NEXTera ENERGY
DUANE ARNOLD

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10 CFR 50.90

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Duane Arnold Energy Center
Docket No. 50-331
Renewed Op. License No. DPR-49

Response to Request for Additional Information Related to an Amendment to Adopt Technical Specifications Task Force Traveler TSTF-425, Revision 3, to Relocate Specific Surveillance Frequencies to a Licensee Controlled Program

References:
1) License Amendment Request (TSCR-120): Application for Technical Specification Change Regarding Risk-Informed Justification for the Relocation of Specific Surveillance Frequency Requirements to a Licensee Controlled Program (TSTF-425, Rev. 3), NG-11-0037, dated February 23, 2011
2) Clarification of Information Contained in License Amendment Request (TSCR-120): Application for Technical Specification Change Regarding Risk-Informed Justification for the Relocation of Specific Surveillance Frequency Requirements to a Licensee Controlled Program (TSTF-425, Rev. 3), NG-11- 0135, dated April 20, 2011

In the Reference 1 letter, as clarified by Reference 2, NextEra Energy Duane Arnold, LLC (hereafter NextEra Energy Duane Arnold) requested a revision to the Technical Specifications (TS) for the Duane Arnold Energy Center (DAEC) pursuant to 10 CFR 50.90. Subsequently, the NRC Staff requested, via facsimile and electronic mail, additional information regarding that application. Attachment 1 to this letter contains the requested information.

As a result of discussions with the Staff held on June 28, 2011, NextEra Energy Duane Arnold withdraws that portion of the Reference 1 application dealing with the

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line item consolidation of certain Surveillances in the Instrumentation Chapter of the DAEC TS. Attachments 2 and 3 to this letter contain the revised TS and TS Bases markup pages, respectively, that are intended to supersede those same pages submitted in Reference 1. As a result of the above changes, Attachment 4 is an updated version of the cross-reference table submitted as Attachment 5 in the original application.

This additional information does not impact the 10 CFR 50.92 evaluation of "No Significant Hazards Consideration" previously provided in the referenced application.

This letter makes no new commitments or changes to any existing commitments.

If you have any questions or require additional information, please contact Steve Catron at 319-851-7234.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on August 15, 2011

Peter Wells
Vice President, Duane Arnold Energy Center
NextEra Energy Duane Arnold, LLC

Attachments:
1) Response to Request for Additional Information Related to an Amendment to Adopt Technical Specifications Task Force Traveler TSTF-425, Revision 3, to Relocate Specific Surveillance Frequencies to a Licensee Controlled Program
2) Updated Revised TS Markup Pages
3) Updated Revised TS Bases Markup Pages
4) TSTF-425 (NUREG-1433) versus DAEC TS Cross-reference (Updated)

cc: NRC Regional Administrator
NRC Resident Inspector
NRC Project Manager
M. Rasmusson (State of Iowa)

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION RELATED TO AN AMENDMENT TO ADOPT TECHNICAL SPECIFICATIONS TASK FORCE TRAVELLER TSTF-425, REVISION 3, TO RELOCATE SPECIFIC SURVEILLANCE FREQUENCIES TO A LICENSEE CONTROLLED PROGRAM
DUANE ARNOLD ENERGY CENTER
DOCKET NO. 50-331

1. The submittal states that technical specifications (TS) have been consolidated for those Surveillances that become duplicative once the specific Frequency has been replaced with the reference to the "Surveillance Frequency Control Program" (SFCP).

   In this approach, tests of the same type, e.g., "Perform a Channel Functional Tests," are consolidated. For example, TS Section 3.3.1.1 (RPS Instrumentation) currently contains 3 Surveillances to "Perform a Channel Functional Tests," one on a 7 day Frequency (SR 3.3.1.1.5), one on a 92 day Frequency (SR 3.3.1.1.9), and one on a 24 month Frequency (SR 3.3.1.1.13). NextEra Energy Duane Arnold proposes to consolidate these 3 Surveillances into the single Surveillance. SR 3.3.1.1.5, with the specified Frequency of "In accordance with the Surveillance Frequency Control Program," and to delete existing SR 3.3.1.1.9 and SR 3.3.1.1.13.

   The NextEra Energy Duane Arnold submittal indicates that the proposed approach is an administrative deviation from the standard Technical Specification Task Force-425 application submittal. Please address the following for the staff's assessment of the proposed consolidated Surveillance Requirements (SRs) approach.

   The SFCP requires a list of frequencies of those SRs for which the frequency is controlled by the program. Given that the different SRs which are consolidated have different SFs (e.g., in the above example the SFs are 7 days, 92 days, and 24 months), it is necessary to maintain these different SFs in the SFCP for evaluating SF changes. Please clarify how NextEra Energy Duane Arnold intends to handle relocation of different SFs for consolidated SRs. In addition, clarify if the existing Bases information describing the basis for SFs will be relocated to the SFCP. Provide an example of the proposed SFCP illustrating the consolidated SR approach.

Response:

As a result of a conference call held with the Staff on June 28, 2011, NextEra Energy Duane Arnold has decided to withdraw this portion of the original application dealing with the Surveillance consolidation. Attachments 2 and 3 of this letter contain the revised marked-up pages of the TS and TS Bases, respectively, that are intended to supercede those same pages provided in the original application.

The current approach is to leave the SF basis information in the TS Bases and not relocate that information into the SFCP. While this could necessitate a TS Bases change, under the TS Bases Control Program, for each future SF change, NextEra Energy Duane

Arnold believes this approach preserves the purpose of the TS Bases to have all the TS supporting information in one location and is a better human-factored presentation.

2. In Table 2-1, "Status of Identified Gaps to Capability Category II of the American Society of Mechanical Engineers (ASME) probabilistic risk assessment (PRA) Standard," it is noted that a gap was found for SC-A6. SC-A6 is to confirm that the bases for the success criteria are consistent with the features, procedures and operating philosophy of the plant. The response to this finding states that MAAP runs were updated. Please elaborate on why you believe that updating MAAP runs only, and not considering updates of other supporting engineering analyses or human reliability analysis for success criteria, is sufficient to address this gap finding.

Response:

Supporting Requirement IE-A4a was assessed as 'Not Met' in the December 2007 PRA Peer Review, but was re-assessed as 'Met: Capability Category I/II/III' in the subsequent Focused PRA Peer Review of March 2011. Although our discussion in Table 2-1 regarding disposition of the 2007 gap focuses on use of MAAP for evaluating success criteria, other analytical tools were also employed for the Rev 6 PRA update.

3. In Table 2-3, "Disposition of Peer Review "Suggestion F&Os," *(sic)* the peer review notes in AS-B5a-01 that the Residual Heat Removal (RHR) in suppression pool cooling is not modeled explicitly. The disposition of this comment discusses it for a specific sequence. Please clarify if the peer review comment is related only to the sequence discussed, or if the RHR suppression pool cooling is not modeled explicitly in the PRA model and what is the impact of the condition on the application.

Response:

The peer review comment is related only to the sequence discussed. The suppression pool cooling function of RHR is, and always has been, explicitly considered in the DAEC PRA model as a means of rejecting energy to the ultimate heat sink.

4. In Table 2-3, the peer review also notes for IE-A4a-01, initiating events resulting from multiple failures from common cause and routine system alignments were not included. The disposition addresses this observation by discussing support system initiating event (SSIE) fault trees, concluding that such fault trees can be considered on a case-by-case basis. Provide confirmation that common cause failures and routine system alignments were considered in assessing the possibility of an initiating event for the PRA model, per IE-A4a, or provide technical justification for not meeting IE-A4a Capability Category II for this application.

Response:

Supporting Requirement IE-A4a was assessed as 'Not Met' in the December 2007 PRA Peer Review, but was re-assessed as 'Met: Capability Category II' in the subsequent Focused PRA Peer Review of March 2011. The basis for this assessment is that a structured system-by-system accounting of initiating event identification is included in the updated Initiating Event Notebook. It was also noted that a support system initiating event fault tree has been developed for the River Water Supply system and that initiating events resulting from failure of other support systems are appropriately quantified using Bayesian updating of generic data.

As stated in Table 2-3 in the original application, development of fault tree logic for quantification of specific support system initiators can be considered on a case-by-case basis, depending on the system or components being evaluated for the Surveillance Frequency Control Program.

5. Supplementary information was provided by memorandum dated April 20, 2011, in response to a staff request, and included a table entitled "ASME Category II SRs Not Met in Duane Arnold Energy Center (DAEC) Model, Rev. 6." The peer review had found ASME SR IE-B3-OIA not met for Category II. Given the grouping of initiators and the potential impacts of the subsumed initiating events, most of the initiating events presented, if modeled separately, may not have a significant impact on the base PRA model for this application. However, the gap description indicates that initiating events involving bus failures (1A1/1A2 and 1A3/1A4) could result in turbine trip (TT) or shutdown with impact on plant systems. Please provide technical justification for grouping these bus failure initiating events into TT for this application.

Response:

Failure data associated with 1A1, 1A2, 1A3 and 1A4 were included in the calculation of TT probability. Loss of 1A1 or 1A2 does result in an automatic SCRAM. Loss of 1A3 or 1A4 does not result in an automatic SCRAM but the Alarm Response procedures do require operators to SCRAM the plant if loss is a result of a fault. A sensitivity analysis considering the failure of these buses as initiators along with a turbine trip was performed. The impact of the bus failures was found to not be significant. Therefore, grouping these bus failures with the TT initiating event is appropriate.

6. Does the failure probabilities of structures, systems, and components that are in standby for extended periods as modeled in the DAEC PRA include a standby time-related contribution and a cyclic demand-related contribution? Please describe how you address the standby time-related contribution for extended surveillances.

Response:

No, the SSC standby failure probabilities do not include a separate standby time-related contribution. The standby time-related probability contribution for extended surveillances will be addressed using guidance contained in NEI-04-10 Rev 1 Steps 8, "Associated STI SSC Modeled in PRA?" and 14, "Perform Sensitivity Studies." 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 unless supported by an alternate method supported by data.

7. The scope of risk assessments may need to include shutdown, using Nuclear Energy Institute (NEI) 04-10 guidance for surveillance test interval (STI) changes. What shutdown risk method would be used for the analyses?

Response:

Risk associated with the conduct of maintenance during outages is managed based on principles contained in NUMARC 91-06, Guidelines for Industry Actions to Assess Shutdown Management. Since a PRA model has not yet been developed for shutdown conditions, evaluations involving structures, systems, or components required to function while shutdown will include qualitative information consistent with these principles.

8. Please address the following requested clarifications:

   a. SR 3.3.1.1.11 is marked up in the submittal, but is not incorporated in the DAEC TS cross-reference, Attachment 5 of the submittal. How does this SR cross-reference to NUREG-1433?

   b. SR 3.5.2.6 is marked up for inclusion of the SFCP; however, its corresponding basis was not found in the submittal. Please provide the corresponding basis for SR 3.5.2.6.

   c. In the cross-reference table, it is noted that DAEC 3.3.1.1.17 is consolidated with SR 3.3.1.1.14. Is this correct, or should it be noted as renumbered to SR 3.3.1.1.14? If it is consolidated, how can it be when the SRs have different descriptions? (DAEC 3.3.1.1.14 in the table is noted to be consolidated with renumbered SR 3.3.1.1.11.)

   d. The cross-reference table shows that DAEC 3.3.1.1.12 is renumbered to SR 3.3.1.1.11; however, the marked-up bases show it renumbered to SR 3.3.1.1.10.

Response:

a. DAEC SR 3.3.1.1.11 does not have a counterpart in NUREG-1433 (TSTF-425). It was inadvertently omitted from the Attachment 5 Table in the original application. A corrected Table is provided as Attachment 4 to this letter.

b. SR 3.5.2.6 does not have a unique write up in the current TS Bases, it is the same as for SR 3.5.1.7. See page B 3.5-25 for this cross-reference information. See markup of TS Bases page B 3.5-17, in the original application, for the pertinent SF basis information.

c. As stated in the Response to Question 1 above, NextEra Energy Duane Arnold has chosen to withdraw this portion of the original application. A revised cross-reference Table is provided as Attachment 4 to this letter.

d. As stated in the Response to Question 1 above, NextEra Energy Duane Arnold has chosen to withdraw this portion of the original application. A revised cross-reference Table is provided as Attachment 4 to this letter.

9. Please confirm, or clarify, the following summary of the July 7, 2011 conference call. Based on this conference call, the staff understands that:

   a. The probabilistic risk assessment (PRA) model, Revision 6, proposed for the TSTF-425 application, is complete.

   b. The status of the open gap items for Revision 6 is as provided in the supplemental information, dated April 20, 2011.

   c. The focused peer review, noted in the supplemental information, utilized appropriate independent peer reviewers consistent with Regulatory Guide 1.200.

   d. The focused peer review reviewed the 83 potential gap items from the 2007 full scope peer review, including the 30 provided in the February 23, 2011 submittal.

   e. The focused peer review also reviewed new methods and PRA model changes associated with the upgrade to Revision 6.

   f. This focused peer review identified 12 items, 5 of which have been incorporated into Revision 6, and 7 open items as provided in the supplemental information.

   g. The 7 open gap items supersedes the 30 open gap items provided in TSTF-425 application submittal, dated February 23, 2011, for Revision 6.

h. The 12 items include gap items not previously identified in the February 23, 2011 submittal.

i. In addition to confirming, or clarifying this summary, please describe the 5 gap items noted in the supplemental information and, for each with its own unique identifier, how they were dispositioned via the Revision 6 PRA model.

Response:

a. Yes the model is complete. It was validated and issued on June 30, 2011.

b. Yes, the only open items remaining are those listed in the supplemental information dated April 20, 2011.

c. There were 5 independent peer reviewers, consisting of a contractor peer review lead and two PRA contractors, supplemented by 2 NextEra Energy employees - one is a senior PRA engineer from Seabrook Station and the other is an experienced PRA engineer that was newly hired to be on the corporate staff. The contractors on the peer review team were selected through a bidding process of qualified vendors. Neither of the NextEra Energy employees on the team had participated in the creation or update of the DAEC PRA.

d. The scope of the review included the original gaps from the 2007 full scope peer review along with reviews of method changes implemented to close the 2007 peer review gaps.

e. The peer review reexamined methods associated with the previous findings and suggestions and methods coupled to the SRs related to these findings. The new methods reviewed include use of the EPRI HRA calculator and changing the common cause statistic from beta to alpha.

f. Yes, 2 of the 5 were logic changes incorporated into Revision 6 of the model, 2 were additional reviews to validate model logic and data, and 1 was a procedure change.

g. Yes, the 7 findings supersede the 30 open gap items provided in TSTF-425 application submittal.

h. Yes, the scope of the focused peer review expanded beyond the previously identified gaps in cases where gaps where found in implementing new methods.

i. See the following table.

