hours~~
~~2. At least HOT SHUTDOWN within the following 6 hours, and~~
~~3. At least COLD SHUTDOWN within the subsequent 24 hours.~~

Declare required features inoperable.

~~This Specification is not applicable in MODES 5 or 6.~~

A08

3.0.6 Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.1 and 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

3.0.7 When one or more required snubbers are unable to perform their associated support function(s), any affected supported LCO(s) are not required to be declared not met solely for this reason if risk is assessed and managed, and:

a. the snubbers not able to perform their associated support function(s) are associated with only one train or subsystem of a multiple train or subsystem supported system or are associated with a single train or subsystem supported system and are able to perform their associated support function within 72 hours; or

b. the snubbers not able to perform their associated support function(s) are associated with more than one train or subsystem of a multiple train or subsystem supported system and are able to perform their associated support function within 12 hours.

At the end of the specified period the required snubbers must be able to perform their associated support function(s), or the affected supported system LCO(s) shall be declared not met.

See ITS 3.0

SURVEILLANCE REQUIREMENTS

4.0.1 Surveillance Requirements shall be met during the MODES or other specified conditions in the Applicability for individual Limiting Condition for Operation, unless otherwise stated in the individual Surveillance Requirement. Failure to meet a Surveillance Requirement, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the Limiting Condition for Operation. Failure to perform a Surveillance within the specified surveillance interval shall be failure to meet the Limiting Conditions for Operation except as provided in Specification 4.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.

4.0.2 Each Surveillance Requirement shall be performed within the specified surveillance interval with a maximum allowable extension not to exceed 25 percent of the specified surveillance interval.

4.0.3 If it is discovered that a Surveillance was not performed within its specified surveillance interval (including the allowed extension per Specification 4.0.2), then compliance with the requirement to declare the Limiting Condition for Operation not met may be delayed, from the time of discovery,

DISCUSSION OF CHANGES
ITS 3.8.1, AC SOURCES - OPERATING

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.8.1.1.a Note @ has an expiration date of November 30, 2013. As it is anticipated that the SQN ITS Conversion License Amendment Request will not be approved by the NRC before this date, Note @ has been deleted. As such, these changes are administrative.

A03 CTS 3.8.1.1 ACTION c applies when one offsite circuit and one diesel generator (DG) are inoperable. In this condition, one or more required electrical boards may be de-energized. CTS 3.8.2.1 provides an ACTION for a de-energized required electrical board. ITS 3.8.1 ACTION ~~F~~ E Note in the Required Actions column states, "Enter applicable Conditions and Required Action of LCO 3.8.9, "Distribution System - Operating," when Condition ~~F~~ E is entered with no AC power source to ~~any train~~ 6.9 kV Shutdown Board 1A-A [2A-A for Unit 2] or 1B-B [2B-B for Unit 2]." This changes the CTS by specifically requiring the compensatory actions for Distribution System - Operating to be taken, if a distribution train is made inoperable by inoperable AC Sources.

This change is acceptable because no changes are made to CTS requirements. CTS 3.0.1 requires the associated ACTION requirements to be met when an LCO is not met. With the addition of ITS LCO 3.0.6, an exception to ITS LCO 3.0.2 (CTS 3.0.1) was created, whereby ACTION requirements associated with an unmet LCO are not required to be met. Therefore, in the event AC Sources are inoperable such that a distribution subsystem is de-energized, ITS LCO 3.0.6 would allow taking only the AC Sources ACTIONS; taking exception to complying with the Distribution System ACTIONS. Since the AC Sources ACTIONS may not be sufficiently conservative in the event of an entire train without power, specific direction to take appropriate ACTIONS for the Distribution System is added (ITS 3.8.1, Note to ACTION ~~F~~ E) for the condition of no power for 6.9 kV Shutdown Board 1A-A [2A-A for Unit 2] or 1B-B [2B-B for Unit 2] ~~a train~~. This format and construction implements the existing treatment of this condition within the framework of the ITS methods. This change is designated as administrative because it does not result in a technical change to the CTS.

A04 CTS 3.8.1.1 does not contain an ACTION for multiple offsite circuits and DGs inoperable. Having multiple offsite circuits and DGs inoperable requires entering CTS LCO 3.0.3. ITS 3.8.1 ACTION ~~L~~ H requires entering LCO 3.0.3 immediately, if two offsite circuits are inoperable concurrent with one or more inoperable Train A or Train B DG(s). ITS 3.8.1 ACTION ~~M~~ I requires entering LCO 3.0.3 immediately, if one offsite circuit is inoperable concurrent with one or more inoperable Train A and Train B DGs. This changes the CTS by adding specific ACTIONS requiring entry into LCO 3.0.3.

DISCUSSION OF CHANGES
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specific CTS DG loading requirement with a statement that DG loadings may include gradual loading as recommended by the manufacturer. This change is consistent with the recommendations of Generic Letter (GL) 93-05, "Line- Item Technical Specifications Improvements to Reduce Surveillance Requirements for Testing During Power Operation." GL 93-05, Section 10.1, states that DGs "should be loaded in accordance with vendor recommendations for all test purposes other than the refueling outage LOOP tests." The change is acceptable, because it will ensure the DGs will continue to be operated consistent with manufacturer recommendations. This change is designated as administrative, because it does not result in a technical change to the CTS.

A07 CTS 4.8.1.1.2.d.5 requires verification that on an ESF actuation test signal (without loss of offsite power), each DG starts and operates for at least 5 minutes. ITS SR 3.8.1.12 requires a similar test, but does not specify that the DG auto-start on an ESF actuation test signal is "without loss of offsite power." This changes the CTS by not specifying the DG auto-start on an ESF actuation test signal is without a loss of offsite power signal.

The purpose of CTS 4.8.1.1.2.d.5 is to demonstrate that each DG automatically starts on an ESF actuation test signal. The requirements of this Surveillance are retained in the ITS as SR 3.8.1.12. The purpose of CTS 4.8.1.1.2.d.6.b) is to verify that each DG starts on a loss of offsite power concurrent with an ESF actuation test signal. The requirements of this Surveillance are retained in the ITS as SR 3.8.1.18. This change is acceptable, because it is understood that the CTS 4.8.1.1.2.d.5 required DG start on an ESF actuation test signal is without a loss of offsite power signal. Therefore, it is unnecessary to provide this information in ITS SR 3.8.1.12. This change is designated as administrative, because it does not result in a technical change to the CTS.

A08 CTS 3.0.5 states that it is not applicable in MODE 5 or 6. CTS 3.0.5 has been incorporated into the ACTIONS of ITS 3.8.1. This changes the CTS by incorporating the allowances of CTS 3.0.5 in ITS 3.8.1.

This change is acceptable because ITS 3.8.1 is only applicable in MODES 1, 2, 3, and 4. Therefore, the statement in CTS 3.0.5, that states that the Specification is not applicable in MODE 5 or 6, is no longer necessary and is deleted. This change is designated as administrative, because it does not result in technical changes to the CTS.

<u>MORE RESTRICTIVE CHANGES</u>

M01 CTS 3.8.1.1 ACTION d specifies the compensatory actions for two inoperable offsite circuits. The action requires restoration of at least one of the offsite sources within 24 hours, and if it is not restored within the allowed time, the unit is required to be in at least HOT STANDBY within the next 6 hours. ITS 3.8.1 ACTION ~~E~~ D requires restoration of at least one offsite circuit to OPERABLE status within 24 hours, otherwise ITS 3.8.1 ACTION ~~K~~ G requires the unit to be in MODE 3 within 6 hours and MODE 5 within 36 hours. This changes the CTS by adding the requirement to be in MODE 5 within 36 hours.

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ITS 3.8.1, AC SOURCES - OPERATING

LA06 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.8.1.1.2.g.1 requires verification of each DG's capability to reject a load of greater than or equal to 600 kW while maintaining voltage and frequency within specified ranges. ITS SR 3.8.1.9 requires a similar verification, but does not specify the value of the single largest post-accident load to reject. This changes the CTS by moving the detail of the single largest load to the ITS Bases.

The removal of these details related to system design from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS retains the requirement to verify that each DG is capable of maintaining voltage and frequency within specified ranges upon reject of the single largest post-accident load. The removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change, because information relating to system design is being removed from the Technical Specifications.

<u>LESS RESTRICTIVE CHANGES</u>

L01 CTS 3.8.1.1 ACTION a provides actions for one inoperable offsite circuit and allows 72 hours to restore the inoperable offsite circuit to OPERABLE status before requiring the unit to be shut down and cooled down. ~~CTS 3.8.1.1 ACTION b provides actions for one or both DGs in a train inoperable and allows 7 days to restore the inoperable DG(s) to OPERABLE status before requiring the unit to be shut down and cooled down.~~ CTS 3.8.1.1 ACTION c provides actions for one inoperable offsite circuit and one inoperable DG and allows 12 hours to restore at least one of the inoperable AC sources to OPERABLE status before requiring the unit to be shut down and cooled down. ~~CTS 3.8.1.1 ACTION d provides actions for two inoperable offsite circuits and allows 24 hours to restore at least one of the inoperable offsite circuits to OPERABLE status before requiring the unit to be shut down. CTS 3.8.1.1 ACTION e provides actions for one or two inoperable DGs in both trains and allows 2 hours to restore the inoperable DG(s) in one train to OPERABLE status before requiring the unit to be shut down and cooled down. CTS 3.8.1.1 ACTION f states LCO 3.0.4.b is not applicable to DGs. The ITS ACTIONS are modified by a Note stating LCO 3.0.4.b is not applicable to DGs.~~ ITS 3.8.1 ACTION A provides actions for one inoperable offsite circuit for reasons other than Condition C, and allows 72 hours to restore the inoperable offsite power source to OPERABLE status. ~~ITS 3.8.1 ACTION B provides actions for one inoperable associated unit's DG or both DGs in one train inoperable, and allows 7 days to restore the inoperable DG(s) to OPERABLE status.~~ ITS 3.8.1 ACTION C provides actions for one offsite circuit inoperable solely due to an inoperable offsite power source to an opposite unit's 6.9 kV Shutdown Board, and requires performance of SR 3.8.1.1 for the OPERABLE offsite circuit in 1 hour and once per 8 hours thereafter, declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours, and restoration of the offsite circuit to OPERABLE status in 7 days. ~~requires declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours. Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the offsite circuit cannot be~~

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ITS 3.8.1, AC SOURCES - OPERATING

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~~restored to an OPERABLE status. ITS 3.8.1 ACTION D requires declaration that the affected required feature(s) with no OPERABLE DG are inoperable when its redundant required feature is inoperable in 4 hours. Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the DG cannot be restored to an OPERABLE status. ITS 3.8.1 ACTION E requires declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 12 hours. Otherwise, one offsite circuit is required to be restored to an OPERABLE status in 24 hours.~~ ITS 3.8.1 ACTION ~~F~~ E provides actions for one associated unit□s offsite circuit inoperable concurrent with one associated unit□s DG inoperable, and allows 12 hours to restore one of the inoperable AC sources to OPERABLE status. ~~ITS ACTION G requires declaring the required feature(s) on the opposite unit□s 6.9 □V Shutdown Board with no offsite power available inoperable in 7 days. ITS ACTION H requires declaring the required feature(s) on the opposite unit□s 6.9 □V~~

□or th□ □ondition of on□ off□it□ □ir□uit ino□□ra□□□ □o□□□du□ to an ino□□ra□□□ □ow□r □our□□ to an o□□o□it□ unit□ 6.9 kV Shutdown Board □on□urr□nt with an ino□□ra□□□ □□ □□i iar to □□S □.□.1.1 A□ton □□□□S □.□.1 □ondition□B and □ woud □□ □nt□r□d □on□urr□nt□□. □□S □.□.1 A□□□□ □S B and □ r□□uir□□in □art□r□□toration of th□ ino□□ra□□□ A□ □our□□□ □ri□ut and □□□to an □□□□AB□□ □tatu□in □da□□. This changes the CTS by providing a new ITS 3.8.1 ACTION C to allow 7 days to restore an inoperable offsite circuit to an OPERABLE status, if the offsite circuit is inoperable solely due to an inoperable power source to an opposite unit's Shutdown Board (e.g., for Unit 1 an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B is inoperable).

