CTS

~~[~~Spent Fuel Pool Storage~~]~~ 1 2
3.7.~~17~~ 15

3.7 PLANT SYSTEMS

3.7.~~17~~ 15 ~~[~~ Spent Fuel Pool Storage ~~]~~ 2 1

5.6.1.1, 5.6.1.1.c

LCO 3.7.~~17~~ 15 The combination of initial enrichment and burnup of each fuel assembly stored in ~~[Region 2] shall be within the Acceptable [Burnup Domain] of~~ INSERT 1 Figure s 3.7.~~17~~ 15 -1 ~~or in accordance with Specification 4.3.1.1~~ INSERT 2. 2 1 2 3

DOC A02

APPLICABILITY: Whenever any fuel assembly is stored in ~~[Region 2]~~ Regions 1 through 3 of the spent fuel storage pool. 1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC M01 A. Requirements of the LCO not met.	A.1 --------------NOTE-------------- LCO 3.0.3 is not applicable. -------------------------------------- Initiate action to move the noncomplying fuel assembly ~~from [Region 2]~~ to an acceptable location.	Immediately 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
DOC M02 SR 3.7.~~17~~ 15 .1	Verify by administrative means the initial enrichment and burnup of the fuel assembly is in accordance with Figure s 3.7.~~17~~ -1 through 3.7.15-4 and Tables 3.7.15-1 through 3.7.15-3 ~~or Specification 4.3.1.1~~.	Prior to storing the fuel assembly in ~~[Region 2]~~ Regions 1 through 3 2 3 1

1 **INSERT 1**

Regions 1 through 3 shall be in accordance with

3 **INSERT 2**

through 3.7.15-4 and Tables 3.7.15-1 through 3.7.15-3 in accordance with the following:

5.6.1.1.c.1 a. Region 1 arrays consist of new fuel with a maximum enrichment of 4.95 (± 0.05) wt% U-235, (or spent fuel regardless of the fuel burnup), in a 1-in-4 checkerboard arrangement of 1 fresh assembly with 3 spent fuel assemblies.

5.6.1.1.c.2 b. Region 2 arrays consist of fuel of 4.95 (± 0.05) wt% U-235 initial enrichment burned to at least 30.27 megawatt days per kilo gram uranium (MWD/KgU) (assembly average), or fuel of other enrichments with a burnup yielding an equivalent reactivity in the fuel racks.

5.6.1.1.c.3 c. Region 3 arrays consist of fuel of 4.95 (± 0.05) wt% U-235 initial enrichment (or fuel assemblies of any lower reactivity) in a 2-out-of-4 checkerboard arrangement with water-filled cells.

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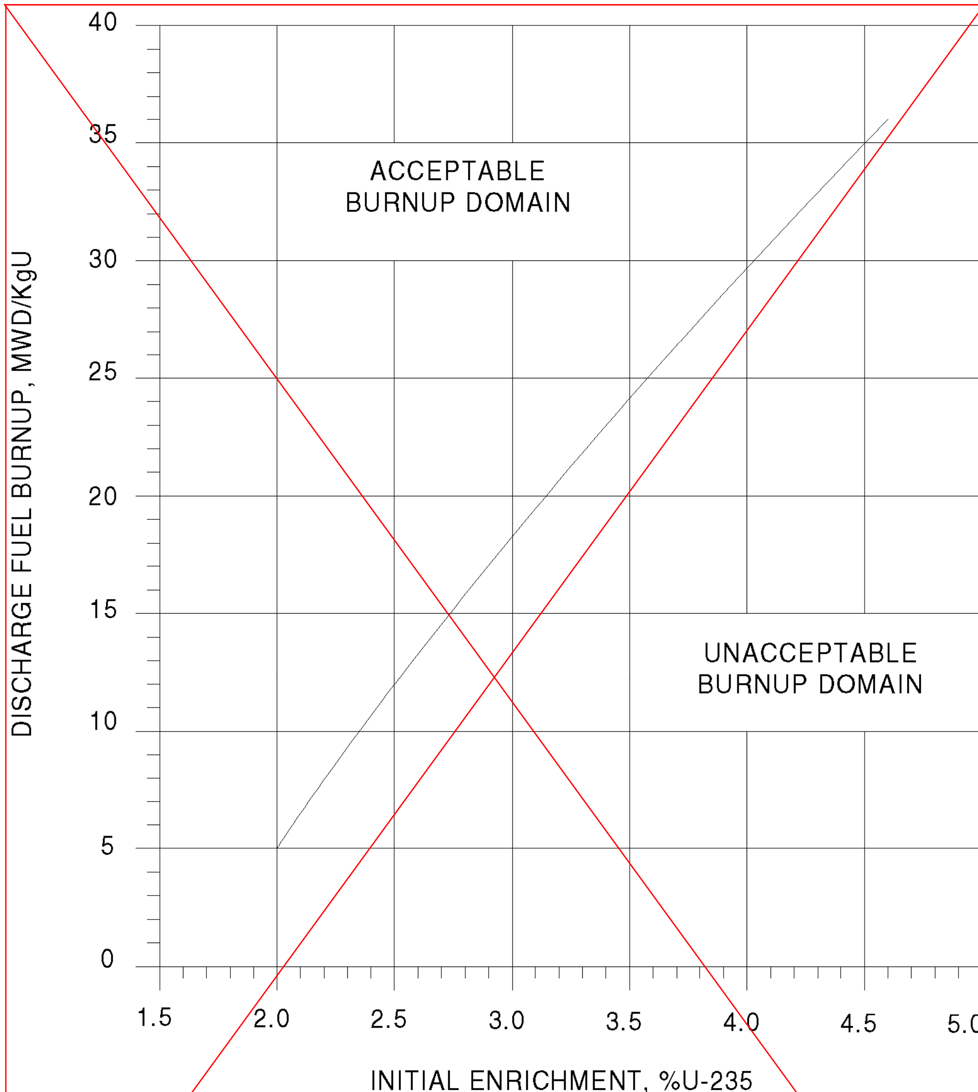
CTS