SR	FINDING	Disposition
SY-A3-01A	The remarks made by the previous peer review under finding SY-A3-03 are still open and still valid. Failure of either vital 4kV bus Start Up Transformer (SUT) breaker, 1A302 [1A402], to trip on LOSP is not modeled – this failure would prevent associated EDG breaker from closing onto the bus. Omission of this is non-conservative. The model should include the necessary dependencies for this event. Specifically, the fault tree model omits a dependency; the failure of the normal supply breaker to each vital 4kV bus to trip upon a loss of offsite power to allow the associated EDG to close onto the bus. More importantly, a common cause failure between the two breakers for the two busses is omitted. This CCF may contribute significantly to SBO sequences. Also, not modeling these breakers will have an impact on the fire model. **RECOMMENDATION:** These components should be modeled to remove non-conservatism and to address future PRA applications.	This finding was closed by adding SUT breakers to the PRA model. The change included new random and CCF basic events for these breakers. This change was documented in supplements to the PRA notebooks.
SY-C2-02A	There are no system level cutsets included in the notebooks and as such no evidence that the system models were evaluated to validate they are complete and accurate [i.e. a description of model results]. Based on discussions with DAEC, system level cutsets were reviewed to validate the models, however the results of the review were not documented and the system level cutsets were not included in the notebooks. **RECOMMENDATON:** Include system level cutsets in the system notebooks along with an assessment.	System cutsets were prepared and reviewed. As a result of this review several changes were made to the Revision 6 model and documented in supplements to the PRA notebooks.
DA-C10-01A	No evidence of failure mode level information is provided. This requires documentation of a review of test procedures to determine that test covers all failure modes of a component. For example a check associated with a pump may or may not be cycled based on the recirculation configuration. **RECOMMENDATION:** Address this issue by component type (e. g. pump test likely covers all pump failure modes but not failure modes of all downstream valves).	Test procedures were reviewed against their related component failure modes. The assumed failure modes for components were found to be covered. No changes were required to the model. The evaluation was documented in supplements to the PRA notebooks.
DA-D4-01A	Appendix C.1 provides graphs of prior and posterior distributions; however there is no discussion of the reasonableness of the posterior. For example for TC AS1K FR has a prior mean of 9 E-5 with evidence of 3 failures in 544. It appears that the data is inconsistent with the prior.	The reasonableness of the prior and posterior distributions was reviewed and concluded that no model changes were required. The evaluation was documented in supplements to the PRA notebooks.

SR	FINDING	Disposition
MU-F1-01	Update PRA procedures to meet all MU SRs.	The Duane Arnold PRA Maintenance procedure was updated to meet all MU SRs. Also, a table cross referencing all the MU SRs to specific sections in the procedure was added to facilitate maintenance of the procedure and its verification in the future.

Attachment 2
To NG-11-0299

UPDATED

PROPOSED

TECHNICAL SPECIFICATION CHANGES

(MARK-UPS)

33 Pages to Follow

SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.1.1-1 to determine which SRs apply for each RPS Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains RPS trip capability.

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1.1	Perform CHANNEL CHECK.	~~12 hours~~ INSERT 1
SR 3.3.1.1.2	----------NOTE---------- Not required to be performed until 12 hours after THERMAL POWER ≥ 21.7% RTP. ----------	
	Verify the absolute difference between the Average Power Range Monitor (APRM) channels and the calculated power is ≤ 2% RTP plus any gain adjustment required by LCO 3.4.1, "Recirculation Loops Operating," while operating at ≥ 21.7% RTP.	~~24 hours~~ INSERT 1
SR 3.3.1.1.3	Perform a functional test of each automatic scram contactor.	~~7 days~~ INSERT 1
SR 3.3.1.1.4	----------NOTE---------- Not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. ----------	
	Perform CHANNEL FUNCTIONAL TEST.	~~7 days~~ INSERT 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.5	Perform CHANNEL FUNCTIONAL TEST.	~~7 days~~ INSERT 1
SR 3.3.1.1.6	Verify the Source Range Monitor (SRM) and Intermediate Range Monitor (IRM) channels overlap.	Prior to withdrawing SRMs from the fully inserted position
SR 3.3.1.1.7	----------NOTE---------- Only required to be met during entry into MODE 2 from MODE 1. ---------- Verify the IRM and APRM channels overlap.	~~7 days~~ INSERT 1
SR 3.3.1.1.8	Calibrate the local power range monitors.	~~1000 MWD/T average core exposure~~ INSERT 1
SR 3.3.1.1.9	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ INSERT 1
SR 3.3.1.1.10	Calibrate the trip units.	~~92 days~~ INSERT 1
SR 3.3.1.1.11	Perform CHANNEL CALIBRATION.	~~92 days~~ INSERT 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1.12	----------NOTES---------- 1. Neutron detectors are excluded. 2. For Function 2.a, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. ---------- Perform CHANNEL CALIBRATION.	~~184 days~~ INSERT 1
SR 3.3.1.1.13	Perform CHANNEL FUNCTIONAL TEST.	~~24 months~~ INSERT 1
SR 3.3.1.1.14	----------NOTES---------- 1. Neutron detectors are excluded. 2. For Function 1, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. ---------- Perform CHANNEL CALIBRATION.	~~24 months~~ INSERT 1
SR 3.3.1.1.15	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~ INSERT 1
SR 3.3.1.1.16	Verify Turbine Stop Valve-Closure and Turbine Control Valve Fast Closure, Trip Oil Pressure – Low Functions are not bypassed when THERMAL POWER is ≥ 26% RTP.	~~24 months~~ INSERT 1 *

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.17	Adjust the channel to conform to a calibrated flow signal.	~~24 months~~ INSERT 1
SR 3.3.1.1.18	Verify the RPS RESPONSE TIME is within limits.	~~24 months on a STAGGERED TEST BASIS~~ INSERT 1
SR 3.3.1.1.19	Verify the RPS logic system response time is within limits.	~~24 months on a STAGGERED TEST BASIS~~ INSERT 1

The revisions on this page are being withdrawn from this application.

Table 3.3.1.1-1 (page 1 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Intermediate Range Monitors					
a. Neutron Flux - High	2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.4 SR 3.3.1.1.6 SR 3.3.1.1.7 SR 3.3.1.1.~~14~~ 11 SR 3.3.1.1.~~15~~ 12 SR 3.3.1.1.~~16~~ 16	≤ 125/125 divisions of full scale
	5[(a)]	2	H	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.~~14~~ 11 SR 3.3.1.1.~~15~~ 12 SR 3.3.1.1.~~16~~ 16	≤ 125/125 divisions of full scale
b. Inop	2	2	G	SR 3.3.1.1.4 SR 3.3.1.1.~~15~~ 12 SR 3.3.1.1.~~16~~ 16	NA
	5[(a)]	2	H	SR 3.3.1.1.5 SR 3.3.1.1.~~15~~ 12 SR 3.3.1.1.~~16~~ 16	NA
2. Average Power Range Monitors					
a. Neutron Flux - Upscale, Startup	2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.4 SR 3.3.1.1.7 SR 3.3.1.1.8 SR 3.3.1.1.~~12~~ 11 SR 3.3.1.1.~~15~~ 12 SR 3.3.1.1.~~16~~ 16	≤ 16.6% RTP
b. Flow Biased - High	1	2	F	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.3 SR 3.3.1.1.8 5 SR 3.3.1.1.~~9~~ 11 SR 3.3.1.1.~~12~~ 12 SR 3.3.1.1.~~15~~ 14 SR 3.3.1.1.~~17~~ 16 SR 3.3.1.1.~~16~~	≤ (0.55W + 67.7) [(b) (c)]

(Continued)

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

(b) When reset for single loop operation per LCO 3.4.1, "Recirculation Loops Operating," the following Allowable Value applies:

≤ (0.55W + 61.4) [(c)]

The trip setpoints may be reset by adjusting APRM gain or by recalibrating the APRMs.

(c) W is equal to the percentage of the drive flow, where 100% drive flow is that required to achieve 100% core flow at 100% RTP.

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~~Amendment 243~~

The revisions on this page are being withdrawn from this application.

Table 3.3.1.1-1 (page 2 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. Average Power Range Monitors (continued)					
c. High Value Clamp	1	2	F	SR 3.3.1.1.2 SR 3.3.1.1.3 SR 3.3.1.1.8 SR 3.3.1.1.~~9~~ 5 SR 3.3.1.1.~~12~~ 11 SR 3.3.1.1.~~15~~ 12 SR 3.3.1.1.~~19~~ 16	≤ 121.6% RTP
d. Inop	1,2	2	G	SR 3.3.1.1.3 SR 3.3.1.1.~~9~~ 5 SR 3.3.1.1.~~15~~ 12 SR 3.3.1.1.~~19~~ 16	NA
3. Reactor Vessel Steam Dome Pressure - High	1,2	2	G	SR 3.3.1.1.3 SR 3.3.1.1.~~9~~ 5 SR 3.3.1.1.~~11~~ 10 SR 3.3.1.1.~~15~~ 12 SR 3.3.1.1.~~18~~ 15 SR 3.3.1.1.~~19~~ 16	≤ 1069.2 psig
4. Reactor Vessel Water Level - Low	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.3 SR 3.3.1.1.~~9~~ 5 SR 3.3.1.1.~~14~~ 11 SR 3.3.1.1.~~15~~ 12 SR 3.3.1.1.~~18~~ 15 SR 3.3.1.1.~~19~~ 16	≥ 165.6 inches
5. Main Steam Isolation Valve - Closure	1	4	F	SR 3.3.1.1.3 SR 3.3.1.1.~~9~~ 5 SR 3.3.1.1.~~14~~ 11 SR 3.3.1.1.~~15~~ 12 SR 3.3.1.1.~~19~~ 16	≤ 10% closed
6. Drywell Pressure - High	1,2	2	G	SR 3.3.1.1.3 SR 3.3.1.1.~~9~~ 5 SR 3.3.1.1.~~14~~ 11 SR 3.3.1.1.~~15~~ 12 SR 3.3.1.1.~~19~~ 16	≤ 2.2 psig

(continued)

Table 3.3.1.1-1 (page 3 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
7. Scram Discharge Volume Water Level - High					
a. Resistance Temperature Detector	1,2	2	G	SR 3.3.1.1.3 SR 3.3.1.1.~~10~~ 9 SR 3.3.1.1.~~13~~ 11 SR 3.3.1.1.~~14~~ 12 SR 3.3.1.1.~~15~~ 16 SR 3.3.1.1.~~19~~ 5	≤ 769 ft – 3.0 inches
	5[(a)]	2	H	SR 3.3.1.1.3 SR 3.3.1.1.~~10~~ 9 SR 3.3.1.1.~~13~~ 11 SR 3.3.1.1.~~14~~ 12 SR 3.3.1.1.~~15~~ 16 SR 3.3.1.1.~~19~~ 5	≤ 769 ft – 3.0 inches
b. Float Switch	1,2	2	G	SR 3.3.1.1.3 SR 3.3.1.1.~~9~~ 11 SR 3.3.1.1.~~14~~ 12 SR 3.3.1.1.~~15~~ 16 SR 3.3.1.1.~~19~~ 5	≤ 769 ft – 2.8 inches
	5[(a)]	2	H	SR 3.3.1.1.3 SR 3.3.1.1.~~9~~ 11 SR 3.3.1.1.~~14~~ 12 SR 3.3.1.1.~~15~~ 16 SR 3.3.1.1.~~19~~ 5	≤ 769 ft – 2.8 inches
8. Turbine Stop Valve - Closure	≥ 26% RTP	4	E	SR 3.3.1.1.3 SR 3.3.1.1.~~9~~ 11 SR 3.3.1.1.~~14~~ 12 SR 3.3.1.1.~~15~~ 13 SR 3.3.1.1.~~16~~ 16 SR 3.3.1.1.~~19~~ 5	≤ 10% closed
9. Turbine Control Valve Fast Closure, Trip Oil Pressure - Low	≥ 26% RTP	2	E	SR 3.3.1.1.3 SR 3.3.1.1.~~9~~ 11 SR 3.3.1.1.~~14~~ 12 SR 3.3.1.1.~~15~~ 13 SR 3.3.1.1.~~16~~ 16 SR 3.3.1.1.~~19~~ 5	≥ 465 psig
10. Reactor Mode Switch – Shutdown Position	1,2	1	G	SR 3.3.1.1.~~13~~ 5 SR 3.3.1.1.~~15~~ 12	NA
	5[(a)]	1	H	SR 3.3.1.1.~~13~~ 5 SR 3.3.1.1.~~15~~ 12	NA
11. Manual Scram	1,2	1	G	SR 3.3.1.1.~~9~~ 5 SR 3.3.1.1.~~15~~ 12	NA
	5[(a)]	1	H	SR 3.3.1.1.~~9~~ 5 SR 3.3.1.1.~~15~~ 12	NA

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

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SURVEILLANCE REQUIREMENTS

----------NOTE----------
Refer to Table 3.3.1.2-1 to determine which SRs apply for each applicable MODE or other specified conditions.

SURVEILLANCE		FREQUENCY
SR 3.3.1.2.1	Perform CHANNEL CHECK.	~~12 hours~~
SR 3.3.1.2.2	----------NOTES---------- 1. Only required to be met during CORE ALTERATIONS. 2. One SRM may be used to satisfy more than one of the following. --- Verify an OPERABLE SRM detector is located in : a. The fueled region; b. The core quadrant where CORE ALTERATIONS are being performed, when the associated SRM is included in the fueled region; and c. A core quadrant adjacent to where CORE ALTERATIONS are being performed, when the associated SRM is included in the fueled region.	~~12 hours~~
SR 3.3.1.2.3	Perform CHANNEL CHECK.	~~24 hours~~

INSERT 1

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.2.4	----------NOTE---------- Not required to be met with less than or equal to four fuel assemblies adjacent to the SRM and no other fuel assemblies in the associated core quadrant. --- Verify count rate is ≥ 3.0 cps.	~~12 hours during CORE ALTERATIONS AND 24 hours~~
SR 3.3.1.2.5	Perform CHANNEL FUNCTIONAL TEST.	~~7 days~~
SR 3.3.1.2.6	----------NOTE---------- Not required to be performed until 12 hours after IRMs on Range 2 or below. --- Perform CHANNEL FUNCTIONAL TEST.	INSERT 1 ~~31 days~~
SR 3.3.1.2.7	----------NOTES---------- 1. Neutron detectors are excluded. 2. Not required to be performed until 12 hours after IRMs on Range 2 or below. --- Perform CHANNEL CALIBRATION.	~~24 months~~

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~~Amendment 223~~

The revisions on this page are being withdrawn from this application.

Table 3.3.1.2-1 (page 1 of 1)
Source Range Monitor Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS
1. Source Range Monitor	2[(a)]	3	SR 3.3.1.2.1 3 SR 3.3.1.2.~~4~~ 5 SR 3.3.1.2.~~6~~ 5 SR 3.3.1.2.~~7~~ 6
	3,4	2	SR 3.3.1.2.~~3~~ 1 SR 3.3.1.2.~~4~~ 3 SR 3.3.1.2.~~6~~ 5 SR 3.3.1.2.~~7~~ 6
5		2[(b) (c)]	SR 3.3.1.2.1 SR 3.3.1.2.2 3 SR 3.3.1.2.~~4~~ 4 SR 3.3.1.2.~~6~~ 4 SR 3.3.1.2.~~7~~ 6

(a) With IRMs on Range 2 or below.

(b) Only one SRM channel is required to be OPERABLE during spiral offload or reload when the fueled region includes only that SRM detector.

(c) Special movable detectors may be used in place of SRMs if connected to normal SRM circuits.

SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.5.1-1 to determine which SRs apply for each ECCS Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed as follows: (a) for up to 6 hours for Functions 1.d, 2.f, 3.c, 3.d, 3.e, and 3.f; and (b) for up to 6 hours for Functions other than 1.d, 2.f, 3.c, 3.d, 3.e, and 3.f provided the associated Function (or the redundant Function for Functions 4 and 5) maintains ECCS initiation or loop selection capability.

	SURVEILLANCE	FREQUENCY
SR 3.3.5.1.1	Perform CHANNEL CHECK.	~~24 hours~~
SR 3.3.5.1.2	Perform CHANNEL FUNCTIONAL TEST.	~~31 days~~
SR 3.3.5.1.3	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~
SR 3.3.5.1.4	Perform CHANNEL CALIBRATION.	~~92 days~~
SR 3.3.5.1.5	Perform CHANNEL FUNCTIONAL TEST.	~~12 months~~
SR 3.3.5.1.6	Perform CHANNEL CALIBRATION.	~~12 months~~

INSERT 1

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.5.1.7	Perform CHANNEL CALIBRATION.	~~18 months~~
SR 3.3.5.1.8	Perform CHANNEL CALIBRATION.	~~24 months~~
SR 3.3.5.1.9	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~

INSERT 1

The revisions on this page are being withdrawn from this application.