~~more Train B DGs inoperable and allows 2 hours to restore one Train of DGs to OPERABLE status. ITS 3.8.1 ACTION K requires the unit to be shut down and cooled down if a Required Action and associated Completion Time of Condition A, B, E, F, I, or □is not met. These changes to the CTS provide separate ACTIONS to declare the required features powered from the opposite unit□s Class 1E AC Electrical Power Distribution System inoperable as the remedial measures for the inoperable AC sources.~~

The purpose of the CTS 3.8.1.1 ACTIONS is to limit the time the unit can remain operating with different combinations of inoperable offsite circuits and DGs. The onsite Class 1E AC Electrical Distribution System supplies electrical power to two power trains shared between the two units. The core cooling and containment cooling system loads (e.g., Safety In□ection (SI) pumps, Auxiliary Feedwater (AF□) pumps, Residual Heat Removal (RHR) pumps, Centrifugal Charging pumps, Containment Spray pumps, and Air Return System (ARS) fans) are uniti□ed to the respective unit□s 6.9 □V Shutdown Boards. However, some safety-related systems (e.g., Essential Raw Cooling □ ater (ERC□), Component Cooling (CCS), Emergency Gas Treatment (EGTS), Auxiliary Building Gas Treatment, (ABGTS), Control Room Emergency Ventilation (CREVs), and Control Room HVAC (CRACS)) are shared between the units. The AC sources for the shared loads are distributed across both unit□s shutdown boards. Therefore, two qualified offsite circuits and four DGs capable of supplying the onsite Class 1E AC Electrical Distribution System are required to be OPERABLE. However, the impacts of an inoperable offsite power source or DG on an opposite unit□s 6.9 □V Shutdown Board differ from the impacts of an inoperable offsite power source or DG on an associated unit□s 6.9 □V Shutdown Board, due to the loads powered from the respective board.

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ITS 3.8.1, AC SOURCES - OPERATING

For example, with SQN Unit 1 in MODES 1, 2, 3, and 4, 6.9 kV Shutdown Boards 1A-A and 1B-B, and the associated offsite power sources and DGs are required to be OPERABLE to provide electrical power to the ESF systems powered from those boards. Additionally, 6.9 kV Shutdown Boards 2A-A and 2B-B and associated offsite power sources and DGs are required to be OPERABLE to provide electrical power to any required shared components required for Unit 1. If it is necessary to de-energize 6.9 kV Shutdown Board 2A-A or 2B-B, the redundant shared systems can be aligned prior to de-energizing the shutdown board to ensure no loss of safety function will occur. Upon removing the shutdown board from service, the applicable Conditions and Required Actions for the affected shared system LCOs will be entered and tracked and either the offsite power source or the DG is required to be restored to an OPERABLE status in 7 days.

In the event of an unplanned loss of an offsite power source to an opposite unit's 6.9 kV Shutdown Board, the proposed actions require declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours (and restoration of the offsite circuit to OPERABLE status in 7 days). ~~Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the offsite power source cannot be restored to an OPERABLE status. Similarly,~~ in ~~the event of an unplanned loss of a DG to an opposite unit 6.9 kV Shutdown Board~~, the proposed actions require declaration that the affected required feature(s) with no OPERABLE DG are inoperable when its redundant required feature is inoperable in 4 hours (and restoration of the DG to OPERABLE status in 7 days). ~~Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the DG cannot be restored to an OPERABLE status.~~ In both cases, the ACTIONS require performance of SR 3.8.1.1 for the required OPERABLE offsite circuit(s) within 1 hour and once per 8 hours thereafter.

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The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. These changes are acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation, while providing time to repair inoperable features. If the necessary repairs cannot be made within the established Completion Time, ITS 3.8.1 ACTION G is entered and the unit is required to be shut down to MODE 3 in 6 hours and MODE 5 in 36 hours. ~~the associated required features are declared inoperable and the applicable Conditions and Required Actions for the affected shared system LCOs are entered and tracked~~. This change is acceptable because the provided ACTIONS effect restoration of the opposite unit's offsite circuit ~~AC sources~~ commensurate with the importance of maintaining these offsite circuit ~~AC sources~~ capable of supporting the associated unit's required feature(s). This change is designated as less restrictive, because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

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L02 *(Category 4 – Relaxation of Required Action)* CTS 3.8.1.1 ACTION b requires with DG set(s) 1A-A and/or 2A-A or 1B-B and/or 2B-B inoperable, determination that OPERABLE DGs are not inoperable due to common cause failure or through performance of CTS 4.8.1.1.2.a.4. This ACTION is modified by Note □, requiring completion of the required action once the ACTION is entered. ITS 3.8.1

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ACTION B requires that with ~~an associated unit's DG inoperable (or with both~~ any DGs in a train inoperable~~)~~, determination that OPERABLE DGs are not inoperable due to common cause failure or through performance of SR 3.8.1.2. However, ITS does not specify completion of the ACTIONS if the Condition is exited. This changes the CTS by removing a requirement to complete the ACTIONS once the ACTION is entered.

The purpose of CTS 3.8.1.1 ACTION b is to provide compensatory measures to be taken in response to inoperable DG set(s), including demonstration that the OPERABLE DGs are not inoperable. The Note requiring completion of the actions to verify the remaining DGs are OPERABLE once the ACTION is entered was added to the CTS with License Amendments 205 (Unit 1) and 195 (Unit 2), dated June 29, 1995 (ADAMS Accession No. ML013320017). TVA license amendment request TS 94-19, submitted on April 6, 1995, stated that the addition of this Note was being made to align with the requirements contained in NUREG-1431, LCO 3.8.1. On April 7, 1995, NUREG-1431, Rev. 1 was issued. The Note modifying LCO 3.8.1 ACTION B that required completion of Required Actions B.3.1 and B.3.2 (demonstration of DG OPERABILITY) was removed from NUREG-1431 in Revision 1. The requirement to complete the actions to demonstrate the OPERABLE DGs are not inoperable is an exception to ITS LCO 3.0.2 (CTS LCO 3.0.2). Completing the ACTIONS to verify the OPERABILITY of the remaining OPERABLE DGs is not required to restore compliance with the LCO. This change is acceptable because completion of the ACTIONS to evaluate the possibility of a DG common cause failure will be tracked as an item in the corrective action program. This change is designated as less restrictive, because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L03 *(Category 4 – Relaxation of Required Action)* CTS 3.8.1.1 ACTION b provides actions for one or both DGs in a train inoperable. ACTION b is modified by Note □stating that no more than one DG may be made simultaneously inoperable on a pre-planned basis for maintenance, modifications, or surveillance testing. ITS SR 3.8.1.3 verifies each DG can be started, synchronized, loaded, and operated for at least 60 minutes. SR 3.8.1.3 is modified by Note 3 stating the Surveillance shall be conducted on only one DG at a time. This changes the CTS by deleting the restriction for not making more than one DG simultaneously inoperable on a pre-planned basis, with the exception of the performance of SR 3.8.1.3.

The purpose of CTS 3.8.1.1 ACTION b is to provide required actions for one or both DGs in a train inoperable. The purpose of Note □is to ensure pre-planned activities that may result in an inoperable DG (i.e., maintenance, modifications, or surveillance testing) are not performed on both DGs in a train at the same time. The proposed required actions do not include the restriction for limiting pre-planned activities to one DG at a time. The control of pre-planned maintenance, modifications, or surveillance testing is an issue for procedures and scheduling. This change is designated as less restrictive, because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L04 *(Category 3 – Relaxation of Completion Time)* CTS 3.8.1.1 ACTION b requires, in part, with one or both DG(s) in a train inoperable to demonstrate the

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OPERABILITY of the remaining DGs by performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours. CTS 3.8.1.1 ACTION c requires, in part, with one offsite circuit and one DG inoperable to demonstrate the OPERABILITY of the remaining DGs by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours. ITS 3.8.1 ACTION B requires with one or both DG(s) in a train inoperable to perform SR 3.8.1.2 for OPERABLE DGs within 24 hours. This changes the CTS by extending the time allowed to demonstrate the OPERABILITY of the OPERABLE DGs with one offsite circuit and one DG inoperable from 8 hours to 24 hours.

The purpose of the CTS 3.8.1.1 ACTIONS b and c is to ensure that the OPERABLE DGs are not inoperable as a result of a similar, yet undetected, failure (i.e., due to a common mode failure). CTS 3.0.1 states that upon failure to meet an LCO, the associated ACTION requirements shall be met. In the instance of one offsite circuit and one DG inoperable, the condition of one inoperable DG also exists. Therefore, in addition to meeting the requirements of CTS 3.8.1.1 ACTION c, the requirements of CTS 3.8.1.1 ACTION b are required to be met. However, this results in conflicting time requirements for performing CTS 4.8.1.1.2.a.4 on the OPERABLE DGs. A 24 hour Completion Time for performing DG common mode failure checks is consistent with the guidance provided in Generic Letter 84-15. This change is acceptable, since the vast majority of DG start tests demonstrate that the DG is OPERABLE. This change is designated as less restrictive, because additional time is allowed to demonstrate the OPERABILITY of the OPERABLE DGs for the condition of one offsite circuit and one DG inoperable under the ITS than under the CTS.

L05 *(Category 4 – Relaxation of Required Action)* CTS 3.8.1.1 ACTION d states, in part, with two offsite circuits inoperable demonstrate the OPERABILITY of the DGs by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours, unless the DGs are already operating. CTS 4.8.1.1.2.a.4 requires verification that each DG starts and achieves voltage and frequency within established ranges within 10 seconds. ITS 3.8.1 ACTION D ~~E~~ does not contain this requirement. This changes the CTS by deleting the requirement to test each DG when two offsite circuits are inoperable.

The purpose of the CTS 4.8.1.1.2.a.4 requirement in CTS 3.8.1.1 ACTION c is to ensure that the DGs are OPERABLE in the case of a loss of offsite power. Since the DGs are tested on monthly basis, there is no reason to suspect that they would not perform their intended safety function. Furthermore, the inoperability of two offsite circuits does not affect the OPERABILITY of the DGs, since the DGs are independent of the offsite circuits. Therefore, there is no need to subject the DGs to additional testing. This change is designated as less restrictive because the CTS requirement to perform testing on the DGs when both offsite circuits are inoperable is not being retained in the ITS.

L06 *(Category 8 – Deletion of Surveillance Requirement Shutdown Performance Requirements)* CTS 4.8.1.1.1.b requires the demonstration of a manual and automatic transfer of the power supply to each 6.9 kV Unit Board from the normal to alternate once per 18 months. Note □ specifies that the Surveillance shall not be performed on the associated unit's 6.9 kV Unit Boards in MODES 1 and 2. This test has been incorporated in ITS SR 3.8.1.8. ITS SR 3.8.1.8 includes a

DISCUSSION OF CHANGES
ITS 3.8.1, AC SOURCES - OPERATING

L19 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.8.1.1.2.g.4 requires demonstration of a DG hot restart and verification following energization that steady state voltage and frequency are maintained ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz during this test. ITS SR 3.8.1.15 requires demonstration of a DG hot restart and requires verification that within 10 seconds, voltage ≥ 6800 V and frequency ≥ 58.8 Hz, and steady state voltage ≥ 6800 V and ≤ 7260 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz. This changes the CTS by specifying a minimum voltage and frequency limit to be achieved within 10 seconds instead of a voltage and frequency range.