~~[~~Spent Fuel Pool Storage~~]~~ 1 2
3.7.~~17~~ 15



INSERT 3 3

Not to be used for Operation.
For illustration purposes only.

Figure 3.7.17-1 (page 1 of 1)
Fuel Assembly Burnup Limits in Region 2

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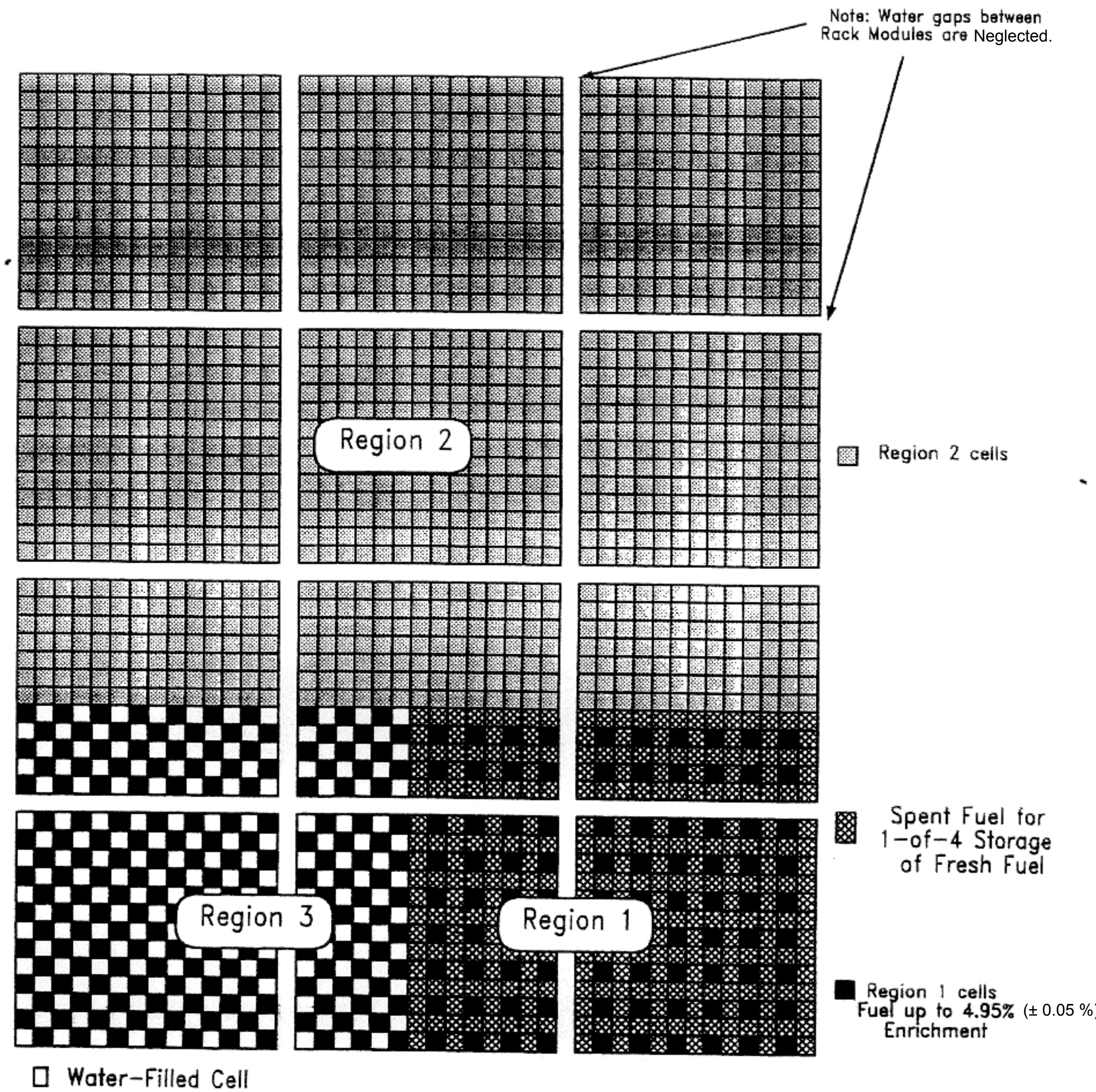
CTS

3.7.15

3 **INSERT 3**

Figure 5.6-1



Note: The edges of the sketch above are not necessarily the edges of the pool. The Regions may appear anywhere in the pool and in any orientation, subject to the restrictions in LCO 3.7.15.