Table 3.3.5.1-1 (page 1 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Core Spray System					
a. Reactor Vessel Water Level – Low Low Low	1,2,3, 4[a], 5[a]	4[b]	B	SR 3.3.5.1.1 2 SR 3.3.5.1.~~2~~ 3 SR 3.3.5.1.~~6~~ 3 SR 3.3.5.1.~~9~~ 4	≥ 38.3 inches
b. Drywell Pressure - High	1,2,3	4[b]	B	SR 3.3.5.1.~~2~~ 2 SR 3.3.5.1.~~6~~ 3 SR 3.3.5.1.~~9~~ 4	≤ 2.19 psig
c. Reactor Steam Dome Pressure – Low (Injection Permissive)	1,2,3	4	C	SR 3.3.5.1.~~2~~ 2 SR 3.3.5.1.~~6~~ 3 SR 3.3.5.1.~~9~~ 4	≥ 363.3 psig and ≤ 485.1 psig
	4[a], 5[a]	4	B	SR 3.3.5.1.~~5~~ 2 SR 3.3.5.1.~~6~~ 3 SR 3.3.5.1.~~9~~ 4	≥ 363.3 psig and ≤ 485.1 psig
d. Core Spray Pump Discharge Flow – Low (Bypass)	1,2,3, 4[a], 5[a]	1 per pump	E	SR 3.3.5.1.~~3~~ 2 SR 3.3.5.1.~~6~~ 3 SR 3.3.5.1.~~9~~ 4	≥ 256.6 gpm and ≤ 2382.1 gpm
e. Core Spray Pump Start Time Delay Relay	1,2,3, 4[a], 5[a]	1 per pump	C	SR 3.3.5.1.~~8~~ 3 SR 3.3.5.1.~~9~~ 4	≥ 2.6 seconds and ≤ 6.8 seconds
f. 4.16 kV Emergency Bus Sequential Loading Relay	1,2,3, 4[a], 5[a]	1 per pump	F	SR 3.3.5.1.~~5~~ 2 SR 3.3.5.1.~~6~~ 3 SR 3.3.5.1.~~9~~ 4	≤ 3500 V
2. Low Pressure Coolant Injection (LPCI) System					
a. Reactor Vessel Water Level- Low Low Low	1,2,3, 4[a], 5[a]	4	B	SR 3.3.5.1.1 SR 3.3.5.1.~~2~~ 2 SR 3.3.5.1.~~8~~ 3 SR 3.3.5.1.~~9~~ 4	≥ 38.3 inches
b. Drywell Pressure - High	1,2,3	4	B	SR 3.3.5.1.~~2~~ 2 SR 3.3.5.1.~~6~~ 3 SR 3.3.5.1.~~9~~ 4	≤ 2.19 psig

(continued)

(a) When associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2, ECCS-Shutdown.

(b) Also required to initiate the associated Diesel Generator (DG).

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The revisions on this page are being withdrawn from this application.

Table 3.3.5.1-1 (page 2 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. LPCI System (continued)					
c. Reactor Steam Dome Pressure – Low (Injection Permissive)	1,2,3	4	C	SR 3.3.5.1.2 2 SR 3.3.5.1.6 3 SR 3.3.5.1.9 4	≥ 363.3 psig and ≤ 485.1 psig
	4(a), 5(a)	4	B	SR 3.3.5.1.3 2 SR 3.3.5.1.8 3 SR 3.3.5.1.9 4	≥ 363.3 psig and ≤ 485.1 psig
d. Reactor Vessel Shroud Level - Low	1,2,3	4	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 3 SR 3.3.5.1.9 4	≥ 40.89 inches
e. Low Pressure Coolant Injection Pump Start - Time Delay Relay	1,2,3, 4(a), 5(a)	1 per pump	C	SR 3.3.5.1.8 3 SR 3.3.5.1.9 4	
Pumps A & B					≥ 8.8 seconds and ≤ 11.2 seconds
Pumps C & D					≥ 13.8 seconds and ≤ 33.5 seconds
f. Low Pressure Coolant Injection Pump Discharge Flow – Low (Bypass)	1,2,3, 4(a), 5(a)	1 per loop	E	SR 3.3.5.1.2 2 SR 3.3.5.1.6 3 SR 3.3.5.1.9 4	≥ 471.8 gpm and ≤ 3676.6 gpm
g. LPCI Loop Select-Reactor Vessel Water Level - Low-Low	1,2,3	4	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.6 3 SR 3.3.5.1.9 4	≥ 112.65 inches
h. LPCI Loop Select – Reactor Steam Dome Pressure - Low	1,2,3	4	C	SR 3.3.5.1.2 SR 3.3.5.1.4 3 SR 3.3.5.1.9 4	≥ 887 psig

(continued)

(a) When associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2, ECCS – Shutdown.

The revisions on this page are being withdrawn from this application.

Table 3.3.5.1-1 (page 3 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. LPCI System (continued)					
i. LPCI Loop Select – Recirculation Pump Differential Pressure	1,2,3	4 per pump	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.~~8~~ 3 SR 3.3.5.1.~~9~~ 4	≤ 7.8 psid
j. LPCI Loop Select – Recirculation Riser Differential Pressure	1,2,3	4	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.~~4~~ 3 SR 3.3.5.1.~~5~~ 4	≥ 0.13 psid and ≤ 2.07 psid
k. 4.16 kV Emergency Bus Sequential Loading Relay	1,2,3	2	F	SR 3.3.5.1.~~5~~ 2 SR 3.3.5.1.~~6~~ 3 SR 3.3.5.1.~~9~~ 4	≤ 3500 V
	4[(a)], 5[(a)]	1	F	SR 3.3.5.1.~~5~~ 2 SR 3.3.5.1.~~6~~ 3 SR 3.3.5.1.~~9~~ 4	≤ 3500 V
3. High Pressure Coolant Injection (HPCI) System					
a. Reactor Vessel Water Level - Low Low	1, 2[(c)], 3[(c)]	4	B	SR 3.3.5.1.1 SR 3.3.5.1.~~2~~ 2 SR 3.3.5.1.~~6~~ 3 SR 3.3.5.1.~~9~~ 4	≥ 112.65 inches
b. Drywell Pressure - High	1, 2[(c)], 3[(c)]	4	B	SR 3.3.5.1.~~3~~ 2 SR 3.3.5.1.~~8~~ 3 SR 3.3.5.1.~~9~~ 4	≤ 2.19 psig
c. Reactor Vessel Water Level - High	1, 2[(c)], 3[(c)]	2	C	SR 3.3.5.1.1 SR 3.3.5.1.~~2~~ 2 SR 3.3.5.1.~~6~~ 3 SR 3.3.5.1.~~9~~ 4	≤ 214.8 inches
d. Condensate Storage Tank Level - Low	1, 2[(c)], 3[(c)]	2	D	SR 3.3.5.1.~~3~~ 2 SR 3.3.5.1.~~8~~ 3 SR 3.3.5.1.~~9~~ 4	≥ 11.6 inches

(continued)

(a) When the associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2, ECCS – Shutdown.

(c) With reactor steam dome pressure > 150 psig.

The revisions on this page are being withdrawn from this application.

Table 3.3.5.1-1 (page 4 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. HPCI System (continued)					
e. Suppression Pool Water Level – High	1, 2[c], 3[c]	2	D	SR 3.3.5.1.~~3~~ 2 SR 3.3.5.1.~~6~~ 3 SR 3.3.5.1.~~9~~ 4	≤ 5.9 inches
f. High Pressure Coolant Injection Pump Discharge Flow – Low (Bypass)	1, 2[c], 3[c]	1	E	SR 3.3.5.1.~~3~~ 2 SR 3.3.5.1.~~6~~ 3 SR 3.3.5.1.~~9~~ 4	≥ 264.2 gpm and ≤ 2025.1 gpm
4. Automatic Depressurization System (ADS) Trip Logic A					
a. Reactor Vessel Water Level - Low Low Low	1, 2[d], 3[d]	2	G	SR 3.3.5.1.1 SR 3.3.5.1.~~3~~ 2 SR 3.3.5.1.~~6~~ 3 SR 3.3.5.1.~~9~~ 4	≥ 38.3 inches
b. Automatic Depressurization System Timer	1, 2[d], 3[d]	1	H	SR 3.3.5.1.~~3~~ 2 SR 3.3.5.1.~~6~~ 3 SR 3.3.5.1.~~9~~ 4	≤ 125 seconds
c. Reactor Vessel Water Level – Low (Confirmatory)	1, 2[d], 3[d]	1	G	SR 3.3.5.1.1 SR 3.3.5.1.~~3~~ 2 SR 3.3.5.1.~~6~~ 3 SR 3.3.5.1.~~9~~ 4	≥ 166.1 inches
d. Core Spray Pump Discharge Pressure - High	1, 2[d], 3[d]	2	H	SR 3.3.5.1.~~3~~ 2 SR 3.3.5.1.~~6~~ 3 SR 3.3.5.1.~~9~~ 4	≥ 114.2 psig and ≤ 177.0 psig
e. Low Pressure Coolant Injection Pump Discharge Pressure - High	1, 2[d], 3[d]	4	H	SR 3.3.5.1.~~3~~ 2 SR 3.3.5.1.~~6~~ 3 SR 3.3.5.1.~~9~~ 4	≥ 103.8 psig and ≤ 147.0 psig

(continued)

(c) With reactor steam dome pressure > 150 psig.

(d) With reactor steam dome pressure > 100 psig.

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The revisions on this page are being withdrawn from this application.

Table 3.3.5.1-1 (page 5 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
5. ADS Trip Logic B					
a. Reactor Vessel Water Level - Low Low Low	1, 2(d), 3(d)	2	G	SR 3.3.5.1.1 SR 3.3.5.1.3 SR 3.3.5.1.8 SR 3.3.5.1.9 2 3 4	≥ 38.3 inches
b. Automatic Depressurization System Timer	1, 2(d), 3(d)	1	H	SR 3.3.5.1.2 SR 3.3.5.1.8 SR 3.3.5.1.9 2 3 4	≤ 125 seconds
c. Reactor Vessel Water Level – Low (Confirmatory)	1, 2(d), 3(d)	1	G	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.8 SR 3.3.5.1.9 2 3 4	≥ 166.1 inches
d. Core Spray Pump Discharge Pressure - High	1, 2(d), 3(d)	2	H	SR 3.3.5.1.3 SR 3.3.5.1.8 SR 3.3.5.1.9 2 3 4	≥ 114.2 psig and ≤ 177.0 psig
e. Low Pressure Coolant Injection Pump Discharge Pressure - High	1, 2(d), 3(d)	4	H	SR 3.3.5.1.3 SR 3.3.5.1.8 SR 3.3.5.1.9 2 3 4	≥ 103.8 psig and ≤ 147.0 psig

(d) With reactor steam dome pressure > 100 psig.

SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.5.2-1 to determine which SRs apply for each RCIC Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed as follows: (a) for up to 6 hours for Functions 2 and 3; and (b) for up to 6 hours for Function 1 provided the associated Function maintains RCIC initiation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.5.2.1	Perform CHANNEL CHECK.	~~24 hours~~
SR 3.3.5.2.2	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~
SR 3.3.5.2.3	Perform CHANNEL CALIBRATION.	~~12 months~~
SR 3.3.5.2.4	Perform CHANNEL CALIBRATION.	~~24 months~~
SR 3.3.5.2.5	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~

INSERT 1

The revisions on this page are being withdrawn from this application.

Table 3.3.5.2-1 (page 1 of 1)
Reactor Core Isolation Cooling System Instrumentation

FUNCTION	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Reactor Vessel Water Level – Low Low	4	B	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.3 SR 3.3.5.2.~~5~~ 4	≥ 112.65 inches
2. Reactor Vessel Water Level - High	2	C	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.3 SR 3.3.5.2.~~5~~ 4	≤ 214.8 inches
3. Condensate Storage Tank Level - Low	2	D	SR 3.3.5.2.2 SR 3.3.5.2.~~4~~ 3 SR 3.3.5.2.~~5~~ 4	≥ 11.6 inches

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SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.6.1-1 to determine which SRs apply for each Primary Containment Isolation Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed as follows: (a) for up to 6 hours for Function 5.a; and (b) for up to 6 hours for Functions other than 5.a provided the associated Function maintains isolation capability. *

SURVEILLANCE		FREQUENCY
SR 3.3.6.1.1	Perform CHANNEL CHECK.	~~12 hours~~
SR 3.3.6.1.2	Perform CHANNEL CHECK.	~~24 hours~~
SR 3.3.6.1.3	Perform CHANNEL FUNCTIONAL TEST.	~~31 days~~
SR 3.3.6.1.4	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~
SR 3.3.6.1.5	Perform CHANNEL CALIBRATION.	~~92 days~~
SR 3.3.6.1.6	Perform CHANNEL CALIBRATION.	~~184 days~~
SR 3.3.6.1.7	Perform CHANNEL CALIBRATION.	~~12 months~~

INSERT 1

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.6.1.8	Perform CHANNEL CALIBRATION.	~~24 months~~
SR 3.3.6.1.9	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~

INSERT 1

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The revisions on this page are being withdrawn from this application.

Table 3.3.6.1-1 (page 1 of 5)
Primary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Main Steam Line Isolation					
a. Reactor Vessel Water Level – Low Low Low	1,2,3	2	D	SR 3.3.6.1.1 SR 3.3.6.1.4 SR 3.3.6.1.8 SR 3.3.6.1.9	2 3 4 ≥ 38.3 inches
b. Main Steam Line Pressure - Low	1	2	E	SR 3.3.6.1.4 SR 3.3.6.1.5 SR 3.3.6.1.9	2 3 4 ≥ 821 psig
c. Main Steam Line Flow - High	1,2,3 2	per MSL	D	SR 3.3.6.1.1 SR 3.3.6.1.4 SR 3.3.6.1.5 SR 3.3.6.1.9	2 3 4 ≤ 138% rated steam flow
d. Condenser Backpressure - High	1, 2[(a)], 3[(a)]	2	D	SR 3.3.6.1.4 SR 3.3.6.1.8 SR 3.3.6.1.9	2 3 4 ≥ 7.2 inches Hg vacuum
e. Main Steam Line Tunnel Temperature - High	1,2,3	4	D	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.7 SR 3.3.6.1.9	1 2 3 4 ≤ 205.1°F
f.. Turbine Building Temperature - High	1,2,3	4	D	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.7 SR 3.3.6.1.9	1 2 3 4 ≤ 205.1°F

(continued)

(a) When any turbine stop valve is greater than 90% open or when the key-locked bypass switch is in the NORM Position.

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The revisions on this page are being withdrawn from this application.

Table 3.3.6.1-1 (page 2 of 5)
Primary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. Primary Containment Isolation					
a. Reactor Vessel Water Level – Low	1,2,3	2	H	SR 3.3.6.1.1 SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.9	2 3 4 ≥ 165.6 inches
b. Drywell Pressure - High	1,2,3	2	H	SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.9	2 3 4 ≤ 2.2 psig
c. Offgas Vent Stack - High Radiation	1(c), 2(c), 3(c)	1	L	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.9	1 2 3 4 (b)
d. Reactor Building Exhaust Shaft – High Radiation	1,2,3	1	H	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.9	1 2 3 4 ≤ 12.8 mR/hr
e. Refueling Floor Exhaust Duct – High Radiation	1,2,3	1	H	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.9	1 2 3 4 ≤ 10.6 mR/hr
3. High Pressure Coolant Injection (HPCI) System Isolation					
a. HPCI Steam Line Flow - High	1,2,3	1	F	SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.9	2 3 4 ≤ 409 inches (inboard) ≤ 110 inches (outboard)

(continued)

(b) Allowable value is determined in accordance with the ODAM.

(c) During venting or purging of primary containment.