The purpose of CTS 4.8.1.1.2.g.4 is to test the ability of each DG to restart on an accident signal under hot conditions and achieve the appropriate voltage and frequency. This changes the CTS by specifying a minimum voltage and frequency limit to be achieved within 10 seconds instead of a voltage and frequency range. This effectively allows the upper voltage and frequency limits to be exceeded during DG acceleration and stabilization. As stated above, the proposed Surveillance will require the establishment of the minimum frequency (58.8 Hz) and voltage (6800 V) within the given time frame. The accident analyses require that the DGs be capable of being loaded within 10 seconds. This can be accomplished at 58.8 Hz and 6800 V. While the upper level requirement regarding the frequency and voltage acceptance criterion is being eliminated, the requirement to establish a steady state voltage and frequency has been retained. Verification that the minimum voltage and frequency limits are met within the proper time is sufficient to ensure the DG can perform its design function. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L20 *(Category 3 – Relaxation of Completion Time)* CTS 3.0.5 allows a system, subsystem, train, component, or device to be considered OPERABLE with an inoperable emergency or normal power source provided its corresponding normal or emergency power source is OPERABLE and its redundant system(s), subsystem(s), train(s), component(s), and device(s) are OPERABLE. CTS 3.0.5 requires a unit shut down to start within two hours with these requirements not met. CTS 3.0.5 also provides an explicit time period to be in HOT STANDBY (MODE 3), HOT SHUTDOWN (MODE 4), and COLD SHUTDOWN (MODE 5). ITS 3.8.1 ACTION A (one associated unit offsite source inoperable) and ACTION C (one opposite unit offsite source inoperable) require ~~requires~~ the declaration of required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable. The Completion Time allowed by Required Actions A.2 and C.2 ~~the Required Action A.2~~ is 24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s). ITS 3.8.1 ACTION B (one ~~associated unit DG~~ or both DGs in a train inoperable) requires the declaration of required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable. The Completion Time allowed by the Required Action B.2 is 4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s). ITS 3.8.1 ACTION D ~~E~~ (two offsite circuits inoperable) requires the declaration of required feature(s) inoperable when its redundant required feature(s) is inoperable. The Completion Time allowed by the Required Action D ~~E~~.1 is 12 hours from discovery of Condition D ~~E~~ concurrent with inoperability of redundant required features. This changes the CTS by allowing more time to restore inoperable equipment and

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replaces the explicit times to be in MODE 3, MODE 4, and MODE 5 with a requirement to declare the affected features inoperable (and thus to take the ACTIONS required by the individual system LCO, including possible shut down of the unit).

This change is acceptable because the Completion Time is consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the allowed Completion Time. This change allows more time to restore inoperable equipment when required AC Sources are inoperable concurrent with inoperabilities of redundant required features and deletes the explicit times to be in MODE 3, MODE 4, and MODE 5. By declaring the affected supported equipment inoperable, and as a result, taking the Technical Specifications ACTIONS of the affected supported equipment, unit operation is maintained within the bounds of the Technical Specifications and approved ACTIONS. Since the AC Sources support the OPERABILITY of the affected equipment, it is appropriate that the proper action, in this condition, would be to declare that affected supported equipment inoperable. CTS 3.0.5 is overly restrictive, in that if the associated supported equipment were inoperable for other reasons and the redundant equipment was also inoperable, a restoration time is sometimes provided, in other CTS sections. The 24 hour Completion Time when one associated unit offsite circuit is inoperable is acceptable because: a) the redundant counterpart to the inoperable required feature is still OPERABLE although single failure protection may have been lost; b) the capacity and capability of the remaining AC Sources is still available; c) a reasonable time for repairs is provided for restoration before the unit is subjected to transients associated with shut down; and d) the low probability of a DBA occurring during this period. The 12 hour Completion Time when two offsite circuits are inoperable is acceptable because Regulatory Guide 1.93 allows a Completion Time of 24 hours for two offsite circuits inoperable. When a concurrent redundant required function is inoperable, a shorter Completion Time of 12 hours is appropriate. The 4 hour Completion Time with one ~~associated unit~~ DG inoperable takes into account the component OPERABILITY of the redundant counterpart to the inoperable required feature and is considered to be less of a risk than subjecting the unit to transients associated with shut down. Additionally, the 4 hour Completion Time takes into account the capacity and capability of the remaining AC Sources, reasonable time for repairs, and low probability of a DBA occurring during this period. This change is designated as less restrictive because additional time is allowed to restore equipment to OPERABLE status and the change deletes the explicit times to reach MODE 3, MODE 4, and MODE 5.

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ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
ACTION a		A.3	Restore ~~required~~ offsite circuit to OPERABLE status.	72 hours	4
ACTIONS b, c, and e	B. ~~One required DG inoperable.~~ 1A-A INSERT 1	B.1	Perform SR 3.8.1.1 for the ~~required~~ offsite circuit~~(s)~~.	1 hour AND Once per 8 hours thereafter	4 5
		AND			
DOC L20		B.2	Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)	
		AND			
ACTION b		B.3.1	Determine OPERABLE DG~~(s)~~ ~~is~~ are not inoperable due to common cause failure.	24 hours	4 1
		OR			
ACTION b ACTION c		B.3.2	Perform SR 3.8.1.2 for OPERABLE DG~~(s)~~.	24 hours	4 1
		AND			
ACTION b		B.4	Restore ~~required~~ DG(s) to OPERABLE status.	~~72 hours~~ 7 days	4 1

INSERT 2 5

~~5~~ 4

INSERT 1

~~DOC L01~~

~~OR~~

~~DG 1B-B inoperable.~~

~~OR~~

~~DGs 1A-A and 2A-A inoperable.~~

~~OR~~

~~DGs 1B-B and 2B-B inoperable.~~

One or more Train A DG(s) inoperable.

OR

One or more Train B DG(s) inoperable.

5

INSERT 2

DOC L01

C. One offsite circuit inoperable solely due to an offsite power source to 6.9 □V Shutdown Board 2A-A or 2B-B inoperable.	C.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit.	1 hour AND Once per 8 hours thereafter
	AND	
	C.2 Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable.	24 hours from discovery of no offsite power to 6.9 □V Shutdown Board 2A-A or 2B-B concurrent with inoperability of redundant required feature(s)
	AND	
	C.3 ~~Declare associated required feature(s) inoperable.~~ Restore offsite circuit to OPERABLE status.	7 days

DOC L20

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Insert Page 3.8.1-2a

5

INSERT 2 (Continued)

D. DG 2A-A or 2B-B inoperable.	D.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit(s).	1 hour AND Once per 8 hours thereafter
	AND	
	D.2 Declare required feature(s) supported by the inoperable DG inoperable when its redundant required feature(s) is inoperable.	4 hours from discovery of Condition D concurrent with inoperability of redundant required feature(s)
	AND	
	D.3.1 Determine OPERABLE DGs are not inoperable due to common cause failure.	24 hours
	OR	
	D.3.2 Perform SR 3.8.1.2 for OPERABLE DGs.	24 hours
	AND	
	D.4 Declare associated required feature(s) inoperable.	7 days

CTS

AC Sources - Operating
3.8.1

ACTIONS (continued)

CONDITION	RE□UIRED ACTION	COMPLETION TIME
ACTION d DOC L20 D ~~C~~ E. Two ~~required~~ offsite circuits inoperable.	D ~~C~~ E.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable.	12 hours from discovery of Condition ~~C~~ E D concurrent with inoperability of redundant required features 5
ACTION d	AND	
	D ~~C~~ E.2 Restore one ~~required~~ offsite circuit to OPERABLE status.	24 hours 5 4
ACTION c DOC A03 E ~~D~~ F. One ~~required~~ offsite circuit inoperable for reasons other than Condition C.	--------------------NOTE------------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition ~~D~~ F is entered with no AC power source to ~~any train~~ 6.9 □V Shutdown Board 1A-A or 1B-B. ---	E 5 4
AND		
ACTION c ~~One required~~ DG 1A-A or 1B-B inoperable.	E ~~D~~ F.1 Restore ~~required~~ offsite circuit to OPERABLE status.	12 hours
ACTION c	OR	
~~INSERT 3~~	E ~~D~~ F.2 Restore ~~required~~ DG to OPERABLE status.	12 hours 5 4
ACTION e F ~~E~~ □. ~~Two required~~ One or more Train A DG~~s~~(s) inoperable. INSERT 4	F ~~E~~ □.1 Restore one ~~required~~ train of DGs to OPERABLE status.	2 hours 5

5

~~5~~ ~~**INSERT 3**~~

~~DOC L01~~	G. One offsite circuit inoperable solely due to an offsite power source to 6.9 □V Shutdown Board 2A-A or 2B-B inoperable. AND DG 1A-A or 1B-B inoperable.	G.1	Declare required feature(s) on associated Unit 2 6.9 □V Shutdown Board inoperable.	7 days
~~DOC L01~~	H. One offsite circuit inoperable for reasons other than Condition C. AND DG 2A-A or 2B-B inoperable.	H.1	Declare required feature(s) on associated Unit 2 6.9 □V Shutdown Board inoperable.	7 days

Insert Page 3.8.1-3a

5 ~~**INSERT 3 (continued)**~~

~~DOC L01~~

I. One offsite circuit inoperable solely due to an offsite power source to 6.9 □V Shutdown Board 2A-A or 2B-B inoperable. AND DG 2A-A or 2B-B inoperable.	--------------------NOTE------------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition I is entered with no AC power source to 6.9 □V Shutdown Board 2A-A or 2B-B. --- I.1 Restore offsite circuit to OPERABLE status. OR I.2 Restore DG to OPERABLE status.	 7 days 7 days

5 **INSERT 4**

ACTION e

AND

One or more Train B DG(s) inoperable.

Insert Page 3.8.1-3b

CTS

AC Sources - Operating
3.8.1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~-----REVIEWER'S NOTE----- This Condition may be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads following a loss of offsite power independent of, or coincident with, a Design Basis Event.~~ ~~F. [One required] [automatic load sequencer] inoperable.~~	~~F.1 Restore [required] [automatic load sequencer] to OPERABLE status.~~	~~[12 hours]~~ 3
~~G~~ ~~K~~ G. Required Action and associated Completion Time of Condition ~~A, B, C, D,~~ E, or ~~F~~ not met. A, B, C, D, E, or F DOC M01	~~G~~ ~~K~~ G.1 Be in MODE 3. AND ~~G~~ ~~K~~ G.2 Be in MODE 5.	6 hours 36 hours 3 5
INSERT 5 ~~H. Three or more [required] AC sources inoperable.~~	~~H.1 Enter LCO 3.0.3.~~	~~Immediately~~ 5

ACTIONS a, b, c, d, e

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.8.1.1 4.8.1.1.1.a SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each ~~[required]~~ offsite circuit.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 4 6

6

5 **INSERT 5**

DOC A04	~~L.~~ H Two offsite circuits inoperable. AND One or more Train A DG(s) inoperable. OR One or more Train B DG(s) inoperable.	~~L~~.1 H Enter LCO 3.0.3.	Immediately
DOC A04	~~M.~~ I One offsite circuit inoperable. AND One or more Train A DG(s) inoperable. AND One or more Train B DG(s) inoperable.	~~M~~.1 I Enter LCO 3.0.3.	Immediately

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ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
ACTION a		A.3	Restore ~~required~~ offsite circuit to OPERABLE status.	72 hours	4
ACTIONS b, c, and e	B. ~~One required DG inoperable.~~ ~~2A-A~~ INSERT 1	B.1	Perform SR 3.8.1.1 for the ~~required~~ offsite circuit~~(s)~~.	1 hour AND Once per 8 hours thereafter	4 ~~5~~
		AND			
DOC L20		B.2	Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)	
		AND			
ACTION b		B.3.1	Determine OPERABLE DG~~(s)~~ ~~is~~ are not inoperable due to common cause failure.	24 hours	4 1
		OR			
ACTION b ACTION c		B.3.2	Perform SR 3.8.1.2 for OPERABLE DG~~(s)~~.	24 hours	4 1
		AND			
ACTION b		B.4	Restore ~~required~~ DG(s) to OPERABLE status.	~~72 hours~~ 7 days	4 1

INSERT 2 5

5 4

INSERT 1

~~DOC L01~~

~~OR~~

~~DG 2B-B inoperable.~~

~~OR~~

~~DGs 1A-A and 2A-A inoperable.~~

One or more Train A DG(s) inoperable.