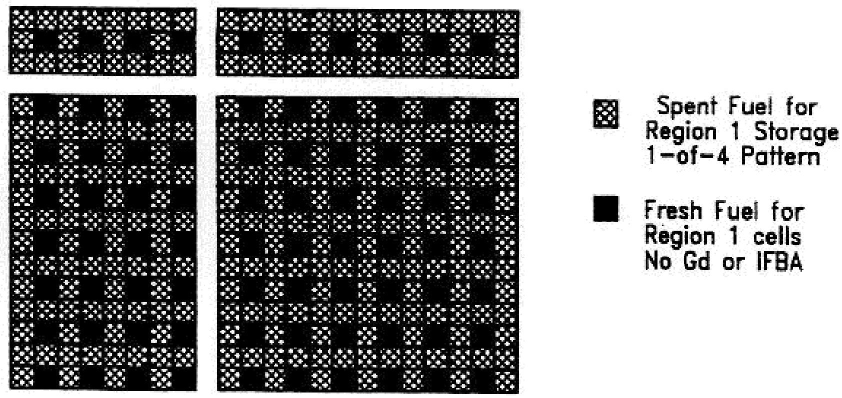
Figure 3.7.15-1
Arrangements of Fuel Storage Regions in the Sequoyah Spent Fuel Storage Pool

CTS

3.7.15

3 **INSERT 3 (Continued)**

Figure 5.6-1a



NOTE: WHEN CREDIT IS TAKEN FOR GADOLINIA OR IFBA RODS IN FRESH ASSEMBLIES THE SPENT FUEL ASSEMBLIES NEED NOT HAVE CONTAINED GADOLINIA OR IFBA RODS..

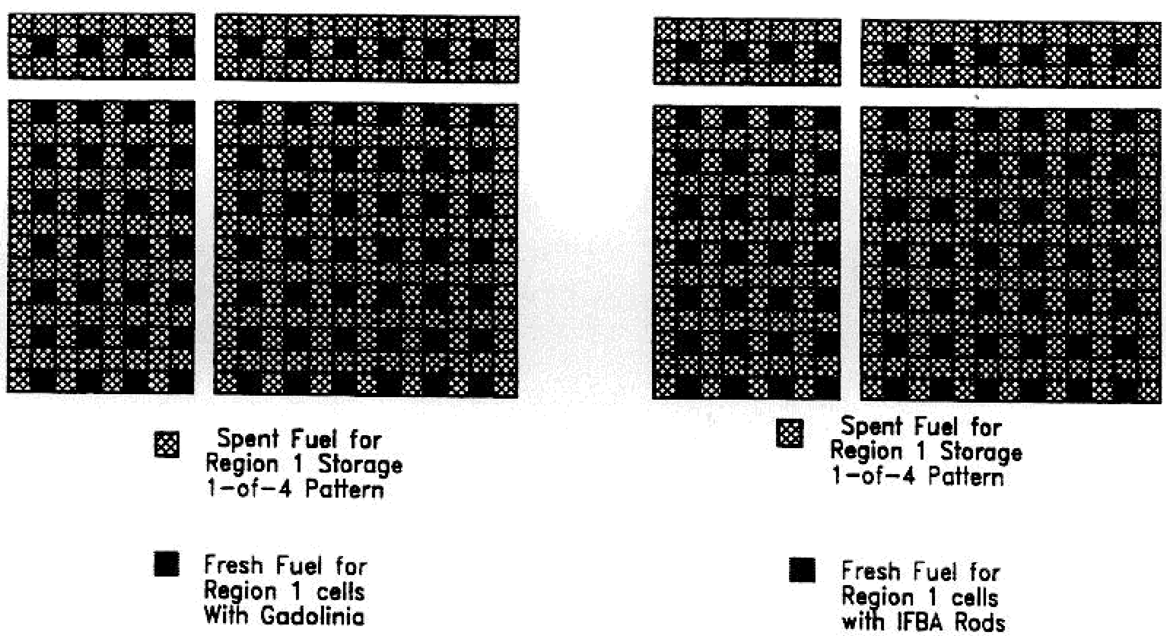


Figure 3.7.15-2
Acceptable Spent Fuel Pool Loading Patterns for Checkerboard Storage of Fresh and Spent Fuel Assemblies – Example

CTS 3.7.15

3

INSERT 3 (Continued)