The revisions on this page are being withdrawn from this application.

Table 3.3.6.1-1 (page 3 of 5)
Primary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. HPCI System Isolation (continued)					
b. HPCI Steam Supply Line Pressure – Low	1,2,3	2	F	SR 3.3.6.1.4 2 SR 3.3.6.1.6 3 SR 3.3.6.1.9 4	≥ 50 psig and ≤ 147.1 psig
c. HPCI Turbine Exhaust Diaphragm Pressure - High	1,2,3	2	F	SR 3.3.6.1.4 2 SR 3.3.6.1.6 3 SR 3.3.6.1.9 4	≥ 2.5 psig
d. Drywell Pressure - High	1,2,3	1	F	SR 3.3.6.1.4 2 SR 3.3.6.1.6 3 SR 3.3.6.1.9 4	≤ 2.2 psig
e. Suppression Pool Area Ambient Temperature – High	1,2,3	1	F	SR 3.3.6.1.2 1 SR 3.3.6.1.4 2 SR 3.3.6.1.6 3 SR 3.3.6.1.9 4	≤ 153.3°F
f. HPCI Leak Detection Time Delay	1,2,3	1	F	SR 3.3.6.1.4 2 SR 3.3.6.1.6 3 SR 3.3.6.1.9 4	N/A
g. Suppression Pool Area Ventilation Differential Temperature - High	1,2,3	1	F	SR 3.3.6.1.2 1 SR 3.3.6.1.4 2 SR 3.3.6.1.6 3 SR 3.3.6.1.9 4	≤ 51.5°F
h. HPCI Equipment Room Temperature - High	1,2,3	1	F	SR 3.3.6.1.2 1 SR 3.3.6.1.4 2 SR 3.3.6.1.6 3 SR 3.3.6.1.9 4	≤ 178.3°F
i. HPCI Room Ventilation Differential Temperature - High	1,2,3	1	F	SR 3.3.6.1.2 1 SR 3.3.6.1.4 2 SR 3.3.6.1.6 3 SR 3.3.6.1.9 4	≤ 51.5°F

(continued)

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The revisions on this page are being withdrawn from this application.

Table 3.3.6.1-1 (page 4 of 5)
Primary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. Reactor Core Isolation Cooling (RCIC) System Isolation					
a. RCIC Steam Line Flow – High	1,2,3	1	F	SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.9 2 3 4	≤ 164 inches (inboard) ≤ 159 inches (outboard)
b. RCIC Steam Supply Line Pressure - Low	1,2,3	2	F	SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.9 2 3 4	≥ 50.3 psig
c. RCIC Turbine Exhaust Diaphragm Pressure - High	1,2,3	2	F	SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.9 2 3 4	≥ 3.3 psig
d. Drywell Pressure – High	1,2,3	1	F	SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.9 2 3 4	≤ 2.2 psig
e. RCIC Suppression Pool Area Ambient Temperature - High	1,2,3	1	F	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.9 1 2 3 4	≤ 153.3°F
f. RCIC Leak Detection Time Delay	1,2,3	1	F	SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.9 2 3 4	N/A
g. RCIC Suppression Pool Area Ventilation Differential Temperature - High	1,2,3	1	F	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.9 1 2 3 4	≤ 51.5°F
h. RCIC Equipment Room Temperature - High	1,2,3	1	F	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.9 1 2 3 4	≤ 178.3°F
i. RCIC Room Ventilation Differential Temperature - High	1,2,3 1		F	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.9 1 2 3 4	≤ 51.5°F

(continued)

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The revisions on this page are being withdrawn from this application.

Table 3.3.6.1-1 (page 5 of 5)
Primary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
5. Reactor Water Cleanup (RWCU) System Isolation					
a. Differential Flow - High	1,2,3	1	F	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.8 SR 3.3.6.1.9	≤ 59 gpm
b. Area Temperature - High	1,2,3	1(d)	F	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.8 SR 3.3.6.1.9	≤ 133.3°F
c. Area Ventilation Differential Temperature – High RWCU Pump Room RWCU Pump A Room RWCU Pump B Room RWCU Heat Exch. Room	1,2,3	1(d)	F	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.8 SR 3.3.6.1.9	≤ 22.5°F ≤ 23.5°F ≤ 34.5°F ≤ 51.5°F
d. SLC System Initiation	1,2	1(e)	I	SR 3.3.6.1.9	NA
e. Reactor Vessel Water Level – Low Low	1,2,3	2	F	SR 3.3.6.1.1 SR 3.3.6.1.4 SR 3.3.6.1.7 SR 3.3.6.1.9	≥ 112.65 inches
f. Area Near TIP Room Ambient Temperature – High	1,2,3	1	F	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.8 SR 3.3.6.1.9	≤ 115.7°F
6. Shutdown Cooling System Isolation					
a. Reactor Steam Dome Pressure - High	1,2,3	1	F	SR 3.3.6.1.4 SR 3.3.6.1.5 SR 3.3.6.1.9	≤ 152.7 psig
b. Reactor Vessel Water Level – Low	3,4,5	2(f)	J	SR 3.3.6.1.1 SR 3.3.6.1.4 SR 3.3.6.1.8 SR 3.3.6.1.9	≥ 165.6 inches
c. Drywell Pressure – High	1,2,3	2	F	SR 3.3.6.1.4 SR 3.3.6.1.8 SR 3.3.6.1.9	≤ 2.2 psig
7. Containment Cooling System Isolation					
a. Containment Pressure – High	1,2,3	4	K	SR 3.3.6.1.3 SR 3.3.6.1.8 SR 3.3.6.1.9	≥ 1.25 psig

(d) Each Trip System must have either an OPERABLE Function 5.b or an OPERABLE Function 5.c channel in both the RWCU pump area and in the RWCU heat exchanger area.

(e) SLC System Initiation only inputs into one of the two trip systems.

(f) Only one trip system required in MODES 4 and 5 when RHR Shutdown Cooling System integrity maintained.

SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.6.2-1 to determine which SRs apply for each Secondary Containment Isolation Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains secondary containment isolation capability.

	SURVEILLANCE	FREQUENCY
SR 3.3.6.2.1	Perform CHANNEL CHECK.	~~12 hours~~
SR 3.3.6.2.2	Perform CHANNEL CHECK.	~~24 hours~~
SR 3.3.6.2.3	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~
SR 3.3.6.2.4	Perform CHANNEL CALIBRATION.	~~24 months~~
SR 3.3.6.2.5	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~

INSERT 1

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The revisions on this page are being withdrawn from this application.

Table 3.3.6.2-1 (page 1 of 1)
Secondary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Reactor Vessel Water Level - Low	1,2,3, (a)	2	SR 3.3.6.2.1 SR 3.3.6.2.3 SR 3.3.6.2.4 SR 3.3.6.2.5 2 3 4	≥ 165.6 inches
2. Drywell Pressure - High	1,2,3	2	SR 3.3.6.2.3 SR 3.3.6.2.4 SR 3.3.6.2.5 2 3 4	≤ 2.2 psig
3. Reactor Building Exhaust Shaft – High Radiation	1,2,3, (a)	1	SR 3.3.6.2.2 SR 3.3.6.2.3 SR 3.3.6.2.4 SR 3.3.6.2.5 1 2 3 4	≤ 12.8 mR/hr
4. Refueling Floor Exhaust Duct – High Radiation	1,2,3, (a)	1	SR 3.3.6.2.2 SR 3.3.6.2.3 SR 3.3.6.2.4 SR 3.3.6.2.5 1 2 3 4	≤ 10.6 mR/hr

(a) During operations with a potential for draining the reactor vessel.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A, B, or C not met. OR Both LLS valves inoperable due to inoperable channels.	D.1 Declare the associated LLS valve(s) inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.6.3-1 to determine which SRs apply for each Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains LLS initiation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.6.3.1	Perform CHANNEL FUNCTIONAL TEST for portion of the channel outside primary containment.	~~92 days~~
SR 3.3.6.3.2	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~
SR 3.3.6.3.3	Perform CHANNEL CALIBRATION.	~~92 days~~

INSERT 1

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.6.3.4	Perform CHANNEL CALIBRATION.	~~184 days~~
SR 3.3.6.3.5	Perform CHANNEL CALIBRATION.	~~24 months~~
SR 3.3.6.3.6	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~

INSERT 1

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The revisions on this page are being withdrawn from this application.

Table 3.3.6.3-1 (page 1 of 1)
Low-Low Set Instrumentation

FUNCTION	REQUIRED CHANNELS PER FUNCTION	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Reactor Vessel Steam Dome Pressure - High	1 per LLS valve	SR 3.3.6.3.2 SR 3.3.6.3.3 [4] SR 3.3.6.3.~~4~~	≤ 1069.21 psig
2. Low-Low Set Pressure Setpoints	2 per LLS valve	SR 3.3.6.3.2 SR 3.3.6.3.~~4~~ [3] SR 3.3.6.3.~~6~~ [4]	Low: Open ≥ 1014 psig and ≤ 1045 psig Close ≥ 893.4 psig and ≤ 925 psig High: Open ≥ 1019 psig and ≤ 1050 psig Close ≥ 893.4 psig and ≤ 930 psig
3. Tailpipe High Pressure	3 per SRV	SR 3.3.6.3.1 SR 3.3.6.3.~~5~~ [3] SR 3.3.6.3.~~6~~ [4]	≤ 99 psig

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SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.8.1-1 to determine which SRs apply for each LOP Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 2 hours provided the associated Function maintains DG initiation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.8.1.1	Perform CHANNEL FUNCTIONAL TEST.	~~31 days~~
SR 3.3.8.1.2	Perform CHANNEL FUNCTIONAL TEST.	~~12 months~~
SR 3.3.8.1.3	Perform CHANNEL CALIBRATION.	~~12 months~~
SR 3.3.8.1.4	Perform CHANNEL CALIBRATION.	~~24 months~~
SR 3.3.8.1.5	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~

INSERT 1

The revisions on this page are being withdrawn from this application.

Table 3.3.8.1-1 (page 1 of 1)
Loss of Power Instrumentation

FUNCTION	REQUIRED CHANNELS PER BUS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)			
a. Bus Undervoltage	1	SR 3.3.8.1.~~2~~ 1 SR 3.3.8.1.~~4~~ 2 SR 3.3.8.1.~~5~~ 3	≥ 595 V and ≤ 2275 V
2. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)			
a. Bus Undervoltage	4	SR 3.3.8.1.1 SR 3.3.8.1.~~3~~ 2 SR 3.3.8.1.~~5~~ 3	≥ 3780 V and ≤3822 V
b. Time Delay	4	SR 3.3.8.1.1 SR 3.3.8.1.~~3~~ 2 SR 3.3.8.1.~~5~~ 3	≥ 7.92 seconds and ≤ 8.5 seconds
3. 4.16 kV Emergency Transformer Supply Undervoltage	2	SR 3.3.8.1.~~2~~ 1 SR 3.3.8.1.~~3~~ 2 SR 3.3.8.1.~~5~~ 3	≥ 2450 V

Attachment 3
To NG-11-0299

UPDATED

PROPOSED

TECHNICAL SPECIFICATION

BASES CHANGES

(MARK-UPS – FOR INFORMATION ONLY)

30 Pages to Follow

BASES (continued)

SURVEILLANCE REQUIREMENTS

As noted at the beginning of the SRs, the SRs for each RPS instrumentation Function are located in the SRs column of Table 3.3.1.1-1.

The Surveillances are modified by a Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours, provided the associated Function maintains RPS trip capability. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. This Note is based on the reliability analysis (Ref. 9) assumption of the average time required to perform channel Surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the RPS will trip when necessary.

SR 3.3.1.1.1

Performance of the CHANNEL CHECK ~~once every 12 hours~~ ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between instrument channels could be an indication of excessive instrument drift in one of the channels or something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside its limit.

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

The Frequency is based upon operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.1.1 (continued)

during normal operational use of the displays associated with the channels required by the LCO.

SR 3.3.1.1.2

To ensure that the APRMs are accurately indicating the true core average power, the APRMs are calibrated to the reactor power calculated from a heat balance. LCO 3.4.1, "Recirculation Loops Operating," allows the APRMs to be reading greater than actual THERMAL POWER to effectively lower the APRM Flow Biased High setpoints by 6.3% for single recirculation loop operation. When this adjustment is made, the requirement for the APRMs to indicate within 2% RTP of calculated power is modified to require the APRMs to indicate within 2% RTP of calculated power plus 6.3%. The Frequency ~~of once per 24 hours~~ is based on minor changes in LPRM sensitivity, which could affect the APRM reading between performances of SR 3.3.1.1.8.

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

Frequency

A restriction to satisfying this SR when < 21.7% RTP is provided that requires the SR to be met only at ≥ 21.7% RTP because it is difficult to accurately maintain APRM indication of core THERMAL POWER consistent with a heat balance when < 21.7% RTP. At low power levels, a high degree of accuracy is unnecessary because of the large, inherent margin to thermal limits (MCPR and APLHGR). At ≥ 21.7% RTP, the Surveillance is required to have been satisfactorily performed within the previous ~~24 hours~~, in accordance with SR 3.0.2. A Note is provided which allows an increase in THERMAL POWER above 21.7% if the ~~24 hour~~ Frequency is not met per SR 3.0.2. In this event, the SR must be performed within 12 hours after reaching or exceeding 21.7% RTP. Twelve hours is based on operating experience and in consideration of providing a reasonable time in which to complete the SR.

SR 3.3.1.1.3

The surveillance frequency extensions for various RPS functions are permitted by Reference 9, provided the automatic scram contactors are functionally tested weekly. There are four pairs of RPS automatic scram contactors (i.e., K14 relay contacts) with each pair associated with an automatic scram logic (A1, A2, B1, and B2). The automatic scram contactors can be functionally tested without the necessity of using an automatic scram

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.1.3 (continued)

function trip. This functional test can be accomplished by placing the associated RPS Test Switch in the trip position, which will deenergize a pair of the automatic scram contactors and in turn, trip the associated RPS logic. The RPS Test Switches were not specifically credited in the accident analysis and thus, do not have any OPERABILITY requirements of their own. However, because the Manual Scram pushbuttons at the DAEC are not configured the same as the generic model used in Reference 9, (i.e., they are in a separate RPS logic - A3 and B3), the RPS Test Switches have been found to be functionally equivalent to the Manual Scram pushbuttons in the generic model for performing the weekly functional test of the automatic scram contactors required by Reference 9. If an RPS Test Switch(es) is (are) not available for performing this test, it is permissible to take credit for a CHANNEL FUNCTIONAL TEST of an automatic RPS trip function (i.e., SR 3.3.1.1.9), if performed within the required Frequency for this Surveillance, as it will also test the K14 relay contacts.

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

The Frequency ~~of 7 days~~ is based upon the reliability analysis in Reference 9.

SR 3.3.1.1.4

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

As noted, SR 3.3.1.1.4 is not required to be performed when entering MODE 2 from MODE 1, since testing of the MODE 2 required IRM and APRM Functions cannot be performed in MODE 1 without utilizing jumpers, lifted leads, or movable links.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.1.4 (continued)

This allows entry into MODE 2 if the ~~7 day~~ Frequency is not met per SR 3.0.2. In this event, the SR must be performed within 12 hours after entering MODE 2 from MODE 1. Twelve hours is based on operating experience and in consideration of providing a reasonable time in which to complete the SR. A Frequency ~~of 7 days~~ provides an acceptable level of system average unavailability over the Frequency interval and is based on reliability analysis (Ref. 9).

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

SR 3.3.1.1.5

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. A Frequency ~~of 7 days~~ provides an acceptable level of system average availability over the Frequency and is based on the reliability analysis using the concepts developed in Reference 10.

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

SR 3.3.1.1.6 and SR 3.3.1.1.7

These Surveillances are established to ensure that no gaps in neutron flux indication exist from subcritical to power operation for monitoring core reactivity status.