OR

One or more Train B DG(s) inoperable.

~~OR~~

~~DGs 1B-B and 2B-B inoperable.~~

5

INSERT 2

DOC L01

DOC L20

VKG027

C. One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 1A-A or 1B-B inoperable.	C.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit. AND C.2 Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable. AND C.3 ~~Declare associated required feature(s) inoperable.~~ Restore offsite circuit to OPERABLE status.	1 hour AND Once per 8 hours thereafter 24 hours from discovery of no offsite power to 6.9 kV Shutdown Board 1A-A or 1B-B concurrent with inoperability of redundant required feature(s) 7 days

Insert Page 3.8.1-2a

5

INSERT 2 (Continued)

D. DG 1A-A or 1B-B inoperable.	D.1	Perform SR 3.8.1.1 for OPERABLE offsite circuit(s).	1 hour <u>AND</u> Once per 8 hours thereafter
	<u>AND</u>		
	D.2	Declare required feature(s) supported by the inoperable DG inoperable when its redundant required feature(s) is inoperable.	4 hours from discovery of Condition D concurrent with inoperability of redundant required feature(s)
	<u>AND</u>		
	D.3.1	Determine OPERABLE DGs are not inoperable due to common cause failure.	24 hours
	<u>OR</u>		
	D.3.2	Perform SR 3.8.1.2 for OPERABLE DGs.	24 hours
	<u>AND</u>		
	D.4	Declare associated required feature(s) inoperable.	7 days

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ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION d DOC L20	~~C~~ E D. Two ~~required~~ offsite circuits inoperable.	~~C~~ E D.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable.	12 hours from discovery of Condition ~~C~~ ~~E~~ D concurrent with inoperability of redundant required features	5
		AND		
ACTION d		~~C~~ E D.2 Restore one ~~required~~ offsite circuit to OPERABLE status.	24 hours	5 4
ACTION c DOC A03	~~D~~ ~~F~~ E. One ~~required~~ offsite circuit inoperable for reasons other than Condition C. AND ~~One required~~ DG 2A-A or 2B-B inoperable.	--------------------NOTE-------------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition ~~D~~ ~~F~~ E is entered with no AC power source to ~~any train~~ 6.9 kV Shutdown Board 2A-A or 2B-B. --- ~~D~~ F E.1 Restore ~~required~~ offsite circuit to OPERABLE status.	12 hours	5 4
		OR		
ACTION c	INSERT 3	~~D~~ ~~F~~ E.2 Restore ~~required~~ DG to OPERABLE status.	12 hours	5 4
ACTION e	~~E~~ F. ~~Two required~~ One or more Train A DG(s) ~~s~~ inoperable. INSERT 4	~~E~~ F.1 Restore one ~~required~~ train of DGs to OPERABLE status.	2 hours	5
				5

~~5~~ ~~**INSERT 3**~~

~~DOC L01~~	G. One offsite circuit inoperable solely due to an offsite power source to 6.9 □V Shutdown Board 1A-A or 1B-B inoperable. <u>AND</u> DG 2A-A or 2B-B inoperable.	G.1	Declare required feature(s) on associated Unit 1 6.9 □V Shutdown Board inoperable.	7 days
~~DOC L01~~	H. One offsite circuit inoperable for reasons other than Condition C. <u>AND</u> DG 1A-A or 1B-B inoperable.	H.1	Declare required feature(s) on associated Unit 1 6.9 □V Shutdown Board inoperable.	7 days

Insert Page 3.8.1-3a

5 ~~**INSERT 3 (continued)**~~

~~DOC L01~~ I. One offsite circuit inoperable solely due to an offsite power source to 6.9 □V Shutdown Board 1A-A or 1B-B inoperable. AND DG 1A-A or 1B-B inoperable.	--------------------NOTE------------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition I is entered with no AC power source to 6.9 □V Shutdown Board 1A-A or 1B-B. --- I.1 Restore offsite circuit to OPERABLE status. OR I.2 Restore DG to OPERABLE status.	 7 days 7 days

5 **INSERT 4**

ACTION e

AND

One or more Train B DG(s) inoperable.

~~Insert Page 3.8.1-3b~~

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~-----REVIEWER'S NOTE----- This Condition may be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads following a loss of offsite power independent of, or coincident with, a Design Basis Event.~~ ~~------------------------------------~~ ~~F. [One required] [automatic load sequencer] inoperable.~~	~~F.1 Restore [required] [automatic load sequencer] to OPERABLE status.~~	~~[12 hours]~~ 3
G ACTIONS a, b, c, d, e ~~G~~ K G. Required Action and associated Completion Time of Condition A, B, C, D, E, or F ~~A, B, C, D~~, E, ~~or F~~ F, I, not met. DOC M01	~~G~~ K G.1 Be in MODE 3. AND ~~G~~ K G.2 Be in MODE 5.	6 hours 36 hours 3 5
INSERT 5 ~~H. Three or more [required] AC sources inoperable.~~	~~H.1 Enter LCO 3.0.3.~~	~~Immediately~~ 5

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.8.1.1 4.8.1.1.1.a SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each ~~[required]~~ offsite circuit.	~~[7 days~~ 4 6 ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 6

5 **INSERT 5**

DOC A04	H ~~L~~. Two offsite circuits inoperable. AND One or more Train A DG(s) inoperable. OR One or more Train B DG(s) inoperable.	H ~~L~~.1 Enter LCO 3.0.3.	Immediately
DOC A04	I ~~M~~. One offsite circuit inoperable. AND One or more Train A DG(s) inoperable. AND One or more Train B DG(s) inoperable.	I ~~M~~.1 Enter LCO 3.0.3.	Immediately

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JUSTIFICATION FOR DEVIATIONS
ITS 3.8.1, AC SOURCES - OPERATING

1. Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. The punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

3. ISTS LCO 3.8.1.c and ISTS 3.8.1 ACTION F have been deleted since SQN Units 1 and 2 do not use load sequencers. Each load or load block is sequenced with the use of its associated time delay relay. Each major ESF component has individual time delay relays that operate individual components, not all ESF components. Thus, if a single time delay relay fails, only the individual component and the DG could be affected. Subsequent Conditions and Required Actions have been renumbered, as applicable. ISTS SR 3.8.1.11 (ITS SR 3.8.1.11), ISTS SR 3.8.1.12 (ITS SR 3.8.1.12), ISTS SR 3.8.1.18 (ITS SR 3.8.1.17), and ISTS SR 3.8.1.19 (ITS SR 3.8.1.18) have been revised to reflect the use of time delay relays.

4. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

5. ~~Changes were made to ISTS LCO 3.8.1 to ensure the appropriate AC power sources are OPERABLE during unit operation in MODES 1, 2, 3 and 4 to satisfy the design requirements. This modification was necessary due to shared systems between Units 1 and 2. This is an exception that is intended to allow taking the ACTIONS associated with inoperable shared equipment in lieu of requiring the opposite unit AC sources to be restored to OPERABLE status within a specified Completion Time. This exception is acceptable since, with the opposite unit equipment inoperable and the associated ACTIONS entered, the opposite unit AC Sources provide no additional assurance of meeting the safety criteria of the given unit's AC power sources.~~ INSERT JFD 5

   SR Notes associated with ISTS SR 3.8.1.8 (ITS SR 3.8.1.8), ISTS SR 3.8.1.9 (ITS SR 3.8.1.9), ISTS SR 3.8.1.10 (ITS SR 3.8.1.10), ISTS SR 3.8.1.11 (ITS SR 3.8.1.11), ISTS SR 3.8.1.12 (ITS SR 3.8.1.12), ISTS SR 3.8.1.13 (ITS SR 3.8.1.13), ISTS SR 3.8.1.14 (ITS SR 3.8.1.14), ISTS SR 3.8.1.16 (ITS SR 3.8.1.16), ISTS SR 3.8.1.18 (ITS SR 3.8.1.17), and ISTS SR 3.8.1.19 (ITS SR 3.8.1.18) have been revised to allow performance of the affected SR on opposite unit shutdown board or DGs when the given unit is in a restricted MODE.

6. ISTS SR 3.8.1.1 (ITS SR 3.8.1.1), ISTS SR 3.8.1.2 (ITS SR 3.8.1.2), ISTS SR 3.8.1.3 (ITS SR 3.8.1.3), ISTS SR 3.8.1.4 (ITS SR 3.8.1.4), ISTS SR 3.8.1.5 (ITS SR 3.8.1.5), ISTS SR 3.8.1.6 (ITS SR 3.8.1.6), ISTS SR 3.8.1.7 (ITS SR 3.8.1.7), ISTS SR 3.8.1.8 (ITS SR 3.8.1.8), ISTS SR 3.8.1.9 (ITS SR 3.8.1.9), ISTS SR 3.8.1.10 (ITS SR 3.8.1.10), ISTS SR 3.8.1.11 (ITS SR 3.8.1.11), ISTS SR 3.8.1.12 (ITS SR 3.8.1.12), ISTS SR 3.8.1.13 (ITS SR 3.8.1.13), ISTS SR 3.8.1.14 (ITS SR 3.8.1.14), ISTS SR 3.8.1.15 (ITS SR 3.8.1.15), ISTS SR 3.8.1.16 (ITS SR 3.8.1.16), ISTS SR 3.8.1.18 (ITS SR 3.8.1.17), ISTS SR 3.8.1.19 (ITS SR 3.8.1.18), and ISTS SR 3.8.1.20 (ITS SR 3.8.1.19) provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the

INSERT JFD 5

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VKG027

BASES

APPLICABILITY

The AC sources ~~and sequencers~~ are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that: 2

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients and

b. Adequate core cooling is provided and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

The AC power requirements for MODES 5 and 6 are covered in LCO 3.8.2, "AC Sources - Shutdown."

ACTIONS

A Note prohibits the application of LCO 3.0.4.b to an inoperable DG. There is an increased risk associated with entering a MODE or other specified condition in the Applicability with an inoperable DG and the provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance.

A.1

To ensure a highly reliable power source remains with one offsite circuit inoperable for reasons other than Condition C, it is necessary to verify the OPERABILITY of the remaining required offsite circuit on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action not met. However, if a second required circuit fails SR 3.8.1.1, the second offsite circuit is inoperable, and Condition ~~C~~ ~~E~~ D, for two offsite circuits inoperable, is entered. 5 5

~~REVIEWER'S NOTE~~ 6

~~The turbine driven auxiliary feedwater pump is only required to be considered a redundant required feature, and, therefore, required to be determined OPERABLE by this Required Action, if the design is such that the remaining OPERABLE motor or turbine driven auxiliary feedwater pump(s) is not by itself capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.~~

ACTIONS (continued)

A.3

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition A for a period that should not exceed 72 hours. With one offsite circuit inoperable, the reliability of the offsite system is degraded, and the potential for a loss of offsite power is increased, with attendant potential for a challenge to the unit safety systems. In this Condition, however, the remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the onsite Class 1E AC Electrical Power Distribution System. 1

The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

B.1

INSERT 9

To ensure a highly reliable power source remains with ~~an~~ inoperable ~~DG~~, it is necessary to verify the availability of the offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must then be entered. 5

~~-----REVIEWER'S NOTE-----~~ 6

~~The turbine driven auxiliary feedwater pump is only required to be considered a redundant required feature, and, therefore, required to be determined OPERABLE by this Required Action, if the design is such that the remaining OPERABLE motor or turbine driven auxiliary feedwater pump(s) is not by itself capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.~~

~~-----~~

B.2

Required Action B.2 is intended to provide assurance that a loss of offsite power, during the period that a DG(s) is inoperable, does not result in a complete loss of safety function of critical systems. These features are designed with redundant safety related trains. This includes motor driven auxiliary feedwater pumps. Single train systems, such as turbine driven auxiliary feedwater pumps, are not included. Redundant required feature failures consist of inoperable features associated with a train, redundant to the train that has an inoperable DG(s). 5 5