Figure 5.6-2

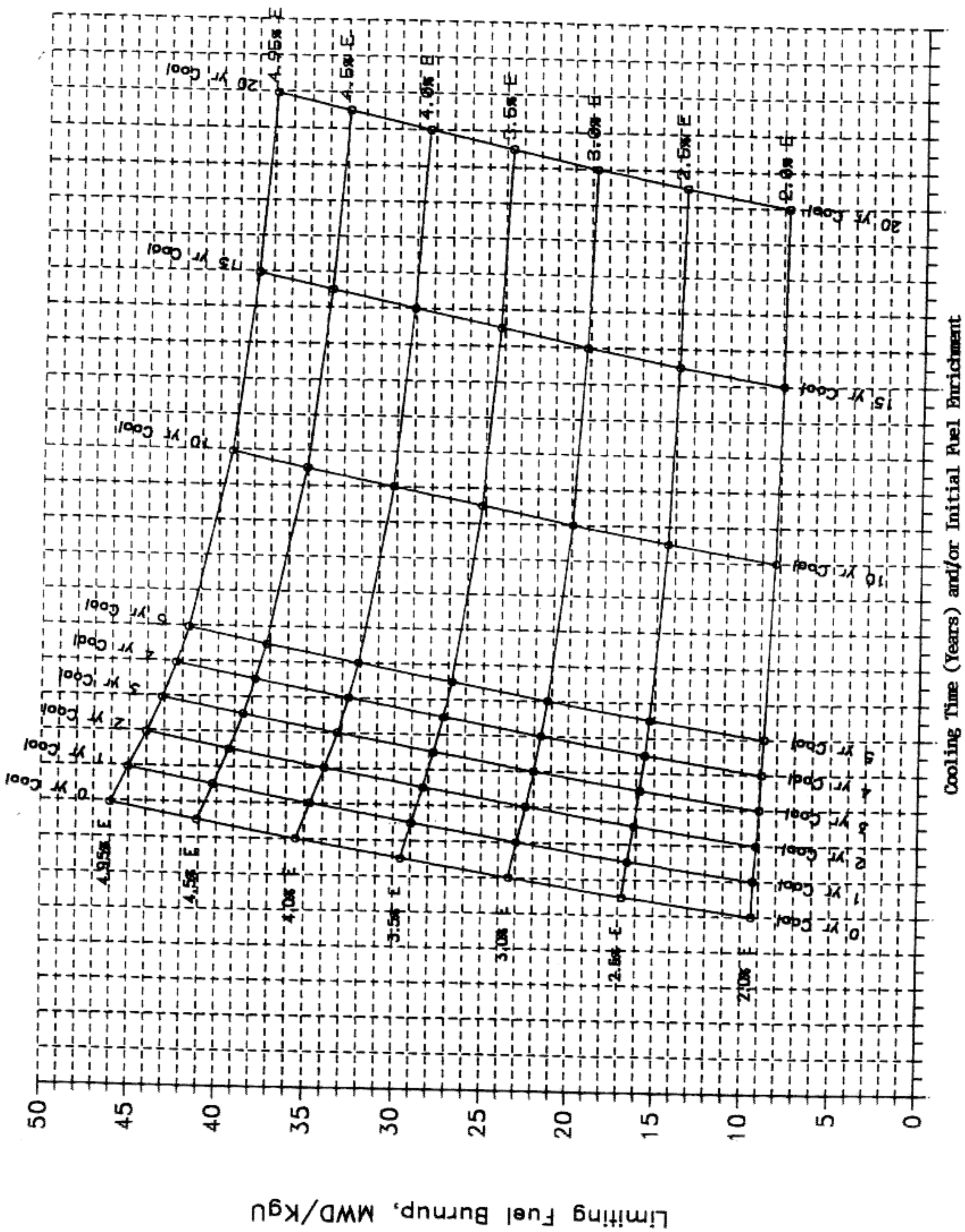


Figure 3.7.15-3
3-Dimensional Plot of Minimum Fuel Burnups in Region 1
For Enrichments and/or Cooling Times