The overlap between SRMs and IRMs is required to be demonstrated to ensure that reactor power will not be increased into a neutron flux region without adequate indication. This is required prior to withdrawing SRMs from the fully inserted position since indication is being transitioned from the SRMs to the IRMs.

The overlap between IRMs and APRMs is of concern when reducing power into the IRM range. On power increases, the system design will prevent further increases (by initiating a rod block) if adequate overlap is not maintained.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.1.6 and SR 3.3.1.1.7 (continued)

Overlap between IRMs and APRMs exists when sufficient IRMs and APRMs concurrently have onscale readings such that the transition between MODE 1 and MODE 2 can be made without either APRM downscale rod block, or IRM upscale rod block (i.e., approximately one-half decade of range). Overlap between SRMs and IRMs similarly exists when, prior to withdrawing the SRMs from the fully inserted position, IRMs are indicating at least 5/40 on range 1 before SRMs have reached 10^6 counts per second.

As noted, SR 3.3.1.1.7 is only required to be met during entry into MODE 2 from MODE 1. That is, after the overlap requirement has been met and indication has transitioned to the IRMs, maintaining overlap is not required (APRMs may be reading downscale once in MODE 2).

If overlap for a group of channels is not demonstrated (e.g., IRM/APRM overlap), the reason for the failure of the Surveillance should be determined and the appropriate channel(s) declared inoperable. Only those appropriate channels that are required in the current MODE or condition should be declared inoperable.

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

~~A~~ Frequency ~~of 7 days~~ is ~~reasonable~~ based on engineering judgment and the reliability of the IRMs and APRMs.

SR 3.3.1.1.8

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

LPRM gain settings are determined using analytical methods with input from the axial flux profiles measured by the Traversing Incore Probe (TIP) System. This establishes the relative local flux profile for appropriate representative input to the APRM System. The ~~1000 MWD/T~~ Frequency is based on operating experience with LPRM sensitivity changes.

SR 3.3.1.1.9 and SR 3.3.1.1.13

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.1.9 and SR 3.3.1.1.13 (continued)

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

are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The ~~92 day~~ Frequency of SR 3.3.1.1.9 is based on the reliability analysis of Reference 9.

of SR 3.3.1.1.13

The ~~24 month~~ Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at ~~the 24 month~~ this Frequency.

SR 3.3.1.1.10

Calibration of trip units provides a check of the actual trip setpoints. The channel must be declared inoperable if the trip setting is discovered to be less conservative than the Allowable Value specified in Table 3.3.1.1-1. If the trip setting is discovered to be less conservative than accounted for in the appropriate setpoint methodology, but is not beyond the Allowable Value, the channel performance is still within the requirements of the plant safety analysis. Under these conditions, the setpoint must be readjusted to be equal to or more conservative than accounted for in the appropriate setpoint methodology.

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

The Frequency ~~of 92 days~~ is based on the reliability analysis of Reference 9.

SR 3.3.1.1.11, SR 3.3.1.1.12 and SR 3.3.1.1.14

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies that the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology. The CHANNEL CALIBRATION for Functions 5 and 8 shall consist of the physical inspection and actuation of these position switches.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.1.11, SR 3.3.1.1.12 and SR 3.3.1.1.14 (continued)

Note 1 states that neutron detectors are excluded from CHANNEL CALIBRATION because they are passive devices, with minimal drift, and because of the difficulty of simulating a meaningful signal. Changes in neutron detector sensitivity are compensated for by performing the calorimetric calibration (SR 3.3.1.1.2) ~~every 24 hours~~ and the ~~1000 MWD/T~~ LPRM calibration against the TIPs (SR 3.3.1.1.8). A second Note is provided that requires the APRM and IRM SRs to be performed within 12 hours of entering MODE 2 from MODE 1. Testing of the MODE 2 APRM and IRM Functions cannot be performed in MODE 1 without utilizing jumpers, lifted leads, or movable links. This Note allows entry into MODE 2 from MODE 1 if the associated Frequency is not met per SR 3.0.2. Twelve hours is based on operating experience and in consideration of providing a reasonable time in which to complete the SR.

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

The Frequency ~~of SR 3.3.1.1.11~~ is based upon the assumption of a ~~92 day~~ specified calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis. ~~The Frequency of SR 3.3.1.1.12 is based upon the assumption of a 184 day calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis. The Frequency of SR 3.3.1.1.14 is based upon the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.~~

SR 3.3.1.1.15

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required trip logic for a specific channel. The functional testing of control rods (LCO 3.1.3), and SDV vent and drain valves (LCO 3.1.8), overlaps this Surveillance to provide complete testing of the assumed safety function.

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

The ~~24 month~~ Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at ~~the 24 month~~ this Frequency.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.1.16

This SR ensures that scrams initiated from the Turbine Stop Valve — Closure and Turbine Control Valve Fast Closure, Trip Oil Pressure — Low Functions will not be inadvertently bypassed when THERMAL POWER is ≥ 26% RTP. This involves calibration of the bypass channels. Adequate margins for the instrument setpoint methodologies are incorporated into the actual setpoint. Because main turbine bypass flow, as well as other turbine steam loads, can affect this setpoint nonconservatively (THERMAL POWER is derived from turbine first stage pressure), the main turbine bypass valves must remain closed at THERMAL POWER ≥ 26% RTP to ensure that the calibration remains valid. If any bypass channel's setpoint is nonconservative (i.e., the Functions are bypassed at ≥ 26% RTP, either due to open main turbine bypass valve(s) (e.g., required testing or upon actual demand) or other reasons, such as changes in turbine steamload to the Main Steam Reheaters), then the affected Turbine Stop Valve — Closure and Turbine Control Valve Fast Closure, Trip Oil Pressure — Low Functions are considered inoperable. Alternatively, the bypass channel can be placed in the conservative condition (nonbypass). If placed in the nonbypass condition, this SR is met and the channel is considered OPERABLE.

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

The Frequency ~~of 24 months~~ is based on engineering judgment and reliability of the components.

SR 3.3.1.1.17

The Average Power Range Monitor Flow Biased — High Function uses the recirculation loop drive flows to vary the trip setpoint. This SR ensures that the total loop drive flow signals from the flow units used to vary the setpoint is appropriately compared to a calibrated flow signal and, therefore, the APRM Function accurately reflects the required setpoint as a function of flow. Each flow signal from the respective flow unit must be ≤ 110% of the calibrated flow signal. If the flow unit signal is not within the limit, that flow unit may be bypassed, and its output to the low auction circuit will be maximum, making the low auction circuit select the input from the operating flow unit.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.1.17 (continued)

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

The Frequency ~~of 24 months~~ is based on engineering judgment, operating experience, the reliability of this instrumentation, the other surveillances performed on the components of the flow biasing network, and the fact that a half scram will be present for an extended period of time during the performance of this surveillance.

SR 3.3.1.1.18

This SR ensures that the individual channel response times are less than or equal to the maximum values assumed in the accident analysis. The RPS Response Time test only applies to the Functions of Reactor Vessel Water Level - Low and Reactor Vessel Steam Dome Pressure - High. These RPS Functions are the only ones that were identified, in a program conducted prior to the first refueling outage, that require sensor response time testing. This test may be performed in one measurement or in overlapping segments, with verification that all components are tested. The RPS RESPONSE TIME acceptance criteria are included in Reference 13.

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

~~RPS RESPONSE TIME tests are conducted on a 24 month STAGGERED TEST BASIS.~~ This Frequency is based on the logic interrelationships of the various channels required to produce an RPS scram signal. The ~~24 month~~ Frequency is consistent with the typical industry refueling cycle and is based upon plant operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences.

SR 3.3.1.1.19

This SR ensures that the RPS logic system response times are less than or equal to the maximum value assumed in the accident analysis. The RPS logic system response time test is measured from the opening of the sensor contact up to and including the opening of the trip actuator contacts. As such, this test does not include the sensor response time. All RPS Functions except the RPS Manual Scram and Reactor Mode Switch - Shutdown Position are included in this test.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.1.19 (continued)

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

These two RPS Functions are excluded since they directly trip their scram solenoid relays without any intervening devices, thus there is nothing to response time test. This test may be performed in one measurement or in overlapping segments, with verification that all components are tested. The RPS logic system response time acceptance criteria are included in Reference 13. ~~RPS logic system response time tests are conducted on a 24 month STAGGERED TEST BASIS.~~ This Frequency is based on the logic interrelationships of the various channels required to produce an RPS scram signal. The ~~24 month~~ Frequency is consistent with the typical industry refueling cycle and is based upon plant operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences.

REFERENCES

1. UFSAR, Figure 7.2-2.
2. UFSAR, Section 15.1.4.2.
3. NEDO-23842, "Continuous Control Rod Withdrawal in the Startup Range," April 18, 1978.
4. UFSAR, Section 5.2.2 and Appendix 5B.
5. UFSAR, Section 15.2.4.
6. UFSAR, Section 15.2.1.
7. UFSAR, Chapter 15.1.
8. P. Check (NRC) letter to G. Lainas (NRC), "BWR Scram Discharge System Safety Evaluation," December 1, 1980.
9. NEDO-30851-P-A , "Technical Specification Improvement Analyses for BWR Reactor Protection System," March 1988.
10. Reliability of Engineered Safety Features as a Function of Testing Frequency, Volume 9, No. 4, July-August 1968.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.2.1 and SR 3.3.1.2.3

Performance of the CHANNEL CHECK ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on another channel. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the instrument channels could be an indication of excessive instrument drift in one of the channels or something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside its limit.

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

The Frequency ~~of once every 12 hours for SR 3.3.1.2.1~~ is based on operating experience that demonstrates channel failure is rare. While in MODES 3 and 4, reactivity changes are not expected; therefore, the ~~12 hour~~ Frequency is relaxed ~~to 24 hours for SR 3.3.1.2.3~~. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the LCO.

from MODES 2 and 5

SR 3.3.1.2.2

To provide adequate coverage of potential reactivity changes in the core when the fueled region encompasses more than one SRM, one SRM is required to be OPERABLE in the quadrant where CORE ALTERATIONS are being performed, and the other OPERABLE SRM must be in an adjacent quadrant containing fuel. Note 1 states that the SR is required to be met only during CORE ALTERATIONS. It is not required to be met at other times in MODE 5 since core reactivity changes are not occurring. This Surveillance consists of a review of plant logs to ensure that SRMs required to be OPERABLE for given CORE ALTERATIONS are, in fact, OPERABLE. In the event that only one SRM is required to be OPERABLE, per Table 3.3.1.2-1, footnote (b),

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.2.2 (continued)

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

only the a. portion of this SR is required. Note 2 clarifies that more than one of the three requirements can be met by the same OPERABLE SRM. The ~~12 hour~~ Frequency is based upon operating experience and supplements operational controls over refueling activities that include steps to ensure that the SRMs required by the LCO are in the proper quadrant.

SR 3.3.1.2.4

This Surveillance consists of a verification of the SRM instrument readout to ensure that the SRM reading is greater than a specified minimum count rate with the detector fully inserted into the core. The requirement of at least 3 cps assures that any transient, should it occur, begins at or above the initial value of 10^{-8} of RTP which is used in the analysis of transients in cold conditions. With few fuel assemblies loaded, the SRMs may not have a high enough count rate to satisfy the SR. Therefore, allowances are made for loading sufficient "source" material, in the form of irradiated fuel assemblies, to establish the minimum count rate.

To accomplish this, the SR is modified by a Note that states that the count rate is not required to be met on an SRM that has less than or equal to four fuel assemblies adjacent to the SRM and no other fuel assemblies are in the associated core quadrant. With four or less fuel assemblies loaded around each SRM and no other fuel assemblies in the associated core quadrant, even with a control rod withdrawn, the configuration will not be critical.

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

The Frequency is based upon channel redundancy and other information available in the control room, and ensures that the required channels are frequently monitored ~~while core reactivity changes are occurring~~. When no reactivity changes are in progress, the Frequency is relaxed from ~~12 hours to 24 hours~~.

during CORE ALTERATIONS

that during CORE ALTERATIONS

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.2.5 and SR 3.3.1.2.6

Performance of a CHANNEL FUNCTIONAL TEST demonstrates the associated channel will function properly. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

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

SR 3.3.1.2.5 is required in MODE 5, and the ~~7 day~~ Frequency ensures that the channels are OPERABLE while core reactivity changes could be in progress. ~~This~~ Frequency is ~~reasonable,~~ based on operating experience and on other Surveillances (such as a CHANNEL CHECK), that ensure proper functioning between CHANNEL FUNCTIONAL TESTS.

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

SR 3.3.1.2.6 is required in MODE 2 with IRMs on Range 2 or below, and in MODES 3 and 4. Since core reactivity changes do not normally take place in MODES 3 and 4 and core reactivity changes are due solely to control rod movement in MODE 2, the Frequency has been extended from ~~7 days to 31 days.~~ The ~~31 day~~ Frequency is based on operating experience and on other Surveillances (such as CHANNEL CHECK) that ensure proper functioning between CHANNEL FUNCTIONAL TESTS.

that in MODE 5

The Note to the Surveillance allows the Surveillance to be delayed until entry into the specified condition of the Applicability (THERMAL POWER decreased to IRM Range 2 or below). The SR must be performed within 12 hours after IRMs are on Range 2 or below. The allowance to enter the Applicability with the ~~31 day~~ Frequency not met is reasonable, based on the limited time of 12 hours allowed after entering the Applicability and the inability to perform the Surveillance while at higher power levels. Although the Surveillance could be performed while on IRM Range 3, the plant would not be expected to maintain steady state operation at this power level. In this event, the 12 hour Frequency is reasonable, based on the SRMs being otherwise verified to be OPERABLE (i.e., satisfactorily performing the CHANNEL CHECK) and the time required to perform the Surveillances.

Surveillance

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.2.7

Performance of a CHANNEL CALIBRATION ~~at a Frequency of 24 months~~ verifies the performance of the SRM detectors and associated circuitry. The Frequency considers the plant ~~conditions required~~ to perform the test, the ease of performing the test, and the likelihood of a change in the system or component status. Note 1 to the Surveillance allows the neutron detectors to be excluded from the CHANNEL CALIBRATION because they cannot readily be adjusted. The detectors are fission chambers that are designed to have a relatively constant sensitivity over the range and with an accuracy specified for a fixed useful life.

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

Note 2 to the Surveillance allows the Surveillance to be delayed until entry into the specified condition of the Applicability. The SR must be performed in MODE 2 within 12 hours of entering MODE 2 with IRMs on Range 2 or below. The allowance to enter the Applicability with the ~~24 month~~ Frequency not met is reasonable, based on the limited time of 12 hours allowed after entering the Applicability and the inability to perform the Surveillance while at higher power levels. Although the Surveillance could be performed while on IRM Range 3, the plant would not be expected to maintain steady state operation at this power level. In this event, the 12 hour Frequency is reasonable, based on the SRMs being otherwise verified to be OPERABLE (i.e., satisfactorily performing the CHANNEL CHECK) and the time required to perform the Surveillances.

Surveillance

REFERENCES None.

BASES

SURVEILLANCE REQUIREMENTS (continued)

Because the Ref. 5 analysis made no assumptions regarding the elapsed time between testing of consecutive channels in the same logic, it is not necessary to remove jumpers/relays blocks or reconnect lifted leads used to prevent actuation of the trip logic during testing of logic channels with instruments in series solely for the purpose of administering the AOT clocks, provided that the AOT allowance is not exceeded on a per instrument channel basis.

SR 3.3.5.1.1

Performance of the CHANNEL CHECK ~~once every 24 hours~~ ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the instrument channels could be an indication of excessive instrument drift in one of the channels or something even more serious. A CHANNEL CHECK guarantees that undetected outright channel failure is limited ~~to 24 hours~~; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

in time

Agreement criteria are determined by the plant staff, based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside its limit. The Frequency is based upon operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the LCO.