5 **INSERT 9**

~~DG 1A-A, DG 1B-B, DGs 1A-A and 2A-A, or DGs 1B-B and 2B-B~~

one or more Train A DGs, or one or more Train B DGs

ACTIONS (continued)

The Completion Time for Required Action B.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. An inoperable DG exists and

b. A required feature on the other train ~~(Train A or Train B)~~ is inoperable. 5

If at any time during the existence of this Condition (one or more DGs in a train ~~DG~~ inoperable) a required feature subsequently becomes inoperable, this Completion Time would begin to be tracked. 5

Discovering one or more DGs in a train ~~required DG~~ inoperable coincident with one or more inoperable required support or supported features, or both, that are associated with the OPERABLE DG, results in starting the Completion Time for the Required Action. Four hours from the discovery of these events existing concurrently is acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown. 5 4

In this Condition, the remaining OPERABLE DGs and offsite circuits are adequate to supply electrical power to the onsite Class 1E AC Electrical Power Distribution System. Thus, on a component basis, single failure protection for the required feature's function may have been lost; however, function has not been lost. The 4 hour Completion Time takes into account the OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 4 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 1 5

B.3.1 and B.3.2

Required Action B.3.1 provides an allowance to avoid unnecessary testing of OPERABLE DG(s). If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG, SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on other DG~~(s)~~, the other DG~~(s)~~ would be declared inoperable upon discovery and Condition F ~~E~~ of LCO 3.8.1 would be entered INSERT 10. Once the failure is repaired, the common cause failure no longer exists, and Required Action B.3.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DG~~(s)~~, performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of that DG. 5

5 **INSERT 10**

if one or more DG(s) in Train A and Train B are inoperable

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ACTIONS (continued)

(s)

In the event the inoperable DG is restored to OPERABLE status prior to completing either B.3.1 or B.3.2, the ~~plant~~ corrective action program will continue to evaluate the common cause possibility. This continued evaluation, however, is no longer under the 24 hour constraint imposed while in Condition B. 5 2

According to Generic Letter 84-15 (Ref. 7), 24 hours is reasonable to confirm that the OPERABLE DG(s) is not affected by the same problem as the inoperable DG. 2

B.4

~~According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition B for a period that should not exceed 72 hours.~~

(s) AC Electrical Power

In Condition B, the remaining OPERABLE DG and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. The 7 day ~~72 hour~~ Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 5

INSERT 11 5

D D D

~~C~~ E.1 and ~~C~~ E.2 5

Required Action ~~C~~ E.1, which applies when two offsite circuits are inoperable, is intended to provide assurance that an event with a coincident single failure will not result in a complete loss of redundant required safety functions. The Completion Time for this failure of redundant required features is reduced to 12 hours from that allowed for one train without offsite power (Required Action A.2). The rationale for the reduction to 12 hours is that Regulatory Guide 1.93 (Ref. 6) allows a Completion Time of 24 hours for two required offsite circuits inoperable, based upon the assumption that two complete safety trains are OPERABLE. When a concurrent redundant required feature failure exists, this assumption is not the case, and a shorter Completion Time of 12 hours is appropriate. These features are powered from redundant AC safety trains. This includes motor driven auxiliary feedwater pumps. Single train features, such as turbine driven auxiliary pumps, are not included in the list.

5 **INSERT 11**

C.1, C.2, and C.3

Condition C is entered for an offsite circuit inoperable solely due to an inoperable power source to 6.9 kV Shutdown Board 2A-A or 2B-B. Required Action C.1 verifies the OPERABILITY of the remaining offsite circuit within an hour of the inoperability and every 8 hours thereafter. Since the Required Action only specifies "perform," a failure of the SR 3.8.1.1 acceptance criteria does not result in a Required Action not met.

The Completion Time for Required Action C.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. 6.9 kV Shutdown Board 2A-A or 2B-B has no offsite power; and
b. A required feature on the other train is inoperable.

If at any time during the existence of Condition C a redundant required feature subsequently becomes inoperable, this Completion Time begins to be tracked.

A Completion Time of 24 hours is acceptable, because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown. The remaining OPERABLE offsite circuit and DGs are adequate to support these functions. The Completion Time takes into account the component OPERABILITY of the remaining redundant feature(s), a reasonable time for repairs, and the low probability of a DBA occurring during this period.

Operation may continue in Condition C for a period of 7 days. With one offsite circuit inoperable, the reliability of the functions is degraded. The potential for the loss of offsite power to the redundant feature(s) is increased, with the attendant potential for a challenge to their safety functions.

The required offsite circuit must be returned to OPERABLE status within 7 days~~, or the support function for the associated required feature is considered inoperable. At that time, the required feature must be declared inoperable and the appropriate Conditions must be entered~~. The 7 days Completion Time takes into account the capacity and capability of the remaining AC sources providing electrical power to the required feature(s), a reasonable time for repairs and the low probability of a DBA occurring during this period of time.

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5

INSERT 11 (Continued)

D.1, D.2, D.3 and D.4

To ensure a highly reliable power source remains with an inoperable DG to a Unit 2 6.9 □V Shutdown Board, it is necessary to verify the availability of the required offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. Required Action D.1 verifies the OPERABILITY of the required offsite sources within an hour of the inoperability and every 8 hours thereafter. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must be entered.

Required Action D.2 is intended to provide assurance that a loss of offsite power, during the period that an LCO 3.8.1.d DG is inoperable, does not result in a complete loss of the safety functions.

The Completion Time for Required Action D.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time □ero" for beginning the allowed outage time "cloc□." In this Required Action, the Completion Time only begins on discovery that both□

a. An inoperable DG to 6.9 □V Shutdown Board 2A-A or 2B-B exists□and
b. A redundant feature in the same system is inoperable.

If at any time during the existence of Condition D (one DG to 6.9 □V Shutdown Board 2A-A or 2B-B) a redundant feature in the same system subsequently becomes inoperable, this Completion Time begins to be trac□ed. The four hour Completion Time is acceptable, because it minimi□es ris□while allowing time for restoration before sub□ecting the unit to transients associated with shutdown.

The remaining OPERABLE offsite circuits and DGs are adequate to support the functions. The 4 hour Completion Time ta□es into account the component OPERABILITY of the remaining redundant feature(s), a reasonable time for repairs, and the low probability of a DBA occurring during this period.

D.3.1 and D.3.2

Required Action D.3.1 provides an allowance to avoid unnecessary testing of OPERABLE DG(s). If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG(s), SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on another DG, the other DG would be declared inoperable, and upon discovery, Condition □of LCO 3.8.1 would be entered, if one or more DG(s) in Train A and Train B are inoperable. Otherwise, if the inoperability exists on the other DG in the same train, the other DG would be declared inoperable upon discovery, Condition B would be entered. Once the failure is repaired, the common cause failure no longer exists, and Required Action D.3.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DGs, performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of that DG.

5

INSERT 11 (Continued)

Operation may continue in Condition D for a period of 7 days. With one Unit 2 DG inoperable, the reliability of the respective function is degraded. The potential for the loss of a DG to the redundant feature(s) is increased, with the attendant potential for a challenge to respective safety function.

The required DG must be returned to OPERABLE status within 7 days, or the support function for the associated required feature is considered inoperable. At that time, the required feature must be declared inoperable and the appropriate Conditions must be entered. The 7 day Completion Time takes into account the capacity and capability of the remaining AC sources providing electrical power to the required feature(s), a reasonable time for repairs and the low probability of a DBA occurring during this period of time.

BASES

ACTIONS (continued)

The Completion Time for Required Action ~~C~~ E.1 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action the Completion Time only begins on discovery that both: 5

a. All required offsite circuits are inoperable and

b. A required feature is inoperable.

If at any time during the existence of Condition ~~C~~ E (two offsite circuits inoperable) a required feature becomes inoperable, this Completion Time begins to be tracked. 5

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition ~~C~~ E for a period that should not exceed 24 hours. This level of degradation means that the offsite electrical power system does not have the capability to effect a safe shutdown and to mitigate the effects of an accident; however, the onsite AC sources have not been degraded. This level of degradation generally corresponds to a total loss of the immediately accessible offsite power sources. 5

Because of the normally high availability of the offsite sources, this level of degradation may appear to be more severe than other combinations of two AC sources inoperable that involve one or more DGs inoperable. However, two factors tend to decrease the severity of this level of degradation:

a. The configuration of the redundant AC electrical power system that remains available is not susceptible to a single bus or switching failure and

b. The time required to detect and restore an unavailable offsite power source is generally much less than that required to detect and restore an unavailable onsite AC source.

With both ~~of the required~~ offsite circuits inoperable, sufficient onsite AC sources are available to maintain the unit in a safe shutdown condition in the event of a DBA or transient. In fact, a simultaneous loss of offsite AC sources, a LOCA, and a worst case single failure were postulated as a part of the design basis in the safety analysis. Thus, the 24 hour Completion Time provides a period of time to effect restoration of one of the offsite circuits commensurate with the importance of maintaining an AC electrical power system capable of meeting its design criteria. 5

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BASES

ACTIONS (continued)

According to Reference 6, with the available offsite AC sources, two less than required by the LCO, operation may continue for 24 hours. If two offsite sources are restored within 24 hours, unrestricted operation may continue. If only one offsite source is restored within 24 hours, power operation continues in accordance with Condition A. or Condition C, as applicable 5

E ~~F~~ E ~~F~~ 5

~~D~~.1 and ~~D~~.2

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energi□ation. Therefore, the Required Actions of Condition ~~D~~ ~~F~~ are modified by a Note to indicate that when Condition ~~D~~ ~~F~~ is entered with no AC source to ~~any train~~ 6.9 □V Shutdown Board 1A-A or 1B-B, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows Condition ~~D~~ ~~F~~ to provide requirements for the loss of one offsite circuit and one DG to 6.9 □V Shutdown Board 1A-A or 1B-B, without regard to whether a train is de-energi□ed. LCO 3.8.9 provides the appropriate restrictions for a de-energi□ed train. E 5

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition ~~D~~ ~~F~~ for a period that should not exceed 12 hours. E 5

In Condition ~~D~~ ~~F~~, individual redundancy is lost in both the offsite electrical power system and the onsite AC electrical power system. Since power system redundancy is provided by two diverse sources of power, however, the reliability of the power systems in this Condition may appear higher than that in Condition ~~C~~ ~~E~~ (loss of both ~~required~~ offsite circuits). This difference in reliability is offset by the susceptibility of this power system configuration to a single bus or switching failure. The 12 hour Completion Time ta□es into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. E E D 5

~~INSERT 12~~

F

~~E~~ ~~/~~.1

□ ith ~~Train A and Train B DGs~~ one or more Train A DG(s) and one or more Train B DG(s) inoperable, there are ~~no remaining~~ insufficient standby AC sources available to power an entire load group. Thus, with an assumed loss of offsite electrical power, insufficient standby AC sources are available to power the minimum required ESF functions. Since the offsite electrical power system is the only source of AC power for this level of degradation, the ris□ associated with continued operation for a very short time could be less than that associated with an immediate controlled shutdown (the immediate shutdown could cause grid instability, which could result in a total loss of AC power). Since any inadvertent generator trip could also result in a 5

5 ~~INSERT 12~~

G.1 and H.1

In Conditions G and H, individual redundancy is lost in the offsite electrical power system for one unit and the onsite AC electrical power system for the other unit. Since Conditions B and C are entered concurrent with entry into Condition G, and Conditions A and D are entered concurrent with entry into Condition H, the Required Actions of Conditions B and C (or Conditions A and D) provide the appropriate compensatory measures to ensure the onsite and offsite power sources are either restored to an OPERABLE status, or the associated required features are declared inoperable, thereby requiring entry into the appropriate Conditions associated with the associated feature□s LCO. The Completion Times of Required Actions G.1 and H.1 are consistent with the Completion Times of Required Actions C.3 and D.4. If, while in Condition G or H, a redundant required feature is determined to be inoperable, the required feature(s) would be declared inoperable at the Completion Times specified in Conditions A, B, C, or D, as applicable.