Insert Page 3.7.15-2c

CTS 3.7.15

3 **INSERT 3 (Continued)**

Figure 5.6-3

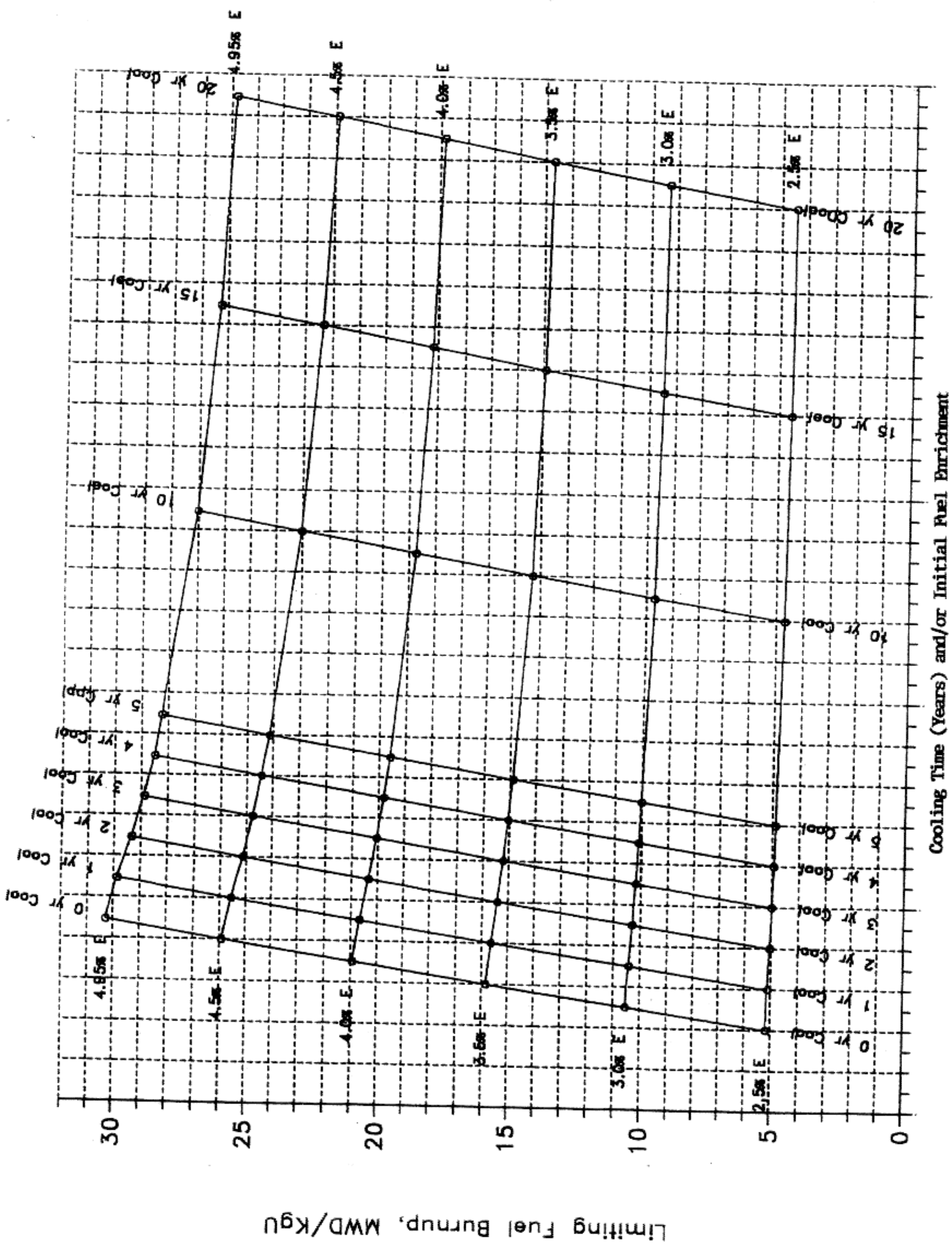


Figure 3.7.15-4
3-Dimensional Plot of Minimum Fuel Burnups in Region 2
For Enrichments and Cooling Times

Insert Page 3.7.15-2d

CTS 3.7.15

3 **INSERT 3 (Continued)**

Table 5.6-1

Table 3.7.15-1
Region 1 Storage Burnup Restrictions: Checkerboard of 1
Fresh Fuel Assembly and 3 Spent Fuel Assemblies (Without Gadolinium or IFBA Rods)

For Zero Year Cooling Time
Bu (limit) = - 28.1868 + 23.0765 x E – 2.46264 x E^2 + 0.167868 x E^3
For One Year Cooling Time
Bu (limit) = - 27.3317 + 22.5087 x E – 2.40586 x E^2 + 0.164207 x E^3
For Two Years Cooling Time
Bu (limit) = -26.4693 + 21.8404 x E – 2.31873 x E^2 + 0.158218 x E^3
For Three Years Cooling Time
Bu (limit) = -25.7404 + 21.2659 x E – 2.24287 x E^2 + 0.153018 x E^3
For Four Years Cooling Time
Bu (limit) = - 25.1367 + 20.7910 x E –2.18484 x E^2 + 0.1499363 x E^3
For Five Years Cooling Time
Bu (limit) = - 24.5981 + 20.3568 x E – 2.12719 x E^2 + 0.145431 x E^3
For Ten Years Cooling Time
Bu (limit) = - 23.2050 + 19.2969 x E – 2.06993 x E^2 + 0.145875 x E^3
For Fifteen Years Cooling Time
Bu (limit) = -22.6098 + 18.8544 x E – 2.08617 x E^2 + 0.150473 x E^3
For Twenty Years Cooling Time
Bu (limit) = - 22.3017 + 18.622 x E – 2.11206 x E^2 + 0.15467 x E^3

CTS

3.7.15

3 **INSERT 3 (Continued)**

Table 5.6-2

Table 3.7.15-2
Region 1 Storage Burnup Restrictions with Gadolinium or IFBA

With Gadolinium Credit: Checkerboard of 1 Fresh Fuel Assembly with 3 Spent Fuel Assemblies

Zero Year Cooling Time, 0 Gadolinia Rods
Bu (limit) = $- 28.1868 + 23.0765 \times E - 2.46264 \times E^2 + 0.167868 \times E^3$
Zero Year Cooling Time, 4 Gadolinia Rods
Bu (limit) = $- 28.4012 + 22.0062 \times E - 2.19268 \times E^2 + 0.143601 \times E^3$
Zero Year Cooling Time, 8 Gadolinia Rods
Bu (limit) = $- 31.4262 + 22.0768 \times E - 2.38845 \times E^2 + 0.164888 \times E^3$

Note: If more than 8 Gadolinium rods per assembly, use the 8 rod correlation.

With IFBA Credit: Checkerboard of 1 Fresh Fuel Assembly with 3 Spent Fuel Assemblies

Zero Year Cooling Time, 0 IFBA Rods
Bu (limit) = $- 28.1868 + 23.0765 \times E - 2.46264 \times E^2 + 0.167868 \times E^3$
Zero Year Cooling Time, 16 IFBA Rods
Bu (limit) = $- 28.5048 + 21.6411 \times E - 2.15262 \times E^2 + 0.140904 \times E^3$
Zero Year Cooling Time, 32 IFBA Rods
Bu (limit) = $- 31.0949 + 22.0435 \times E - 2.36088 \times E^2 + 0.162229 \times E^3$
Zero Year Cooling Time, 48 IFBA Rods
Bu (limit) = $- 33.1342 + 22.3999 \times E - 2.55367 \times E^2 + 0.18082 \times E^3$
Zero Year Cooling Time, 64 IFBA Rods
Bu (limit) = $- 36.0468 + 24.1492 \times E - 3.11807 \times E^2 + 0.233987 \times E^3$

Note: If more than 64 IFBA rods per assembly, use the correlation for 64 IFBA rods.