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

SR 3.3.5.1.2, SR 3.3.5.1.3, and SR 3.3.5.1.5

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.5.1.2, SR 3.3.5.1.3, and SR 3.3.5.1.5 (continued)

of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

Surveillance

The Frequency of ~~92 days~~ for SR 3.3.5.1.3 is based on the reliability analyses of Reference 5.

Surveillance

The Frequencies of ~~31 days and 12 months~~ (SR 3.3.5.1.2 and SR 3.3.5.1.5~~, respectively~~) are based upon engineering judgment and the reliability of the components.

The Surveillance Frequencies are controlled under the Surveillance Frequency Control Program.

SR 3.3.5.1.4, SR 3.3.5.1.6, SR 3.3.5.1.7, and SR 3.3.5.1.8

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

The Surveillance Frequencies are controlled under the Surveillance Frequency Control Program.

The Frequency ~~of SR 3.3.5.1.4~~ is based upon the ~~assumption of a 92 day calibration interval in the determination of the~~ magnitude of equipment drift in the setpoint analysis.

The Frequency of SR 3.3.5.1.6 is based upon the assumption of a 12 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

The Frequency of SR 3.3.5.1.7 is based upon the assumption of an 18 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

The Frequency of SR 3.3.5.1.8 is based upon the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.5.1.9

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required initiation logic for a specific channel. The system functional testing performed in LCO 3.5.1, LCO 3.5.2, LCO 3.8.1, and LCO 3.8.2 overlaps this Surveillance to complete testing of the assumed safety function.

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

The ~~24 month~~ Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at ~~the 24 month~~ this Frequency.

REFERENCES

1. UFSAR, Section 5.4.7.
2. UFSAR, Section 6.3.2.
3. UFSAR, Chapter 15.
4. NEDC-32980P, "Safety Analysis Report for Duane Arnold Energy Center Extended Power Uprate," Rev. 1, April 2001.
5. NEDC-30936-P-A, "BWR Owners' Group Technical Specification Improvement Analyses for ECCS Actuation Instrumentation, Part 2," December 1988.

BASES (continued)

SURVEILLANCE REQUIREMENTS

As noted in the beginning of the SRs, the SRs for each RCIC System instrumentation Function are found in the SRs column of Table 3.3.5.2-1.

The Surveillances are modified by a Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed as follows: (a) for up to 6 hours for Functions 2 and 3; and (b) for up to 6 hours for Function 1, provided the associated Function maintains trip capability. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to status or the applicable Condition entered and Required Actions taken. This Note is based on the reliability analysis (Ref. 1) assumption of the average time required to perform channel surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the RCIC will initiate when necessary. Because the Ref. 1 analysis made no assumptions regarding the elapsed time between testing of consecutive channels in the same logic, it is not necessary to remove jumpers/relay blocks or reconnect lifted leads used to prevent actuation of the trip logic during testing of logic channels with instruments in series solely for the purpose of administering the AOT clocks, provided that the AOT allowance is not exceeded on a per instrument channel basis.

SR 3.3.5.2.1

Performance of the CHANNEL CHECK ~~once every 24 hours~~ ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a parameter on other similar channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the instrument channels could be an indication of excessive instrument drift in one of the channels or something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.5.2.1 (continued)

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside its limit.

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

The Frequency is based upon operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the LCO.

SR 3.3.5.2.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the channel will perform the intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extenstions.

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

The Frequency ~~of 92 days~~ is based on the reliability analysis of Reference 1.

SR 3.3.5.2.3 and SR 3.3.5.2.4

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

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

The Frequency ~~of SR 3.3.5.2.3~~ is based upon ~~the assumption of a 12 month calibration interval in the determination of~~ the magnitude of equipment drift in the setpoint analysis.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~SR 3.3.5.2.3 and SR 3.3.5.2.4 (continued)~~

~~The Frequency of SR 3.3.5.2.4 is based upon the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.~~

SR 3.3.5.2.5

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required initiation logic for a specific channel. The system functional testing performed in LCO 3.5.3 overlaps this Surveillance to provide complete testing of the safety function.

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

The ~~24 month~~ Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at ~~the 24 month~~ this Frequency.

REFERENCES

1. GENE-770-06-2, "Addendum to Bases for Changes to Surveillance Test Intervals and Allowed Out-of-Service Times for Selected Instrumentation Technical Specifications," February 1991.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.6.1.1 and SR 3.3.6.1.2

Performance of the CHANNEL CHECK ~~once every 12 hours or once every 24 hours~~ ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside its limit.

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

~~The Frequencies are~~ based on operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the LCO.

SR 3.3.6.1.3, and SR 3.3.6.1.4

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.6.1.3, and SR 3.3.6.1.4 (continued)

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

Surveillance

Surveillance

The ~~92 day~~ Frequency of SR 3.3.6.1.4 is based on the reliability analyses described in References 5 and 6. The ~~31 day~~ Frequency of SR 3.3.6.1.3 is based on engineering judgment and the reliability of the components.

SR 3.3.6.1.5, SR 3.3.6.1.6, SR 3.3.6.1.7 and SR 3.3.6.1.8

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

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

The Frequency ~~of SR 3.3.6.1.5~~ is based on the ~~assumption of a 92 day calibration interval in the determination of the~~ magnitude of equipment drift in the setpoint analysis.

~~The Frequency of SR 3.3.6.1.6 is based on the assumption of a 184 day calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.~~

~~The Frequency of SR 3.3.6.1.7 is based on the assumption of a 12 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.~~

~~The Frequency of SR 3.3.6.1.8 is based on the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.6.1.9

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required isolation logic for a specific channel. The system functional testing performed on PCIVs in LCO 3.6.1.3 overlaps this Surveillance to provide complete testing of the assumed safety function. The ~~24 month~~ Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the ~~24 month~~ Frequency.

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

this

REFERENCES

1. UFSAR, Section 6.2.
2. UFSAR, Chapter 15.
3. NEDO-31466, "Technical Specification Screening Criteria Application and Risk Assessment," November 1987.
4. UFSAR, Section 9.3.4.2.
5. NEDC-31677P-A, "Technical Specification Improvement Analysis for BWR Isolation Actuation Instrumentation," July 1990.
6. NEDC-30851P-A Supplement 2, "Technical Specifications Improvement Analysis for BWR Isolation Instrumentation Common to RPS and ECCS Instrumentation," March 1989.
7. UFSAR, Section 7.3.
8. UFSAR, Section 15.2.1.5.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Surveillances are modified by a Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains secondary containment isolation capability. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. This Note is based on the reliability analysis (Refs. 4 and 5) assumption of the average time required to perform channel surveillance. That analysis demonstrated the 6 hour testing allowance does not significantly reduce the probability that the SCIV/Ds will isolate the associated penetration flow paths and that the SBGT System will initiate when necessary.

SR 3.3.6.2.1 and SR 3.3.6.2.2

Performance of the CHANNEL CHECK ~~either once every 12 hours or once every 24 hours~~ ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the instrument channels could be an indication of excessive instrument drift in one of the channels or something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION. Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside its limit.

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

~~The Frequencies are~~ based on operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channel status during normal operational use of the displays associated with channels required by the LCO.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.6.2.3

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

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

The ~~Frequency of 92 days~~ is based on the reliability analysis of References 4 and 5.

SR 3.3.6.2.4

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

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

The Frequency ~~of SR 3.3.6.2.4~~ is based on the ~~assumption of a 24 month calibration interval in the determination of the~~ magnitude of equipment drift in the setpoint analysis.

SR 3.3.6.2.5

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required isolation logic for a specific channel. The system functional testing performed on SCIV/Ds and the SBGT System in LCO 3.6.4.2 and LCO 3.6.4.3, respectively, overlaps this Surveillance to provide complete testing of the assumed safety function.

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

The ~~24 month~~ Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.6.2.5 (continued)

Operating experience has shown that these components usually pass the Surveillance when performed at ~~the 24 month~~ this Frequency.

REFERENCES

1. UFSAR, Section 6.2.3.
2. UFSAR, Chapter 15.
3. UFSAR, Section 15.2.1.
4. NEDC-30851P-A Supplement 2, "Technical Specifications Improvement Analysis for BWR Isolation Instrumentation Common to RPS and ECCS Instrumentation," March 1989.
5. NEDC-31677P-A, "Technical Specification Improvement Analysis for BWR Isolation Actuation Instrumentation," July 1990.

BASES

SURVEILLANCE REQUIREMENTS (continued)

does not significantly reduce the probability that the LLS valves will initiate when necessary.

SR 3.3.6.3.1, and SR 3.3.6.3.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

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

The ~~92 day~~ Frequency is based on the reliability analysis of Reference 3.

A portion of the SRV tailpipe pressure switch channels is located inside the primary containment and is not available for testing during reactor operation. Therefore, SR 3.3.6.3.1 is only required on that portion of the channel that is outside primary containment.

SR 3.3.6.3.3, SR 3.3.6.3.4, and SR 3.3.6.3.5

CHANNEL CALIBRATION is a complete check of the instrument loop and sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology. The Frequency ~~of once every 92 days for SR 3.3.6.3.3, 184 days for SR 3.3.6.3.4, and 24 months for SR 3.3.6.3.5~~ is based on the ~~assumption of the corresponding calibration interval in the determination of the~~ magnitude of equipment drift in the setpoint analysis.

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

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.6.3.6

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required actuation logic for a specified channel. The system functional testing performed in LCO 3.4.3, "Safety Relief Valves (SRVs)" and LCO 3.6.1.5, "Low-Low Set (LLS) Safety Relief Valves (SRVs)," for SRVs overlaps this test to provide complete testing of the assumed safety function.

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

The Frequency ~~of once every 24 months~~ for SR 3.3.6.3.6 is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at ~~the 24 month~~ this Frequency.

REFERENCES

1. UFSAR, Figure 7.6-31.

2. NEDE-30021-P, Low-Low Set Relief Logic System and Lower MSIV Water Level Trip for the DAEC, January 1983.

3. GENE-770-06-1, "Bases for Changes to Surveillance Test Intervals and Allowed Out-of-Service Times for Selected Instrumentation Technical Specifications," February 1991.

4 UFSAR, Chapter 15.

BASES

ACTIONS (continued)

C.1

If the Required Action and associated Completion Time is not met, the associated Function is not capable of performing the intended function. Therefore, the associated DG(s) is declared inoperable immediately. This requires entry into applicable Conditions and Required Actions of LCO 3.8.1 and LCO 3.8.2, which provide appropriate actions for the inoperable DG(s).

SURVEILLANCE REQUIREMENTS

As noted at the beginning of the SRs, the SRs for each LOP instrumentation Function are located in the SRs column of Table 3.3.8.1-1.

The Surveillances are modified by a Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 2 hours provided the associated Function maintains DG initiation capability. Upon completion of the Surveillance, or expiration of the 2 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken.

SR 3.3.8.1.1 and SR 3.3.8.1.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

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

~~The Frequencies of 31 days and 12 months are~~ based on operating experience with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given Function in ~~any 31 day~~ interval ~~or 12 month interval (as appropriate)~~ is a rare event.

this

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.8.1.3 and SR 3.3.8.1.4

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

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

~~The Frequencies are~~ based upon ~~the assumption of either a 12 month or 24 month calibration interval in the determination of~~ the magnitude of equipment drift in the setpoint analysis.

SR 3.3.8.1.5

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

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required actuation logic for a specific channel. The system functional testing performed in LCO 3.8.1 and LCO 3.8.2 overlaps this Surveillance to provide complete testing of the assumed safety functions.

The ~~24 month~~ Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at ~~the 24 month~~ this Frequency.

REFERENCES

1. UFSAR, Section 6.2.
2. UFSAR, Section 6.3.
3. UFSAR, Chapter 15.

TSTF-425 (NUREG-1433) vs. DAEC Cross-Reference

Technical Specification Section Title/Surveillance Description*	**TSTF-425**	**DAEC**	**Notes**
Control Rod Operability	**3.1.3**	**3.1.3**	
Control rod position	3.1.3.1	3.1.3.1	
Notch test - fully withdrawn control rod one notch	3.1.3.2	3.1.3.2	
Notch test - partially withdrawn control rod one notch	3.1.3.3	3.1.3.2	DAEC has adopted TSTF-475
Control Rod Scram Times	**3.1.4**	**3.1.4**	
Scram time testing	3.1.4.2		
Control Rod Scram Accumulators	**3.1.5**	**3.1.5**	
Control rod scram accumulator pressure	3.1.5.1	3.1.5.1	
Rod Pattern Control	**3.1.6**	**3.1.6**	
Analyzed rod position sequence	3.1.6.1	3.1.6.1	
Standby Liquid Control (SLC) System	**3.1.7**	**3.1.7**	
Volume of sodium pentaborate	3.1.7.1	3.1.7.1	
Temperature of sodium pentaborate solution	3.1.7.2	3.1.7.2	
Temperature of pump suction piping	3.1.7.3	3.1.7.3	
Continuity of explosive charge	3.1.7.4	3.1.7.4	
Concentration of boron solution	3.1.7.5	3.1.7.5	
Manual/power operated valve position	3.1.7.6	--	
Pump flow rate	3.1.7.7	--	DAEC Frequency is controlled by IST Program
Flow through one SLC subsystem	3.1.7.8	3.1.7.7	
Heat traced piping is unblocked	3.1.7.9	3.1.7.8	
Scram Discharge Volume (SDV) Vent & Drain Valves	**3.1.8**	**3.1.8**	
Each SDV vent & drain valve open	3.1.8.1	3.1.8.1	
Cycle each SDV vent & drain valve fully closed/fully open position	3.1.8.2	--	DAEC Frequency is controlled by IST Program
Each SDV vent & drain valve closes on receipt of scram	3.1.8.3	3.1.8.3	
Average Planar Linear Heat Generation Rate (APLHGR)	**3.2.1**	**3.2.1**	
APLHGR less than or equal to limits	3.2.1.1	3.2.1.1	
Minimum Critical Power Ratio (MCPR)	**3.2.2**	**3.2.2**	
MCPR greater than or equal to limits	3.2.2.1	3.2.2.1	
Linear Heat Generation Rate (LHGR)	**3.2.3**	**N/A**	
LHGR less than or equal to limits	3.2.3.1	N/A	
Average Power Range Monitor (APRM) Gain & Setpoints	**3.2.4**	**N/A**	
MFLPD is within limits	3.2.4.1	N/A	
APRM setpoints or gain are adjusted for calculated MFLPD	3.2.4.2	N/A	
Reactor Protection System (RPS) Instrumentation	**3.3.1.1**	**3.3.1.1**	
Channel Check	3.3.1.1.1	3.3.1.1.1	
Absolute diff. between APRM channels & calculated power	3.3.1.1.2	3.3.1.1.2	
Adjust channel to conform to calibrated flow (APRM STP – Hi)	3.3.1.1.3	3.3.1.1.17	