I.1 and I.2

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energi□ation. Therefore, the Required Actions of Condition I are modified by a Note to indicate that when Condition I is entered with no AC source to 6.9 □V Shutdown Board 2A-A or 2B-B, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows Condition I to provide requirements for the loss of one offsite power source and one DG, without regard to whether a train is de-energi□ed. LCO 3.8.9 provides the appropriate restrictions for a de-energi□ed 6.9 □V Shutdown Board.

In Condition I, individual redundancy is lost in the offsite electrical power system and the onsite AC electrical power system. Concurrent with entry into Condition I, entry into Condition C (inoperable offsite power source) and Condition D (inoperable DG) are required. The Required Actions of Conditions C and D ensure the remaining offsite circuit and DGs are OPERABLE and that required features with no offsite or onsite power sources are declared inoperable when its redundant required feature is inoperable within the Completion Times of Required Actions C.2 and D.2.

ACTIONS (continued)

total loss of offsite AC power, however, the time allowed for continued operation is severely restricted. The intent here is to avoid the ris associated with an immediate controlled shutdown and to minimi e the ris associated with this level of degradation.

In this Condition,

~~According to Reference 6, with both DGs inoperable,~~ operation may continue for a period that should not exceed 2 hours, consistent with the guidance provided in Reference 6. 5 5

~~F.1~~ 5

~~The sequencer(s) is an essential support system to both the offsite circuit and the DG associated with a given ESF bus. Furthermore, the sequencer is on the primary success path for most ma or AC electrically powered safety systems powered from the associated ESF bus. Therefore, loss of an ESF bus sequencer affects every ma or ESF system in the division. The 12 hour Completion Time provides a period of time to correct the problem commensurate with the importance of maintaining sequencer OPERABILITY. This time period also ensures that the probability of an accident (requiring sequencer OPERABILITY) occurring during periods when the sequencer is inoperable is minimal.~~

~~This Condition is preceded by a Note that allows the Condition to be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads under any conditions. Implicit in this Note is the concept that the Condition must be retained if any sequencer failure mode results in the inability to start all or part of the safety loads when required, regardless of power availability, or results in overloading the offsite power circuit to a safety bus during an event and thereby causes its failure. Also implicit in the Note, is that the Condition is not applicable to any train that does not have a sequencer.~~

G G

~~K~~ ~~K~~

~~G~~.1 and ~~G~~.2 5

If the inoperable AC electric power sources cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

ACTIONS (continued)

H I

L.1 and M.1

~~H.1~~

H and I

s

L and M

Condition ~~H~~ corresponds to a level of degradation in which ~~all~~ redundancy in the AC electrical power supplies cannot be assured ~~has been lost~~. At this severely degraded level, any further losses in the AC electrical power system will cause a loss of function. Therefore, no additional time is justified for continued operation. The unit is required by LCO 3.0.3 to commence a controlled shutdown. 5

SURVEILLANCE REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function, in accordance with 10 CFR 50, Appendix A, GDC 18 (Ref. 8). Periodic component tests are supplemented by extensive functional tests during refueling outages (under simulated accident conditions). The SRs for demonstrating the OPERABILITY of the DGs are in accordance with the recommendations of Regulatory Guide 1.9 (Ref. 3)~~,~~ and Regulatory Guide 1.108 (Ref. 9)~~, and Regulatory Guide 1.137 (Ref. 10), as addressed in the FSAR~~. 1

Where the SRs discussed herein specify voltage and frequency tolerances, the following is applicable. The minimum steady state output voltage of 6210 ~~3740~~ V is 90% of the nominal 6900 ~~4160~~ V output voltage. This value, which is specified in ANSI C84.1 (Ref. 10 ~~11~~), allows for voltage drop to the terminals of 6600 ~~4000~~ V motors whose minimum operating voltage is specified as 90% or 5940 ~~3600~~ V. It also allows for voltage drops to motors and other equipment down through the 120 V level where minimum operating voltage is also usually specified as 90% of name plate rating. The specified maximum steady state output voltage of 7260 ~~4756~~ V is equal to the maximum operating voltage specified for 6600 ~~4000~~ V motors. It ensures that for a lightly loaded distribution system, the voltage at the terminals of 6600 ~~4000~~ V motors is no more than the maximum rated operating voltages. The specified minimum and maximum frequencies of the DG are 58.8 Hz and 61.2 Hz, respectively. These values are equal to ± 2% of the 60 Hz nominal frequency and are derived from the recommendations given in Regulatory Guide 1.9 (Ref. 3). 2 1 1 1 2 1 1

SR 3.8.1.1

This SR ensures proper circuit continuity for the offsite AC electrical power supply to the onsite distribution network and availability of offsite AC electrical power. The breaker alignment verifies that each breaker is in its correct position to ensure that distribution buses and loads are connected to their preferred power source, and that appropriate independence of offsite circuits is maintained. ~~The 7 day Frequency is~~ 7

BASES

APPLICABILITY

The AC sources ~~and sequencers~~ are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that: 2

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients and

b. Adequate core cooling is provided and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

The AC power requirements for MODES 5 and 6 are covered in LCO 3.8.2, "AC Sources - Shutdown."

ACTIONS

A Note prohibits the application of LCO 3.0.4.b to an inoperable DG. There is an increased risk associated with entering a MODE or other specified condition in the Applicability with an inoperable DG and the provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance.

A.1

To ensure a highly reliable power source remains with one offsite circuit inoperable for reasons other than Condition C, it is necessary to verify the OPERABILITY of the remaining required offsite circuit on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action not met. However, if a second required circuit fails SR 3.8.1.1, the second offsite circuit is inoperable, and Condition ~~C~~ ~~E~~ D, for two offsite circuits inoperable, is entered. 5 5

~~-----REVIEWER'S NOTE-----~~ 6
~~The turbine driven auxiliary feedwater pump is only required to be considered a redundant required feature, and, therefore, required to be determined OPERABLE by this Required Action, if the design is such that the remaining OPERABLE motor or turbine driven auxiliary feedwater pump(s) is not by itself capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.~~
~~-----~~

ACTIONS (continued)

A.3

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition A for a period that should not exceed 72 hours. With one offsite circuit inoperable, the reliability of the offsite system is degraded, and the potential for a loss of offsite power is increased, with attendant potential for a challenge to the unit safety systems. In this Condition, however, the remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the onsite Class 1E AC Electrical Power Distribution System. 1

The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

B.1

To ensure a highly reliable power source remains with INSERT 9 ~~an~~ inoperable ~~DG~~, it is necessary to verify the availability of the offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must then be entered. 5

~~-----REVIEWER'S NOTE-----~~ 6
~~The turbine driven auxiliary feedwater pump is only required to be considered a redundant required feature, and, therefore, required to be determined OPERABLE by this Required Action, if the design is such that the remaining OPERABLE motor or turbine driven auxiliary feedwater pump(s) is not by itself capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.~~

B.2

Required Action B.2 is intended to provide assurance that a loss of offsite power, during the period that a DG(s) is inoperable, does not result in a complete loss of safety function of critical systems. These features are designed with redundant safety related trains. This includes motor driven auxiliary feedwater pumps. Single train systems, such as turbine driven auxiliary feedwater pumps, are not included. Redundant required feature failures consist of inoperable features associated with a train, redundant to the train that has an inoperable DG(s). 5

5

5

INSERT 9

~~DG 1A-A, DG 1B-B, DGs 1A-A and 2A-A, or DGs 1B-B and 2B-B~~

one or more Train A DGs, or one or more Train B DGs

ACTIONS (continued)

The Completion Time for Required Action B.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time □ero" for beginning the allowed outage time "cloc□." In this Required Action, the Completion Time only begins on discovery that both□

a. An inoperable DG exists and

b. A required feature on the other train ~~(Train A or Train B)~~ is inoperable. 5

or more DGs in a train

If at any time during the existence of this Condition (one or more DGs in a train ~~DG~~ inoperable) a required feature subsequently becomes inoperable, this Completion Time would begin to be trac□ed. 5

or more DGs in a train

Discovering one or more DGs in a train ~~required DG~~ inoperable coincident with one or more inoperable required support or supported features, or both, that are associated with the OPERABLE DG, results in starting the Completion Time for the Required Action. Four hours from the discovery of these events existing concurrently is acceptable because it minimi□es ris□ while allowing time for restoration before sub□ecting the unit to transients associated with shutdown. 5 4

s AC Electrical Power

In this Condition, the remaining OPERABLE DGs and offsite circuits are adequate to supply electrical power to the onsite Class 1E AC Electrical Power Distribution System. Thus, on a component basis, single failure protection for the required feature□s function may have been lost□however, function has not been lost. The 4 hour Completion Time ta□es into account the OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 4 hour Completion Time ta□es into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 1 5

B.3.1 and B.3.2

Required Action B.3.1 provides an allowance to avoid unnecessary testing of OPERABLE DG(s). If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG, SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on other DG~~(s)~~, the other DG~~(s)~~ would be declared inoperable upon discovery and Condition F ~~E~~ of LCO 3.8.1 would be entered. INSERT 10 Once the failure is repaired, the common cause failure no longer exists, and Required Action B.3.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DG~~(s)~~, performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of that DG. 5

5 **INSERT 10**

if one or more DG(s) in Train A and Train B are inoperable

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ACTIONS (continued)

(s)

In the event the inoperable DG is restored to OPERABLE status prior to completing either B.3.1 or B.3.2, the ~~plant~~ corrective action program will continue to evaluate the common cause possibility. This continued evaluation, however, is no longer under the 24 hour constraint imposed while in Condition B. 5 2

According to Generic Letter 84-15 (Ref. 7), 24 hours is reasonable to confirm that the OPERABLE DG(s) is not affected by the same problem as the inoperable DG. 2

B.4

~~According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition B for a period that should not exceed 72 hours.~~

(s) AC Electrical Power

In Condition B, the remaining OPERABLE DG and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. The 7 day ~~72 hour~~ Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 5

INSERT 11 5

D D D

~~C~~.1 and ~~C~~.2 5

~~E~~ ~~E~~ ~~E~~

Required Action ~~C~~.1, which applies when two offsite circuits are inoperable, is intended to provide assurance that an event with a coincident single failure will not result in a complete loss of redundant required safety functions. The Completion Time for this failure of redundant required features is reduced to 12 hours from that allowed for one train without offsite power (Required Action A.2). The rationale for the reduction to 12 hours is that Regulatory Guide 1.93 (Ref. 6) allows a Completion Time of 24 hours for two required offsite circuits inoperable, based upon the assumption that two complete safety trains are OPERABLE. When a concurrent redundant required feature failure exists, this assumption is not the case, and a shorter Completion Time of 12 hours is appropriate. These features are powered from redundant AC safety trains. This includes motor driven auxiliary feedwater pumps. Single train features, such as turbine driven auxiliary pumps, are not included in the list.

5 **INSERT 11**

C.1, C.2, and C.3

Condition C is entered for an offsite circuit inoperable solely due to an inoperable power source to 6.9 kV Shutdown Board 1A-A or 1B-B. Required Action C.1 verifies the OPERABILITY of the remaining offsite circuit within an hour of the inoperability and every 8 hours thereafter. Since the Required Action only specifies "perform," a failure of the SR 3.8.1.1 acceptance criteria does not result in a Required Action not met.

The Completion Time for Required Action C.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. 6.9 kV Shutdown Board 1A-A or 1B-B has no offsite power; and
b. A required feature on the other train is inoperable.

If at any time during the existence of Condition C a redundant required feature subsequently becomes inoperable, this Completion Time begins to be tracked.