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CTS 3.7.15

3 **INSERT 3 (Continued)**

Table 5.6-3

Table 3.7.15-3
Region 2 Storage Burnup Restrictions

Zero Cooling Time Bu (limit) = - 23.8702 + 12.3026 x E - 0.275672 x E^2
1 Year Cooling Time Bu (limit) = - 23.6854 + 12.2384 x E - 0.287498 x E^2
2 Years Cooling Time Bu (limit) = - 23.499 + 12.1873 x E - 0.305988 x E^2
3 Years Cooling Time Bu (limit) = - 23.3124 + 12.1249 x E - 0.319566 x E^2
4 Years Cooling Time Bu (limit) = - 23.1589 + 12.0748 x E - 0.332212 x E^2
5 Years Cooling Time Bu (limit) = - 22.6375 + 11.7906 x E - 0.307623 x E^2
10 Years Cooling Time Bu (limit) = - 21.7256 + 11.3660 x E – 0.31029 x E^2
15 Years Cooling Time Bu (limit) = - 21.1160 + 11.0663 x E - 0.306231 x E^2
20 Years Cooling Time Bu (limit) = - 20.6055 + 10.7906 x E - 0.29291 x E^2

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.15, SPENT FUEL POOL STORAGE

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

2. Sequoyah Nuclear Plant (SQN) design does not include ISTS 3.7.12, "Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)" and ISTS 3.7.14, "Penetration Room Exhaust Air Cleanup System (PREACS)." Therefore, ISTS 3.7.17, "Spent Fuel Pool Storage" has been renumbered as ITS 3.7.15, "Spent Fuel Pool Storage."

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

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Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.7 PLANT SYSTEMS

B 3.7.~~17~~ ~~[~~ Spent Fuel Pool Storage ~~]~~ 2 1
15

BASES

BACKGROUND

INSERT 1

~~In the Maximum Density Rack (MDR) [(Refs. 1 and 2)] design, the spent fuel storage pool is divided into two separate and distinct regions which, for the purpose of criticality considerations, are considered as separate pools. [Region 1], with [336] storage positions, is designed to accommodate new fuel with a maximum enrichment of [4.65] wt% U-235, or spent fuel regardless of the discharge fuel burnup. [Region 2], with [2670] storage positions, is designed to accommodate fuel of various initial enrichments which have accumulated minimum burnups within the acceptable domain according to Figure 3.7.17-1, in the accompanying LCO. Fuel assemblies not meeting the criteria of Figure [3.7.17-1] shall be stored in accordance with paragraph 4.3.1.1 in Section 4.3, Fuel Storage.~~ 3

The water in the spent fuel storage pool normally contains soluble boron, which results in large subcriticality margins under actual operating conditions. However, the NRC guidelines, based upon the accident condition in which all soluble poison is assumed to have been lost, specify that the limiting k_{eff} of 0.95 be evaluated in the absence of soluble boron. Hence, the design of the ~~both~~ regions is based on the use of unborated water, which maintains each region in a subcritical condition during normal operation with the regions fully loaded. The double contingency principle discussed in ANSI N-16.1-1975 and the April 1978 NRC letter (Ref. 1 ~~3~~) allows credit for soluble boron under other abnormal or accident conditions, since only a single accident need be considered at one time. For example, the most severe accident scenario is associated with the ~~movement of fuel from [Region 1 to Region 2], and accidental misloading of a fuel assembly in [Region 2]. This could potentially increase the criticality of [Region 2]. To mitigate these~~ INSERT 2 ~~postulated criticality related accidents, boron is dissolved in the pool water. Safe operation of the MDR with no movement of assemblies~~ may therefore be achieved by controlling the location of each assembly in accordance with the accompanying LCO. Prior to movement of an assembly, it is necessary to perform SR 3.7.~~16~~ 14 .1. 3 3 2

3 **INSERT 1**

In the high density Spent Fuel Storage Rack design, the spent fuel storage pool is divided into three separate and distinct regions which, for the purpose of criticality considerations, are considered as separate pools. Region 1 is designed to accommodate new fuel with a maximum enrichment of 4.95 (± 0.05) wt% U-235, or spent fuel regardless of the discharge fuel burnup in a 1-in-4 checkerboard arrangement of 1 fresh assembly with 3 spent fuel assemblies with specified enrichment, burnup and cooling times. Region 2 is designed to accommodate fuel of 4.95 (± 0.05) wt% initial enrichment burned to at least 30.27 megawatt days per kilo gram uranium (MWD/KgU) (assembly average), or fuel of other enrichment with a burnup yielding an equivalent reactivity in the fuel racks. Region 3 is designed to accommodate fuel of 4.95 (± 0.05) wt% initial enrichment or fuel assemblies of any lower reactivity in a 2-out-of-4 checkerboard arrangement with water-filled cells.