TSTF-425 (NUREG-1433) vs. DAEC Cross-Reference

Technical Specification Section Title/Surveillance Description*	**TSTF-425**	**DAEC**	**Notes**
Functional Test of automatic scram contactors	--	3.3.1.1.3	
Channel Functional Test (after entering Mode 2)	3.3.1.1.4	3.3.1.1.4	
Channel Functional Test (7 days)	3.3.1.1.5	3.3.1.1.5	
IRM/APRM channel overlap	--	3.3.1.1.7	
Calibrate local power range monitors	3.3.1.1.6	3.3.1.1.8	
Channel Functional Test ([92] days)	3.3.1.1.7	3.3.1.1.9	
Calibrate trip units (92 days)	3.3.1.1.8	3.3.1.1.10	
Channel Calibration (92 days)	--	3.3.1.1.11	
Channel Calibration (184 days)	3.3.1.1.9	3.3.1.1.12	
Channel Functional Test ([18] month)	3.3.1.1.10	3.3.1.1.13	
Channel Calibration ([18] month)	3.3.1.1.11	3.3.1.1.14	
Verify APRM Flow Biased STP – High	3.3.1.1.12	--	
Logic System Functional Test	3.3.1.1.13	3.3.1.1.15	
Verify TSV/TCV closure/Trip Oil Press-Low Not Bypassed	3.3.1.1.14	3.3.1.1.16	
Verify RPS Response Time	3.3.1.1.15	3.3.1.1.18	
Verify RPS logic system response time	--	3.3.1.1.19	
Source Range Monitor (SRM) Instrumentation	**3.3.1.2**	**3.3.1.2**	
Channel Check (12 hours)	3.3.1.2.1	3.3.1.2.1	
Verify Operable SRM Detector	3.3.1.2.2	3.3.1.2.2	
Channel Check (24 hours)	3.3.1.2.3	3.3.1.2.3	
Verify count rate	3.3.1.2.4	3.3.1.2.4	
Channel Functional Test (Mode 5) (7 days)	3.3.1.2.5	3.3.1.2.5	
Channel Functional Test (Modes 2, 3, 4) (31 days)	3.3.1.2.6	3.3.1.2.6	
Channel Calibration	3.3.1.2.7	3.3.1.2.7	
Control Rod Block Instrumentation	**3.3.2.1**	**3.3.2.1**	
Channel Functional Test (quarterly)	3.3.2.1.1	3.3.2.1.1	
Channel Functional Test (rod withdrawal MODE 2)	3.3.2.1.2	3.3.2.1.2	
Channel Functional Test (thermal power < 10% RTP in MODE 1)	3.3.2.1.3	3.3.2.1.3	
Verify RBM not bypassed	3.3.2.1.4	3.3.2.1.4	
Verify RWM not bypassed (thermal power < 10%)	3.3.2.1.5	--	
Channel Functional Test	3.3.2.1.6	3.3.2.1.6	
Channel Calibration	3.3.2.1.7	3.3.2.1.5	
Feedwater & Main Turbine High Water Level Trip Instrumentation	**3.3.2.2**	**N/A**	
Channel Check	3.3.2.2.1	N/A	
Channel Functional Test	3.3.2.2.2	N/A	
Channel Calibration	3.3.2.2.3	N/A	
Logic System Functional Test	3.3.2.2.4	N/A	
Post Accident Monitor (PAM) Instrumentation	**3.3.3.1**	**3.3.3.1**	
Channel Check	3.3.3.1.1	3.3.3.1.1	
Calibration	3.3.3.1.2	3.3.3.1.2	
Remote Shutdown System	**3.3.3.2**	**3.3.3.2**	
Channel Check	3.3.3.2.1	--	
Verify control circuit and transfer switch capable of function	3.3.3.2.2	3.3.3.2.1	

TSTF-425 (NUREG-1433) vs. DAEC Cross-Reference

Technical Specification Section Title/Surveillance Description*	**TSTF-425**	**DAEC**	**Notes**
Channel Calibration	3.3.3.2.3	3.3.3.2.2	
End-of-Cycle-Recirculation Pump Trip (RPT) Instrumentation	**3.3.4.1**	**3.3.4.1**	
Channel Functional Test	3.3.4.1.1	3.3.4.1.1	
Calibrate trip units	3.3.4.1.2	--	
Channel Calibration	3.3.4.1.3	3.3.4.1.2	
Logic System Functional Test	3.3.4.1.4	3.3.4.1.3	
Verify TSV/TCV Closure/Trip Oil Press-Low Not Bypassed	3.3.4.1.5	3.3.4.1.4	
Verify EOC-RPT System Response Time	3.3.4.1.6	3.3.4.1.5	
Determine RPT breaker interruption time	3.3.4.1.7	--	
Anticipated Trip Without Scram-RPT Instrumentation	**3.3.4.2**	**3.3.4.2**	
Channel Check	3.3.4.2.1	3.3.4.2.1	
Channel Functional Test	3.3.4.2.2	3.3.4.2.2	
Calibrate trip units	3.3.4.2.3	--	
Channel Calibration	3.3.4.2.4	3.3.4.2.3	
Logic System Functional Test	3.3.4.2.5	3.3.4.2.4	
Emergency Core Cooling System (ECCS) Instrumentation	**3.3.5.1**	**3.3.5.1**	
Channel Check	3.3.5.1.1	3.3.5.1.1	
Channel Functional Test (Monthly)	--	3.3.5.1.2	
Channel Functional Test (92 days)	3.3.5.1.2	3.3.5.1.3	
Calibrate trip units	3.3.5.1.3	--	
Channel Calibration (92 days)	3.3.5.1.4	3.3.5.1.4	
Channel Functional Test (Annually)	--	3.3.1.5.5	
Channel Calibration (Annually)	--	3.3.5.1.6	
Channel Calibration (18 months)	--	3.3.5.1.7	
Channel Calibration ([18] months)	3.3.5.1.5	3.3.5.1.8	
Logic System Functional Test	3.3.5.1.6	3.3.5.1.9	
Verify ECCS Response Time	3.3.5.1.7	N/A	
Reactor Core Isolation Cooling (RCIC) System Instrumentation	**3.3.5.2**	**3.3.5.2**	
Channel Check	3.3.5.2.1	3.3.5.2.1	
Channel Functional Test	3.3.5.2.2	3.3.5.2.2	
Calibrate trip units	3.3.5.2.3	--	
Channel Calibration (92 days)	3.3.5.2.4	--	
Channel Calibration (Annually)	--	3.3.5.2.3	
Channel Calibration ([18] months)	3.3.5.2.5	3.3.5.2.4	
Logic System Functional Test	3.3.5.2.6	3.3.5.2.5	
Primary Containment Isolation Instrumentation	**3.3.6.1**	**3.3.6.1**	
Channel Check (12 hours)	3.3.6.1.1	3.3.6.1.1	
Channel Check (Daily)	--	3.3.6.1.2	
Channel Functional Test (Monthly)	--	3.3.6.1.3	
Channel Functional Test ([92] days)	3.3.6.1.2	3.3.6.1.4	
Calibrate trip units	3.3.6.1.3	--	
Channel Calibration (92 days)	3.3.6.1.4	3.3.6.1.5	
Channel Functional Test ([184] days)	3.3.6.1.5	--	

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Technical Specification Section Title/Surveillance Description*	**TSTF-425**	**DAEC**	**Notes**
Channel Calibration (Semi-annually)	--	3.3.6.1.6	
Channel Calibration (Annually)	--	3.3.6.1.7	
Channel Calibration ([18] months)	3.3.6.1.6	3.3.6.1.8	
Logic System Functional Test	3.3.6.1.7	3.3.6.1.9	
Verify Isolation Response Time	3.3.6.1.8	N/A	
Secondary Containment Isolation Instrumentation	**3.3.6.2**	**3.3.6.2**	
Channel Check (12 hours)	3.3.6.2.1	3.3.6.2.1	
Channel Check (Daily)	--	3.3.6.2.2	
Channel Functional Test	3.3.6.2.2	3.3.6.2.3	
Calibrate trip units	3.3.6.2.3	--	
Channel Calibration ([92} days)	3.3.6.2.4	--	
Channel Calibration ([18] months)	3.3.6.2.5	3.3.6.2.4	
Logic System Functional Test	3.3.6.2.6	3.3.6.2.5	
Verify Isolation Response Time	3.3.6.2.7	N/A	
Low-Low-Set (LLS) Instrumentation	**3.3.6.3**	**3.3.6.3**	
Channel Check	3.3.6.3.1	--	
Channel Functional Test (outside containment)	3.3.6.3.2	3.3.6.3.1	
Channel Functional Test (inside containment)	3.3.6.3.3	--	
Channel Functional Test ([92] days)	3.3.6.3.4	3.3.6.3.2	
Calibrate trip units	3.3.6.3.5	--	
Channel Calibration (Quarterly)	--	3.3.6.3.3	
Channel Calibration (Semi-annually)	--	3.3.6.3.4	
Channel Calibration ([18] months)	3.3.6.3.6	3.3.6.3.5	
Logic System Functional Test	3.3.6.3.7	3.3.6.3.6	
Main Control Room Environmental Control (MCREC) Instrumentation	**3.3.7.1**	**3.3.7.1**	
Channel Check	3.3.7.1.1	3.3.7.1.1	
Channel Functional Test	3.3.7.1.2	3.3.7.1.2	
Calibrate trip units	3.3.7.1.3	--	
Channel Calibration	3.3.7.1.4	3.3.7.1.3	
Logic System Functional Test	3.3.7.1.5	3.3.7.1.4	
Loss of Power (LOP) Instrumentation	**3.3.8.1**	**3.3.8.1**	
Channel Check	3.3.8.1.1	--	
Channel Functional Test (31 days)	3.3.8.1.2	3.3.8.1.1	
Channel Functional Test (Annually)	--	3.3.8.1.2	
Channel Calibration (Annually)	--	3.3.8.1.3	
Channel Calibration ([18] months)	3.3.8.1.3	3.3.8.1.4	
Channel Functional Test (Loss of Voltage)	--	3.3.8.1.3	
Logic System Functional Test	3.3.8.1.4	3.3.8.1.5	
RPS Electric Power Monitoring	**3.3.8.2**	**3.3.8.2**	
Channel Functional Test	3.3.8.2.1	3.3.8.2.1	
Channel Calibration	3.3.8.2.2	3.3.8.2.2	
System functional test	3.3.8.2.3	3.3.8.2.3	
Recirculation Loops Operating	**3.4.1**	**3.4.1**	

TSTF-425 (NUREG-1433) vs. DAEC Cross-Reference

Technical Specification Section Title/Surveillance Description*	**TSTF-425**	**DAEC**	**Notes**
Recirculation loop jet pump flow mismatch	3.4.1.1	3.4.1.1	
Verify operation outside Exclusion Zone	--	3.4.1.2	
Jet Pumps	**3.4.2**	**3.4.2**	
Jet pump parameters match established patterns	3.4.2.1	3.4.2.1	
Safety/Relief Valves (SRVs)	**3.4.3**	**3.4.3**	
Safety function lift setpoints	3.4.3.1	--	DAEC Frequency is controlled by IST Program
SRV opens when manually actuated	3.4.3.2	3.4.3.2	
Reactor Coolant System (RCS) Operational Leakage	**3.4.4**	**3.4.4**	
RCS unidentified and total leakage increase within limits	3.4.4.1	3.4.4.1	
RCS Pressure Isolation Valve (PIV) Leakage	**3.4.5**	**N/A**	
Equivalent leakage of each PIV	3.4.5.1	N/A	
RCS Leakage Detection Instrumentation	**3.4.6**	**3.4.5**	
Channel Check	3.4.6.1	3.4.5.1	
Channel Functional Test (31 days)	3.4.6.2	3.4.5.2	
Channel Functional Test (Quarterly)	--	3.4.5.3	
Channel Calibration (Quarterly)	--	3.4.5.4	
Channel Calibration ([18] months)	3.4.6.3	3.4.5.5	
RCS Specific Activity	**3.4.7**	**3.4.6**	
Dose Equivalent I-131 specific activity	3.4.7.1	3.4.6.1	
Residual Heat Removal (RHR) Shutdown Cooling - Hot Shutdown	**3.4.8**	**3.4.7**	
One RHR Shutdown cooling subsystem operating	3.4.8.1	3.4.7.1	
RHR Shutdown Cooling - Cold Shutdown	**3.4.9**	**3.4.8**	
One RHR Shutdown cooling subsystem operating	3.4.9.1	3.4.8.1	
RCS Pressure/Temperature Limit	**3.4.10**	**3.4.9**	
RCS pressure, temperature, heatup and cooldown rates	3.4.10.1	3.4.9.1	
RPV flange/head flange temperatures (tensioning head bolt stud)	3.4.10.7	3.4.9.5	
RPV flange/head flange temperatures (after RCS temp < 80°F)	3.4.10.8	3.4.9.6	
RPV flange/head flange temperatures (after RCS temp < 100°F)	3.4.10.9	3.4.9.7	
Reactor Steam Dome Pressure	**3.4.11**	**3.4.10**	
Verify reactor steam dome pressure	3.4.11.1	3.4.10.1	
ECCS - Operating	**3.5.1**	**3.5.1**	
Verify injection/spray piping filled with water	3.5.1.1	3.5.1.1	
Verify each valve in flow path is in correct position	3.5.1.2	3.5.1.2	
Verify ADS header pressure	3.5.1.3	3.5.1.3	
Verify RHR (LPCI) cross tie valve is closed and power removed	3.5.1.4	N/A	
Verify LPCI inverter output voltage	3.5.1.5	N/A	
Verify ECCS pumps develop specified flow	3.5.1.7	--	DAEC Frequency is controlled by IST Program

TSTF-425 (NUREG-1433) vs. DAEC Cross-Reference

Technical Specification Section Title/Surveillance Description*	**TSTF-425**	**DAEC**	**Notes**
Verify HPCI flow rate (Rx press < 1020, > 920)	3.5.1.8	--	DAEC Frequency is controlled by IST Program
Verify HPCI flow rate (Rx press < [165] psig)	3.5.1.9	3.5.1.6	
Verify ECCS actuates on initiation signal	3.5.1.10	3.5.1.7	
Verify ADS actuates on initiation signal	3.5.1.11	3.5.1.8	
Verify each ADS valve opens when manually actuated	3.5.1.12	3.5.1.9	
ECCS - Shutdown	**3.5.2**	**3.5.2**	
Verify, for LPCI, suppression pool water level	3.5.2.1	3.5.2.1	
Verify, for CS, suppression pool water level and CST water level	3.5.2.2	3.5.2.2	
Verify ECCS piping filled with water	3.5.2.3	3.5.2.3	
Verify each valve in flow path is in correct position	3.5.2.4	3.5.2.4	
Verify each ECCS pump develops flow	3.5.2.5	--	DAEC Frequency is controlled by IST Program
Verify ECCS actuates on initiation signal	3.5.2.6	3.5.2.6	
RCIC System	**3.5.3**	**3.5.3**	
Verify RCIC piping filled with water	3.5.3.1	3.5.3.1	
Verify each valve in flow path is in correct position	3.5.3.2	3.5.3.2	
Verify RCIC flow rate (Rx press <1020, >920)	3.5.3.3	--	DAEC Frequency is controlled by IST Program
Verify RCIC flow rate (Rx press < 165)	3.5.3.4	3.5.3.4	
Verify RCIC actuates on initiation signal	3.5.3.5	3.5.3.5	
Primary Containment	**3.6.1.1**	**3.6.1.1**	
Verify drywell to suppression chamber differential pressure	3.6.1.1.2	3.6.1.1.2	
Primary Containment Air Lock	**3.6.1.2**	**3.6.1.2**	
Verify only one door can be opened at a time	3.6.1.2.2	3.6.1.2.2	
Primary Containment Isolation Valves (PCIVs)	**3.6.1.3**	**3.6.1.3**	
Verify purge valve is sealed closed	3.6.1.3.1	--	
Verify each 18 inch purge valve is closed	3.6.1.3.2	3.6.1.3.1	
Verify each manual PCIV outside containment is closed	3.6.1.3.3		
Verify continuity of traversing incore probe (TIP) shear valve	3.6.1.3.5	3.6.1.3.2	
Verify isolation time of each power operated PCIV	3.6.1.3.6	--	DAEC Frequency is controlled by IST Program
Perform leakage rate testing on each PC purge valve	3.6.1.3.7	3.6.1.3.4	
Verify isolation time of MSIVs	3.6.1.3.8	--	DAEC Frequency is controlled by