A Completion Time of 24 hours is acceptable, because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown. The remaining OPERABLE offsite circuit and DGs are adequate to support these functions. The Completion Time takes into account the component OPERABILITY of the remaining redundant feature(s), a reasonable time for repairs, and the low probability of a DBA occurring during this period.

Operation may continue in Condition C for a period of 7 days. With one offsite circuit inoperable, the reliability of the functions is degraded. The potential for the loss of offsite power to the redundant feature(s) is increased, with the attendant potential for a challenge to their safety functions.

The required offsite circuit must be returned to OPERABLE status within 7 days~~, or the support function for the associated required feature is considered inoperable. At that time, the required feature must be declared inoperable and the appropriate Conditions must be entered~~. The 7 days Completion Time takes into account the capacity and capability of the remaining AC sources providing electrical power to the required feature(s), a reasonable time for repairs and the low probability of a DBA occurring during this period of time.

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5

INSERT 11 (Continued)

D.1, D.2, D.3, and D.4

To ensure a highly reliable power source remains with an inoperable DG to a Unit 1 6.9 □V Shutdown Board, it is necessary to verify the availability of the required offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. Required Action D.1 verifies the OPERABILITY of the required offsite sources within an hour of the inoperability and every 8 hours thereafter. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must be entered.

Required Action D.2 is intended to provide assurance that a loss of offsite power, during the period that an LCO 3.8.1.d DG is inoperable, does not result in a complete loss of the safety functions.

The Completion Time for Required Action D.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time □ero" for beginning the allowed outage time "cloc□." In this Required Action, the Completion Time only begins on discovery that both□

a. An inoperable DG to 6.9 □V Shutdown Board 1A-A or 1B-B exists□and
b. A redundant feature in the same system is inoperable.

If at any time during the existence of Condition D (one DG to 6.9 □V Shutdown Board 1A-A or 1B-B) a redundant feature in the same system subsequently becomes inoperable, this Completion Time begins to be trac□ed. The four hour Completion Time is acceptable, because it minimi□es ris□while allowing time for restoration before sub□ecting the unit to transients associated with shutdown.

The remaining OPERABLE offsite circuits and DGs are adequate to support the functions. The 4 hour Completion Time ta□es into account the component OPERABILITY of the remaining redundant feature(s), a reasonable time for repairs, and the low probability of a DBA occurring during this period.

D.3.1 and D.3.2

Required Action D.3.1 provides an allowance to avoid unnecessary testing of OPERABLE DG(s). If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG(s), SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on another DG, the other DG would be declared inoperable, and upon discovery, Condition □of LCO 3.8.1 would be entered, if one or more DG(s) in Train A and Train B are inoperable. Otherwise, if the inoperability exists on the other DG in the same train, the other DG would be declared inoperable upon discovery, Condition B would be entered. Once the failure is repaired, the common cause failure no longer exists, and Required Action D.3.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DGs, performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of that DG.

5

INSERT 11 (Continued)

Operation may continue in Condition D for a period of 7 days. With one Unit 2 DG inoperable, the reliability of the respective function is degraded. The potential for the loss of a DG to the redundant feature(s) is increased, with the attendant potential for a challenge to respective safety function.

The required DG must be returned to OPERABLE status within 7 days, or the support function for the associated required feature is considered inoperable. At that time, the required feature must be declared inoperable and the appropriate Conditions must be entered. The 7 day Completion Time takes into account the capacity and capability of the remaining AC sources providing electrical power to the required feature(s), a reasonable time for repairs and the low probability of a DBA occurring during this period of time.

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BASES

ACTIONS (continued)

The Completion Time for Required Action ~~C~~ E.1 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action the Completion Time only begins on discovery that both: 5

a. All required offsite circuits are inoperable and

b. A required feature is inoperable.

If at any time during the existence of Condition ~~C~~ E (two offsite circuits inoperable) a required feature becomes inoperable, this Completion Time begins to be tracked. 5

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition ~~C~~ E for a period that should not exceed 24 hours. This level of degradation means that the offsite electrical power system does not have the capability to effect a safe shutdown and to mitigate the effects of an accident; however, the onsite AC sources have not been degraded. This level of degradation generally corresponds to a total loss of the immediately accessible offsite power sources. 5

Because of the normally high availability of the offsite sources, this level of degradation may appear to be more severe than other combinations of two AC sources inoperable that involve one or more DGs inoperable. However, two factors tend to decrease the severity of this level of degradation:

a. The configuration of the redundant AC electrical power system that remains available is not susceptible to a single bus or switching failure and

b. The time required to detect and restore an unavailable offsite power source is generally much less than that required to detect and restore an unavailable onsite AC source.

With both ~~of the required~~ offsite circuits inoperable, sufficient onsite AC sources are available to maintain the unit in a safe shutdown condition in the event of a DBA or transient. In fact, a simultaneous loss of offsite AC sources, a LOCA, and a worst case single failure were postulated as a part of the design basis in the safety analysis. Thus, the 24 hour Completion Time provides a period of time to effect restoration of one of the offsite circuits commensurate with the importance of maintaining an AC electrical power system capable of meeting its design criteria. 5

ACTIONS (continued)

According to Reference 6, with the available offsite AC sources, two less than required by the LCO, operation may continue for 24 hours. If two offsite sources are restored within 24 hours, unrestricted operation may continue. If only one offsite source is restored within 24 hours, power operation continues in accordance with Condition A or Condition C, as applicable. 5

E F E F

~~D~~.1 and ~~D~~.2 5

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energi□ation. Therefore, the Required Actions of Condition ~~D~~ F are modified by a Note to indicate that when Condition ~~D~~ F is entered with no AC source to ~~any train~~ 6.9 □V Shutdown Board 2A-A or 2B-B, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows Condition ~~D~~ F to provide requirements for the loss of one offsite circuit and one DG to 6.9 □V Shutdown Board 2A-A or 2B-B, without regard to whether a train is de-energi□ed. LCO 3.8.9 provides the appropriate restrictions for a de-energi□ed train. E 5

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition ~~D~~ F for a period that should not exceed 12 hours. 5

E F E F

In Condition ~~D~~ F, individual redundancy is lost in both the offsite electrical power system and the onsite AC electrical power system. Since power system redundancy is provided by two diverse sources of power, however, the reliability of the power systems in this Condition may appear higher than that in Condition ~~C~~ E (loss of both ~~required~~ offsite circuits). This difference in reliability is offset by the susceptibility of this power system configuration to a single bus or switching failure. The 12 hour Completion Time ta□es into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. D 5

~~INSERT 12~~

F

~~E~~.1 5

□ ith ~~Train A and Train B DGs~~ one or more Train A DG(s) and one or more Train B DG(s) inoperable, there are ~~no remaining~~ insufficient standby AC sources available to power an entire load group. Thus, with an assumed loss of offsite electrical power, insufficient standby AC sources are available to power the minimum required ESF functions. Since the offsite electrical power system is the only source of AC power for this level of degradation, the ris□associated with continued operation for a very short time could be less than that associated with an immediate controlled shutdown (the immediate shutdown could cause grid instability, which could result in a total loss of AC power). Since any inadvertent generator trip could also result in a

5 ~~**INSERT 12**~~

G.1 and H.1

In Conditions G and H, individual redundancy is lost in the offsite electrical power system for one unit and the onsite AC electrical power system for the other unit. Since Conditions B and C are entered concurrent with entry into Condition G, and Conditions A and D are entered concurrent with entry into Condition H, the Required Actions of Conditions B and C (or Conditions A and D) provide the appropriate compensatory measures to ensure the onsite and offsite power sources are either restored to an OPERABLE status, or the associated required features are declared inoperable, thereby requiring entry into the appropriate Conditions associated with the associated feature's LCO. The Completion Times of Required Actions G.1 and H.1 are consistent with the Completion Times of Required Actions C.3 and D.4. If, while in Condition G or H, a redundant required feature is determined to be inoperable, the required feature(s) would be declared inoperable at the Completion Times specified in Conditions A, B, C, or D, as applicable.

I.1 and I.2

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Actions of Condition ~~I~~ are modified by a Note to indicate that when Condition ~~I~~ is entered with no AC source to 6.9 kV Shutdown Board 1A-A or 1B-B, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows Condition I to provide requirements for the loss of one offsite power source and one DG, without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized 6.9 kV Shutdown Board.

In Condition I, individual redundancy is lost in the offsite electrical power system and the onsite AC electrical power system. Concurrent with entry into Condition I, entry into Condition C (inoperable offsite power source) and Condition D (inoperable DG) are required. The Required Actions of Conditions C and D ensure the remaining offsite circuit and DGs are OPERABLE and that required features with no offsite or onsite power sources are declared inoperable when its redundant required feature is inoperable within the Completion Times of Required Actions C.2 and D.2.

BASES

ACTIONS (continued)

total loss of offsite AC power, however, the time allowed for continued operation is severely restricted. The intent here is to avoid the ris associated with an immediate controlled shutdown and to minimi e the ris associated with this level of degradation.

In this Condition,

~~According to Reference 6, with both DGs inoperable~~, operation may continue for a period that should not exceed 2 hours, consistent with the guidance provided in Reference 6 5

~~F.1~~ 5

~~The sequencer(s) is an essential support system to both the offsite circuit and the DG associated with a given ESF bus. Furthermore, the sequencer is on the primary success path for most ma or AC electrically powered safety systems powered from the associated ESF bus. Therefore, loss of an ESF bus sequencer affects every ma or ESF system in the division. The 12 hour Completion Time provides a period of time to correct the problem commensurate with the importance of maintaining sequencer OPERABILITY. This time period also ensures that the probability of an accident (requiring sequencer OPERABILITY) occurring during periods when the sequencer is inoperable is minimal.~~

~~This Condition is preceded by a Note that allows the Condition to be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads under any conditions. Implicit in this Note is the concept that the Condition must be retained if any sequencer failure mode results in the inability to start all or part of the safety loads when required, regardless of power availability, or results in overloading the offsite power circuit to a safety bus during an event and thereby causes its failure. Also implicit in the Note, is that the Condition is not applicable to any train that does not have a sequencer.~~

G ~~K~~ ~~K~~ G

~~G~~.1 and ~~G~~.2 5

If the inoperable AC electric power sources cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

BASES

ACTIONS (continued)

H I L.1 and M.1

~~H~~.1

H and I L and M s

Condition ~~H~~ correspond~~s~~ to a level of degradation in which ~~all~~ redundancy in the AC electrical power supplies cannot be assured ~~has been lost~~. At this severely degraded level, any further losses in the AC electrical power system will cause a loss of function. Therefore, no additional time is justified for continued operation. The unit is required by LCO 3.0.3 to commence a controlled shutdown. 5

SURVEILLANCE REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function, in accordance with 10 CFR 50, Appendix A, GDC 18 (Ref. 8). Periodic component tests are supplemented by extensive functional tests during refueling outages (under simulated accident conditions). The SRs for demonstrating the OPERABILITY of the DGs are in accordance with the recommendations of Regulatory Guide 1.9 (Ref. 3)~~,~~ and Regulatory Guide 1.108 (Ref. 9)~~, and Regulatory Guide 1.137 (Ref. 10), as addressed in the FSAR~~. 1

Where the SRs discussed herein specify voltage and frequency tolerances, the following is applicable. The minimum steady state output voltage of 6210 ~~3740~~ V is 90% of the nominal 6900 ~~4160~~ V output voltage. This value, which is specified in ANSI C84.1 (Ref. 10 ~~11~~), allows for voltage drop to the terminals of 6600 ~~4000~~ V motors whose minimum operating voltage is specified as 90% or 5940 ~~3600~~ V. It also allows for voltage drops to motors and other equipment down through the 120 V level where minimum operating voltage is also usually specified as 90% of name plate rating. The specified maximum steady state output voltage of 7260 ~~4756~~ V is equal to the maximum operating voltage specified for 6600 ~~4000~~ V motors. It ensures that for a lightly loaded distribution system, the voltage at the terminals of 6600 ~~4000~~ V motors is no more than the maximum rated operating voltages. The specified minimum and maximum frequencies of the DG are 58.8 Hz and 61.2 Hz, respectively. These values are equal to ± 2% of the 60 Hz nominal frequency and are derived from the recommendations given in Regulatory Guide 1.9 (Ref. 3). 2 1 1 1 2 1 1

SR 3.8.1.1

This SR ensures proper circuit continuity for the offsite AC electrical power supply to the onsite distribution network and availability of offsite AC electrical power. The breaker alignment verifies that each breaker is in its correct position to ensure that distribution buses and loads are connected to their preferred power source, and that appropriate independence of offsite circuits is maintained. ~~The 7 day Frequency is~~ 7

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.1, AC SOURCES - OPERATING

10 CFR 50.92 EVALUATION
FOR
LESS RESTRICTIVE CHANGE L01

SQN is converting to the Improved Technical Specifications (ITS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." The proposed change involves making the Current Technical Specifications (CTS) less restrictive. Below are the descriptions of this less restrictive change and the determination of No Significant Hazards Considerations for conversion to NUREG-1431.