3 **INSERT 2**

accidental mishandling of a fresh fuel assembly face adjacent to a fresh fuel assembly of Region 3. This could potentially increase the criticality of Region 3. To mitigate these postulated criticality related accidents, boron is dissolved in the pool water. The soluble boron concentration required to maintain $k_{eff} \leq 0.95$ under normal conditions is 300 ppm and 700 ppm under the most severe postulated fuel mis-location accident. Safe operation of the spent fuel storage racks

~~[~~Spent Fuel Pool Storage~~]~~ 1 2
B 3.7.~~17~~ 15

BASES

APPLICABLE SAFETY ANALYSES

INSERT 3

~~The hypothetical accidents can only take place during or as a result of the movement of an assembly (Ref. 4). For these accident occurrences, the presence of soluble boron in the spent fuel storage pool (controlled by LCO 3.7.16, "Fuel Storage Pool Boron Concentration") prevents criticality in both regions. By closely controlling the movement of each assembly and by checking the location of each assembly after movement, the time period for potential accidents may be limited to a small fraction of the total operating time. During the remaining time period with no potential for accidents, the operation may be under the auspices of the accompanying LCO.~~ 3

The configuration of fuel assemblies in the fuel storage pool satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

The restrictions on the placement of fuel assemblies within the spent fuel pool, in accordance with Figure s 3.7.~~17~~ 15-1 through 3.7.15-4 and Tables 3.7.15-1 through 3.7.15-3 in the accompanying LCO, ensures the k_{eff} of the spent fuel storage pool will always remain ~~<~~ ≤ 0.95, assuming the pool to be flooded with unborated water. ~~Fuel assemblies not meeting the criteria of Figure [3.7.17-1] shall be stored in accordance with Specification 4.3.1.1 in Section 4.3.~~ INSERT 4 3

APPLICABILITY

This LCO applies whenever any fuel assembly is stored in ~~[Region 2]~~ Regions 1 through 3 of the fuel storage pool. 1

ACTIONS

A.1

Required Action A.1 is modified by a Note indicating that LCO 3.0.3 does not apply.

When the configuration of fuel assemblies stored in ~~[Region 2]~~ Regions 1 through 3 of the spent fuel storage pool is not in accordance with Figure s 3.7.~~17~~ 15-1 through 3.7.15-4 and Tables 3.7.15-1 through 3.7.15-3, ~~or paragraph 4.3.1.1,~~ the immediate action is to initiate action to make the necessary fuel assembly movement(s) to bring the configuration into compliance with Figure s 3.7.~~17~~ 15-1 through 3.7.15-4 and Tables 3.7.15-1 through 3.7.15-3 ~~or Specification 4.3.1.1~~. 1 3

If unable to move irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not be applicable. If unable to move irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the action is independent of reactor operation. Therefore, inability to move fuel assemblies is not sufficient reason to require a reactor shutdown.

3 **INSERT 3**

Most accident conditions do not result in an increase in the reactivity of any one of the three regions (Ref. 2). Examples of these accident conditions are the loss of cooling and the dropping of a fuel assembly on the top of the rack. However, accidents can be postulated that could increase the reactivity. This increase in reactivity is unacceptable with unborated water in the storage pool. Thus, for these accident occurrences, the presence of soluble boron in the storage pool prevents criticality in all regions. The most limiting postulated accident with respect to the storage configurations assumed in the spent fuel rack criticality analysis is the misplacement of a nominal 4.95 (± 0.05) wt% U-235 fuel assembly into an empty storage cell location in the Region 3 checkerboard storage arrangement. The amount of soluble boron required to maintain $k_{eff} \leq 0.95$ due to this fuel misload accident is 700 ppm.

3 **INSERT 4**

The arrangements in the spent fuel storage pool have the following definitions:

Region 1 is designed to accommodate new fuel with a maximum enrichment of 4.95 (± 0.05) wt% U-235, (or spent fuel regardless of the fuel burnup), in a 1-in-4 checkerboard arrangement of 1 fresh assembly with 3 spent fuel assemblies with enrichment-burnup and cooling times illustrated in Figure 3.7.15-3 and defined by the equations in Table 3.7.15-1. Cooling time is defined as the period since reactor shutdown at the end of the last operating cycle for the discharged spent fuel assembly. The presence of a removable, non-fissile insert such as a burnable poison rod assembly (BPRA) or either gadolinia or integral fuel burnable absorber (IFBA) in a fresh fuel assembly does not affect the applicability of Figure 3.7.15-3 or Table 3.7.15-1.

Two alternative storage arrays (or sub-arrays) are acceptable in Region 1 if the fresh fuel assemblies contain rods with either gadolinia or IFBA. For these types of assemblies, the minimum burnup of the spent fuel in the 1-of-4 sub-array are defined by the equations in Table 3.7.15-2.

For Region 1, any of the three sub-arrays illustrated in Figure 3.7.15-2 may be used in any combination provided that:

a. Each sub-array of 4 fuel assemblies includes, in addition to the fresh fuel assembly, 3 assemblies with enrichment and minimum burnup requirements defined by the equations in Tables 3.7.15-1 and 3.7.15-2, as appropriate.

b. The arrangement of Region 1 sub-arrays must not allow a configuration with fresh assemblies adjacent to each other.

c. If Region 1 arrays are used in conjunction with Region 2 or Region 3 arrangements (see below), the arrangements shall not allow fresh fuel assemblies to be adjacent to each other (see also Figure 3.7.15-1).

3

INSERT 4 (Continued)

Region 2 is designed to accommodate fuel of 4.95 (± 0.05) wt% U-235 initial enrichment burned to at least 30.27 MWD/KgU (assembly average), or fuel of other enrichments with a burnup yielding an equivalent reactivity in the fuel racks. The minimum required assembly average burnup in MWD/KgU and cooling time is given by the equations in Table 3.7.15-3 in terms of E, where E is the initial enrichment in the axial zone of highest enrichment (wt% U-235). The minimum required burnups are illustrated in Figure 3.7.15-4 in terms of the initial enrichment and cooling time.