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Technical Specification Section Title/Surveillance Description*	**TSTF-425**	**DAEC**	**Notes**
			IST Program
Verify automatic PCIV actuates to isolation position	3.6.1.3.9	3.6.1.3.6	
Verify sample of Excess Flow Check Valves actuate	3.6.1.3.10	3.6.1.3.7	
Test explosive squib from each shear valve	3.6.1.3.11	--	DAEC Frequency is controlled by IST Program
Verify each purge valve is blocked	3.6.1.3.15	--	
Drywell Pressure	**3.6.1.4**	**N/A**	
Verify drywell pressure is within limit	3.6.1.4.1	N/A	
Drywell Average Air Temperature	**3.6.1.5**	**3.6.1.4**	
Verify drywell average air temperature is within limit	3.6.1.5.1	3.6.1.4.1	
LLS Valves	**3.6.1.6**	**3.6.1.5**	
Verify each LLS valve opens when manually actuated	3.6.1.6.1	3.6.1.5.1	
Verify LLS system actuates on initiation signal	3.6.1.6.2	3.6.1.5.2	
Reactor Building - Suppression Chamber Vacuum Breakers	**3.6.1.7**	**3.6.1.6**	
Verify each vacuum breaker is closed	3.6.1.7.1	3.6.1.6.1	
Perform functional test on each vacuum breaker	3.6.1.7.2	3.6.1.6.2	
Verify opening setpoint for each vacuum breaker	3.6.1.7.3	3.6.1.6.3	
Suppression Chamber - Drywell Vacuum Breakers	**3.6.1.8**	**3.6.1.7**	
Verify each vacuum breaker is closed	3.6.1.8.1	3.6.1.7.1	
Perform functional test on each vacuum breaker	3.6.1.8.2	3.6.1.7.2	
Verify opening setpoint for each vacuum breaker	3.6.1.8.3	3.6.1.7.3	
Main Steam Isolation Valve (MSIV) Leakage Control System	**3.6.1.9**	**N/A**	
Operate each MSIV LCS blower	3.6.1.9.1	N/A	
Verify continuity of inboard MSIV LCS heater element	3.6.1.9.2	N/A	
Perform functional test of each MSIV LCS subsystem	3.6.1.9.3	N/A	
Suppression Pool Average Temperature	**3.6.2.1**	**3.6.2.1**	
Verify suppression pool average temperature within limits	3.6.2.1.1	3.6.2.1.1	
Suppression Pool Water Level	**3.6.2.2**	**3.6.2.2**	
Verify suppression pool water level within limits	3.6.2.2.1	3.6.2.2.1	
RHR Suppression Pool Cooling	**3.6.2.3**	**3.6.2.3**	
Verify each valve in flow path is in correct position	3.6.2.3.1	3.6.2.3.1	
Verify each RHR pump develops flow rate	3.6.2.3.2	--	DAEC Frequency is controlled by IST Program
RHR Suppression Pool Spray	**3.6.2.4**	**3.6.2.4**	
Verify each valve in flow path is in correct position	3.6.2.4.1	--	
Verify RHR pump develops flow rate	3.6.2.4.2	--	
Verify spray nozzle unobstructed		3.6.2.4.1	
Drywell - Suppression Chamber Differential Pressure	**3.6.2.5**	**N/A**	
Verify differential pressure is within limit	3.6.2.5.1	N/A	
Drywell Cooling System Fans	**3.6.3.1**	**N/A**	

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Operate each fan > 15 minutes	3.6.3.1.1	N/A	
Verify each fan flow rate	3.6.3.1.2	N/A	
Primary Containment Oxygen Concentration	**3.6.3.2**	**3.6.3.2**	
Verify PC oxygen concentration is within limits	3.6.3.2.1	3.6.3.2.1	
Containment Atmosphere Dilution (CAD) System	**3.6.3.3**	**N/A**	
Verify CAD liquid nitrogen storage	3.6.3.3.1	N/A	
Verify each CAD valve in flow path is in correct position	3.6.3.3.2	N/A	
Secondary Containment	**3.6.4.1**	**3.6.4.1**	
Verify SC vacuum	3.6.4.1.1	--	
Verify all SC equipment hatches closed and sealed	3.6.4.1.2	3.6.4.1.1	
Verify one SC access door in each opening is closed	3.6.4.1.3	3.6.4.1.2	
Verify SC drawn down using one SGTS	3.6.4.1.4	--	
Verify SC can be maintained using one SGTS	3.6.4.1.5	3.6.4.1.3	
Secondary Containment Isolation Valves	**3.6.4.2**	**3.6.4.2**	
Verify each SC isolation manual valve is closed	3.6.4.2.1	--	
Verify isolation time of each SCIV	3.6.4.2.2	3.6.4.2.1	
Verify each automatic SCIV actuates to isolation position	3.6.4.2.3	3.6.4.2.2	
Standby Gas Treatment (SGT) System	**3.6.4.3**	**3.6.4.3**	
Operate each SGT subsystem with heaters operating	3.6.4.3.1	3.6.4.3.1	
Verify each SGT subsystem actuates on initiation signal	3.6.4.3.3	3.6.4.3.3	
Verify each SGT filter cooler bypass damper can be opened	3.6.4.3.4	3.6.4.3.4	
Residual Heat Removal Service Water (RHRSW) System	**3.7.1**	**3.7.1**	
Verify each RHRSW valve in flow path in correct position	3.7.1.1	3.7.1.1	
Plant Service Water (PSW) System and Ultimate Heat Sink (UHS)	**3.7.2**	**3.7.2**	
Verify water level in cooling tower basin	3.7.2.1	3.7.2.1	
Verify water level in pump well of pump structure	3.7.2.2	--	
Verify average water temperature of heat sink	3.7.2.3	3.7.2.2	
Verify river water depth (Daily)	--	3.7.2.3	
Operate each cooling tower fan	3.7.2.4	--	
Verify each PSW valve in flow path is in correct position	3.7.2.5	3.7.2.4	
Verify river water depth (Quarterly)	--	3.7.2.5	
Verify PSW actuates on initiation signal	3.7.2.6	3.7.2.6	
Diesel Generator (DG) Standby Service Water (SSW) System	**3.7.3**	**3.7.3**	
Verify each valve in flow path is in correct position	3.7.3.1	3.7.3.1	
Verify pump starts automatically	3.7.3.2	3.7.3.2	
MCREC System	**3.7.4**	**3.7.4**	
Operate each MCREC subsystem	3.7.4.1	3.7.4.1	
Verify each subsystem actuates on initiation signal	3.7.4.3	3.7.4.3	
Verify each subsystem can maintain positive pressure	3.7.4.4	--	DAEC has implemented TSTF-448
Control Room Air Conditioning System	**3.7.5**	**3.7.5**	
Verify each subsystem has capability to remove heat load	3.7.5.1	3.7.5.1	

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Technical Specification Section Title/Surveillance Description*	TSTF-425	DAEC	Notes
Main Condenser Offgas	**3.7.6**	**3.7.6**	
Verify gross gamma activity rate of the noble gases	3.7.6.1	3.7.6.1	
Main Turbine Bypass System	**3.7.7**	**3.7.7**	
Verify one complete cycle of each main turbine bypass valve	3.7.7.1	3.7.7.1	
Perform system functional test	3.7.7.2	3.7.7.2	
Verify Turbine Bypass System Response Time within limits	3.7.7.3	3.7.7.3	
Spent Fuel Storage Pool Water Level	**3.7.8**	**3.7.8**	
Verify spent fuel storage pool water level	3.7.8.1	3.7.8.1	
CB/SBGT Instrument Air System	--	**3.7.9**	
Operate each CB/SBGT Instrument Air compressor	--	3.7.9.1	
Verify each CB/SBGT Instrument Air subsystem automatically actuates	--	3.7.9.2	
AC Sources - Operating	**3.8.1**	**3.8.1**	
Verify correct breaker alignment	3.8.1.1	3.8.1.1	
Verify each DG starts from standby conditions/steady state	3.8.1.2	3.8.1.2	
Verify each DG is synchronized and loaded	3.8.1.3	3.8.1.3	
Verify each day tank level	3.8.1.4	3.8.1.4	
Check for and remove accumulated water from day tank	3.8.1.5	3.8.1.5	
Verify fuel oil transfer system operates	3.8.1.6	3.8.1.6	
Verify each DG starts from standby conditions/quick start	3.8.1.7	3.8.1.7	
Verify transfer of power from offsite circuit to alternate circuit	3.8.1.8	3.8.1.8	
Verify DG rejects load greater than single largest load	3.8.1.9	3.8.1.9	
Verify DG maintains load following load reject	3.8.1.10	--	
Verify on loss of offsite power signal	3.8.1.11	--	
Verify DG starts on ECCS initiation signal	3.8.1.12	--	
Verify DG automatic trips bypassed on ECCS initiation signal	3.8.1.13	3.8.1.10	
Verify each DG operates for > 24 hours	3.8.1.14	--	
Verify each DG starts from standby conditions/quick restart	3.8.1.15	--	
Verify each DG synchronizes with offsite power	3.8.1.16	3.8.1.11	
Verify ECCS initiation signal overrides test mode	3.8.1.17	--	
Verify interval between each timed load block	3.8.1.18	3.8.1.12	
Verify on LOOP in conjunction with ECCS initiation signal	3.8.1.19	3.8.1.13	
Verify simultaneous DG starts	3.8.1.20	--	
Diesel Fuel Oil, Lube Oil, and Starting Air	**3.8.3**	**3.8.3**	
Verify fuel oil storage tank volume	3.8.3.1	3.8.3.1	
Verify lube oil inventory	3.8.3.2	3.8.3.2	
Verify each DG air start receiver pressure	3.8.3.4	3.8.3.4	
Check/remove accumulated water from fuel oil storage tank	3.8.3.5	3.8.3.5	
DC Sources – Operating	**3.8.4**	**3.8.4**	
Verify battery terminal voltage	3.8.4.1	3.8.4.1	
Verify no visible corrosion	--	3.8.4.2	
Verify no physical damage or abnormal deterioration	--	3.8.4.3	
Remove visible corrosion	--	3.8.4.4	
Verify connection resistance	--	3.8.4.5	

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Technical Specification Section Title/Surveillance Description*	TSTF-425	DAEC	Notes
Verify each battery charger supplies amperage	3.8.4.2	3.8.4.6	
Verify battery capacity is adequate (service test)	3.8.4.3	3.8.4.7	
Verify battery capacity is adequate (performance discharge test)	--	3.8.4.8	
Battery Parameters	**3.8.6**	**3.8.6**	
Verify battery float current	3.8.6.1	--	
Verify battery pilot cell voltage	3.8.6.2	--	
Verify battery connected cell electrolyte level	3.8.6.3	--	
Verify battery pilot cell temperature	3.8.6.4	--	
Verify battery connected cell voltage	3.8.6.5	--	
Verify battery cell parameters meet Category A	--	3.8.6.1	
Verify battery cell parameters meet Category B	--	3.8.6.2	
Verify electrolyte temperature of representative cells	--	3.8.6.3	
Verify battery capacity during performance discharge test	3.8.6.6	--	See 3.8.4.8 above
Inverters - Operating	**3.8.7**	**N/A**	
Verify correct inverter voltage, frequency and alignment	3.8.7.1	N/A	
Inverters - Shutdown	**3.8.8**	**N/A**	
Verify correct inverter voltage, frequency and alignment	3.8.8.1	N/A	
Distribution System - Operating	**3.8.9**	**3.8.7**	
Verify correct breaker alignment/power to distribution subsystems	3.8.9.1	3.8.7.1	
Verify LPCI Swing Bus breaker coordination	--	3.8.7.2	
Distribution System - Shutdown	**3.8.10**	**3.8.8**	
Verify correct breaker alignment/power to distribution subsystems	3.8.10.1	3.8.8.1	
Refueling Equipment Interlocks	**3.9.1**	**3.9.1**	
Channel Functional Test of refueling equip interlock inputs	3.9.1.1	3.9.1.1	
Refuel Position One-Rod-Out Interlock	**3.9.2**	**3.9.2**	
Verify reactor mode switch locked in refuel position	3.9.2.1	3.9.2.1	
Perform Channel Functional Test	3.9.2.2	3.9.2.2	
Control Rod Position	**3.9.3**	**3.9.3**	
Verify all control rods fully inserted	3.9.3.1	3.9.3.1	
Control Rod Operability - Refuel	**3.9.5**	**3.9.5**	
Insert each withdrawn control rod one notch	3.9.5.1	3.9.5.1	
Verify each withdrawn control rod scram accumulator press	3.9.5.2	3.9.5.2	
Reactor Pressure Vessel (RPV) Water Level - Irradiated Fuel	**3.9.6**	**3.9.6**	
Verify RPV water level	3.9.6.1	3.9.6.1	
Reactor Pressure Vessel (RPV) Water Level - New Fuel	**3.9.7**	**N/A**	
Verify RPV water level	3.9.7.1	N/A	
RHR - High Water Level	**3.9.8**	**3.9.7**	
Verify one RHR shutdown cooling subsystem operating	3.9.8.1	3.9.7.1	
RHR - Low Water Level	**3.9.9**	**3.9.8**	
Verify one RHR shutdown cooling subsystem operating	3.9.9.1	3.9.8.1	
Reactor Mode Switch Interlock Testing	**3.10.2**	**3.10.2**	

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Verify all control rods fully inserted in core cells	3.10.2.1	3.10.2.1	
Verify no Core Alterations in progress	3.10.2.2	3.10.2.2	
Single Control Rod Withdrawal - Hot Shutdown	**3.10.3**	**3.10.3**	
Verify all control rods in five-by-five array are disarmed	3.10.3.2	3.10.3.2	
Verify all control rods other than withdrawn rod are fully inserted	3.10.3.3	3.10.3.3	
Single Control Rod Withdrawal - Cold Shutdown	**3.10.4**	**3.10.4**	
Verify all control rods in five-by-five array are disarmed	3.10.4.2	3.10.4.2	
Verify all control rods other than withdrawn rod are fully inserted	3.10.4.3	3.10.4.3	
Verify a control rod withdrawal block is inserted	3.10.4.4	3.10.4.4	
Single Control Rod Drive (CRD) Removal - Refuel	**3.10.5**	**3.10.5**	
Verify all control rods other than withdrawn rod are fully inserted	3.10.5.1	3.10.5.1	
Verify all control rods in five-by-five array are disarmed	3.10.5.2	3.10.5.2	
Verify a control rod withdrawal block is inserted	3.10.5.3	3.10.5.3	
Verify no other Core Alterations in progress	3.10.5.5	3.10.5.5	
Multiple CRD Removal-Refuel	**3.10.6**	**3.10.6**	
Verify four fuel assemblies removed from core cells	3.10.6.1	3.10.6.1	
Verify all other rods in core cells inserted	3.10.6.2	3.10.6.2	
Verify fuel assemblies being loaded comply with reload sequence	3.10.6.3	3.10.6.3	
Shutdown Margin Test - Refueling	**3.10.8**	**3.10.8**	
Verify no other Core Alterations in progress	3.10.8.4	3.10.8.4	
Verify CRD charging water header pressure	3.10.8.6	3.10.8.6	
Recirculation Loops - Testing	**3.10.9**	**N/A**	
Verify LCO 3.4.1 requirements suspended for < 24 hours	3.10.9.1	N/A	
Verify Thermal power < 5% RTP during Physics Test	3.10.9.2	N/A	
Training Startups	**3.10.10**	**N/A**	
Verify all operable IRM channels are <25/40 div. of full scale	3.10.10.1	N/A	
Verify average reactor coolant temperature < 200 F	3.10.10.2	N/A	
Programs (Surveillance Frequency Control Program)	**5.5.15**	**5.5.14**	New Program

* The Technical Specification Section Title/Surveillance Description portion of this attachment is a summary description of the referenced TSTF-425 (NUREG-1433)/DAEC TS Surveillances which is provided for information purposes only and is not intended to be a verbatim description of the TS Surveillances.