CTS 3.8.1.1 ACTION a provides actions for one inoperable offsite circuit and allows 72 hours to restore the inoperable offsite circuit to OPERABLE status before requiring the unit to be shut down and cooled down. ~~CTS 3.8.1.1 ACTION b provides actions for one or both DGs in a train inoperable and allows 7 days to restore the inoperable DG(s) to OPERABLE status before requiring the unit to be shut down and cooled down.~~ CTS 3.8.1.1 ACTION c provides actions for one inoperable offsite circuit and one inoperable DG and allows 12 hours to restore at least one of the inoperable AC sources to OPERABLE status before requiring the unit to be shut down and cooled down. ~~CTS 3.8.1.1 ACTION d provides actions for two inoperable offsite circuits and allows 24 hours to restore at least one of the inoperable offsite circuits to OPERABLE status before requiring the unit to be shut down. CTS 3.8.1.1 ACTION e provides actions for one or two inoperable DGs in both trains and allows 2 hours to restore the inoperable DG(s) in one train to OPERABLE status before requiring the unit to be shut down and cooled down. CTS 3.8.1.1 ACTION f states LCO 3.0.4.b is not applicable to DGs. The ITS ACTIONS are modified by a Note stating LCO 3.0.4.b is not applicable to DGs.~~ ITS 3.8.1 ACTION A provides actions for one inoperable offsite circuit for reasons other than Condition C, and allows 72 hours to restore the inoperable offsite power source to OPERABLE status. ~~ITS 3.8.1 ACTION B provides actions for one inoperable associated unit's DG or both DGs in one train inoperable, and allows 7 days to restore the inoperable DG(s) to OPERABLE status.~~ ITS 3.8.1 ACTION C provides actions for one offsite circuit inoperable solely due to an inoperable offsite power source to an opposite unit's 6.9 kV Shutdown Board, and ~~requires declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours. Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the offsite circuit cannot be restored to an OPERABLE status. ITS 3.8.1 ACTION D requires declaration that the affected required feature(s) with no OPERABLE DG are inoperable when its redundant required feature is inoperable in 4 hours. Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the DG cannot be restored to an OPERABLE status. ITS 3.8.1 ACTION E requires declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 12 hours. Otherwise, one offsite circuit is required to be restored to an OPERABLE status in 24 hours.~~ ITS 3.8.1 ACTION ~~F~~ E provides actions for one associated unit's offsite circuit inoperable concurrent with one associated unit's DG inoperable, and allows 12 hours to restore one of the inoperable AC sources to OPERABLE status. ~~ITS ACTION G requires declaring the required feature(s) on the opposite unit's 6.9 kV Shutdown Board with no offsite power available inoperable in 7 days. ITS ACTION H requires declaring the required feature(s) on the opposite unit's 6.9 kV Shutdown Board with no DG available inoperable in 7 days. ITS ACTION I provides actions for one offsite circuit inoperable solely due to an inoperable offsite power source to an opposite unit's 6.9 kV Shutdown Board concurrent with one opposite unit's DG inoperable, and allows 7 days~~

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E

requires: 1) performance of CTS SR 4.8.1.1 for the OPERABLE offsite circuit in 1 hour and once per 8 hours thereafter, 2) declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours, and 3) restoration of the offsite circuit to OPERABLE status in 7 days.

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DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.1, AC SOURCES - OPERATING

~~to restore one of the inoperable AC sources to OPERABLE status. In addition, a Note~~

For the condition of one offsite circuit inoperable solely due to an inoperable power source to an opposite unit's 6.9 kV Shutdown Board concurrent with an inoperable DG, similar to CTS 3.8.1.1 Action ..., ITS 3.8.1 Condition B and C would be entered concurrently. ITS 3.8.1 ACTIONS B and C require in part restoration of the inoperable AC sources (circuit and DG) to an OPERABLE status in 7 days. This changes the CTS by providing a new ITS 3.8.1 ACTION C to allow 7 days to restore an inoperable offsite circuit to an OPERABLE status, if the offsite circuit is inoperable solely due to an inoperable power source to an opposite unit's Shutdown Board (e.g., for Unit 1 an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B is inoperable).

The purpose of the CTS 3.8.1.1 ACTIONS is to limit the time the unit can remain operating with different combinations of inoperable offsite circuits and DGs. The onsite Class 1E AC Electrical Distribution System supplies electrical power to two power trains shared between the two units. The core cooling and containment cooling system loads (e.g., Safety Injection (SI) pumps, Auxiliary Feedwater (AFW) pumps, Residual Heat Removal (RHR) pumps, Centrifugal Charging pumps, Containment Spray pumps, and Air Return System (ARS) fans) are unitized to the respective unit's 6.9 kV Shutdown Boards. However, some safety-related systems (e.g., Essential Raw Cooling Water (ERCW), Component Cooling (CCS), Emergency Gas Treatment (EGTS), Auxiliary Building Gas Treatment, (ABGTS), Control Room Emergency Ventilation (CREVs), and Control Room HVAC (CRACS)) are shared between the units. The AC sources for the shared loads are distributed across both unit's shutdown boards. Therefore, two qualified offsite circuits and four DGs capable of supplying the onsite Class 1E AC Electrical Distribution System are required to be OPERABLE. However, the impacts of an inoperable offsite power source or DG on an opposite unit's 6.9 kV Shutdown Board differ from the impacts of an inoperable offsite power source or DG on an associated unit's 6.9 kV Shutdown Board, due to the loads powered from the respective board.

For example, with SQN Unit 1 in MODES 1, 2, 3, and 4, 6.9 kV Shutdown Boards 1A-A and 1B-B, and the associated offsite power sources and DGs are required to be OPERABLE to provide electrical power to the ESF systems powered from those boards. Additionally, 6.9 kV Shutdown Boards 2A-A and 2B-B and associated offsite power sources and DGs are required to be OPERABLE to provide electrical power to any required shared components required for Unit 1. If it is necessary to de-energize 6.9 kV Shutdown Board 2A-A or 2B-B, the redundant shared systems can be aligned prior to de-energizing the shutdown board to ensure no loss of safety function will occur. Upon removing the shutdown board from service, the applicable Conditions and Required Actions for the affected shared system LCOs will be entered and tracked and either the offsite power source or the DG is required to be restored to an OPERABLE status in 7 days.

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In the event of an unplanned loss of an offsite power source to an opposite unit's 6.9 kV Shutdown Board, the proposed actions require declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours and restoration of the offsite circuit to OPERABLE status in 7 days. ~~Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the offsite power source cannot be restored to an OPERABLE status. Similarly, in~~ In the event of an unplanned loss of a DG to an opposite unit 6.9 kV Shutdown Board, the proposed actions require declaration that the affected required feature(s) with no OPERABLE DG are inoperable when its redundant required feature is inoperable in 4 hours and restoration of the DG to OPERABLE status in 7 days. ~~Otherwise, the affected required feature(s) are declared~~

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~~inoperable in 7 days, if the DG cannot be restored to an OPERABLE status~~. In both cases, the ACTIONS require performance of SR 3.8.1.1 for the required OPERABLE offsite circuit(s) within 1 hour and once per 8 hours thereafter.

ITS 3.8.1 ACTION G is entered and the unit is required to be shut down to MODE 3 in 6 hours and MODE 5 in 36 hours.

The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. These changes are acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation, while providing time to repair inoperable features. If the necessary repairs cannot be made within the established Completion Time, ~~the associated required features are declared inoperable and the applicable Conditions and Required Actions for the affected shared system LCOs are entered and tracked~~. This change is acceptable because the provided ACTIONS effect restoration of the opposite unit's ~~AC sources~~ offsite circuit commensurate with the importance of maintaining these ~~AC sources~~ offsite circuit capable of supporting the associated unit's required feature(s). This change is designated as less restrictive, because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

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Tennessee Valley Authority (TVA) has evaluated whether or not a significant hazards consideration is involved with these proposed Technical Specification changes by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of any accident previously evaluated?

Response: No.

The proposed change relaxes the Required Actions for the opposite unit's offsite AC power sources ~~and DGs~~. The opposite unit's offsite AC power sources ~~and DGs~~ are required to be OPERABLE to support the associated unit's required features. This change will not affect the probability of an accident, since the offsite AC circuits ~~and DGs~~ are not initiators of any accident sequence analyzed in the Updated Final Safety Analysis Report (UFSAR). Rather, offsite AC power sources ~~and DGs~~ support equipment used to mitigate accidents. The consequences of an analyzed accident will not be significantly increased since the minimum requirements for AC power sources will be maintained to ensure the availability of the required power to mitigate accidents assumed in the UFSAR. Operation in accordance with the proposed TS will ensure that sufficient onsite and offsite AC power sources are OPERABLE as required to support the unit's required features. Therefore, the mitigating functions supported by the onsite and offsite AC power sources will continue to provide the protection assumed by the accident analysis. The integrity of fission product barriers, plant configuration, and operating procedures as described in the UFSAR will not be affected by the proposed changes. Thus, the consequences of previously analyzed accidents will not increase by implementing these changes. Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

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2. Does the proposed change create the possibility of a new or different kind of accident from any previously evaluated?

Response: No

The proposed change relaxes the Required Actions for the opposite unit's offsite AC power sources ~~and DGs~~. The opposite unit's offsite AC power sources ~~and DGs~~ are required to be OPERABLE to support the associated unit's required features. This change will not physically alter the plant (no new or different type of equipment will be installed). The proposed changes will maintain the minimum requirements for AC power sources to ensure the availability of the equipment required to mitigate accidents assumed in the UFSAR. Therefore, operation of the facility in accordance with this proposed change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in the margin of safety?

Response: No.

The proposed change relaxes the Required Actions for the opposite unit's offsite AC power sources ~~and DGs~~. The opposite unit's offsite AC power sources ~~and DGs~~ are required to be OPERABLE to support the associated unit's required features. The margin of safety is not affected by this change because the minimum requirements for AC power sources will be maintained to ensure the availability of the required power to shutdown the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. Therefore, the proposed changes do not involve a significant reduction in a margin of safety

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Licensee Response/NRC Response/NRC Question Closure

Id	**450**
NRC Question Number	**VKG027**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**Attachment 1 associated with the response to RAI VKG027 contained the same attachment as the response to RAI VKG026. A supplemental response has been provided for RAI VKG026 with a revised Attachment 1. There has been no change to the attachment as it pertains to the information provided in the response to RAI VKG027. However, as a result of the change associated with RAI VKG026, please refer to Attachment 1 for the supplemental response to RAI VKG026 to view all changes to the ITS submittal associated with these two RAIs.**
Response Date/Time	**5/10/2015 12:25 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Vijay Goel** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele**
Added By	**Scott Bowman**
Date Added	**5/10/2015 11:22 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**454**
NRC Question Number	**VKG027**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**5/14/2015**
Notification	**Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**5/14/2015 3:12 PM**
Date Modified	
Modified By	