The following restrictions apply to the storage of spent fuel in the Region 2 cells:

a. The spent fuel shall conform to the minimum burnup requirements defined by the equations in Table 3.7.15-3. Linear interpolation between cooling times may be made if desired.

b. For the interface with Region 1 storage cells, fresh fuel in Region 1 shall not be stored adjacent to spent fuel assemblies in the Region 2 storage cells.

Region 3 is designed to accommodate fuel of 4.95 (± 0.05) wt% U-235 initial enrichment (or fuel assemblies of any lower reactivity) in a 2-out-of-4 checkerboard arrangement with water-filled cells. The water-filled cells shall not contain any components bearing any fissile material, but may accommodate miscellaneous items or equipment.

The following restrictions apply to the storage of spent fuel in the Region 3 cells:

a. For the interface between Region 1 and Region 3 storage regions, fresh fuel assemblies shall not be stored adjacent to each other.

b. If miscellaneous items or equipment are stored in the water cells of Region 3, the total volume of the miscellaneous items shall be no more than 75% of the storage cell volume.

c. No fuel rods, assemblies, or items containing fissile material shall be stored in the water cells of Region 3.

An empty cell is less reactive than any cell containing fuel and therefore may be used as a Region 1, Region 2, or Region 3 cell in any arrangement.

Region 2 array described above may be used in the 15 x 15 storage rack module in the cask loading area of the cask pit.

A nominal concentration of 2000 ppm boron in the pool water. This concentration of soluble boron provides a margin sufficient to allow timely detection of a boron dilution accident and corrective action before the minimum concentration (700 ppm) required to protect against the most severe postulated fuel handling accident or before the minimum concentration (300 ppm) required to maintain the storage configuration design basis (k_{eff} less than 0.95) is reached.

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1 2

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.~~17~~ 15.1

This SR verifies by administrative means that the initial enrichment and burnup of the fuel assembly is in accordance with Figure s [3.7.~~17~~ 15-1] through 3.7.15-4 and Tables 3.7.15-1 through 3.7.15-3 in the accompanying LCO. ~~For fuel assemblies in the unacceptable range of Figure 3.7.17-1, performance of this SR will ensure compliance with Specification 4.3.1.1.~~

REFERENCES

~~[1. Callaway FSAR, Appendix 9.1A, "The Maximum Density Rack (MDR) Design Concept."~~

~~2. Description and Evaluation for Proposed Changes to Facility Operating Licenses DPR-39 and DPR-48 (Zion Power Station).]~~

~~3~~ 1. Double contingency principle of ANSI N16.1-1975, as specified in the April 14, 1978 NRC letter (Section 1.2) and implied in the proposed revision to Regulatory Guide 1.13 (Section 1.4, Appendix A).

~~4~~ 2. U FSAR, Section ~~[15.7.4]~~ 4.3.2.7.

B 3.7 PLANT SYSTEMS

B 3.7.~~17~~ 15 ~~[~~ Spent Fuel Pool Storage ~~]~~ 2 1

BASES

BACKGROUND

INSERT 1 ~~In the Maximum Density Rack (MDR) [(Refs. 1 and 2)] design, the spent fuel storage pool is divided into two separate and distinct regions which, for the purpose of criticality considerations, are considered as separate pools. [Region 1], with [336] storage positions, is designed to accommodate new fuel with a maximum enrichment of [4.65] wt% U-235, or spent fuel regardless of the discharge fuel burnup. [Region 2], with [2670] storage positions, is designed to accommodate fuel of various initial enrichments which have accumulated minimum burnups within the acceptable domain according to Figure 3.7.17-1, in the accompanying LCO. Fuel assemblies not meeting the criteria of Figure [3.7.17-1] shall be stored in accordance with paragraph 4.3.1.1 in Section 4.3, Fuel Storage.~~ 3

The water in the spent fuel storage pool normally contains soluble boron, which results in large subcriticality margins under actual operating conditions. However, the NRC guidelines, based upon the accident condition in which all soluble poison is assumed to have been lost, specify that the limiting k_{eff} of 0.95 be evaluated in the absence of soluble boron. Hence, the design of the ~~both~~ regions is based on the use of unborated water, which maintains each region in a subcritical condition during normal operation with the regions fully loaded. The double contingency principle discussed in ANSI N-16.1-1975 and the April 1978 NRC letter (Ref. 1 ~~3~~) allows credit for soluble boron under other abnormal or accident conditions, since only a single accident need be considered at one time. For example, the most severe accident scenario is associated with the ~~movement of fuel from [Region 1 to Region 2], and accidental misloading of a fuel assembly in [Region 2]. This could potentially increase the criticality of [Region 2]. To mitigate these~~ INSERT 2 ~~postulated criticality related accidents, boron is dissolved in the pool water. Safe operation of the MDR with no movement of assemblies~~ may therefore be achieved by controlling the location of each assembly in accordance with the accompanying LCO. Prior to movement of an assembly, it is necessary to perform SR 3.7.~~16~~ 14.1. 3 3 2

3 **INSERT 1**

In the high density Spent Fuel Storage Rack design, the spent fuel storage pool is divided into three separate and distinct regions which, for the purpose of criticality considerations, are considered as separate pools. Region 1 is designed to accommodate new fuel with a maximum enrichment of 4.95 (± 0.05) wt% U-235, or spent fuel regardless of the discharge fuel burnup in a 1-in-4 checkerboard arrangement of 1 fresh assembly with 3 spent fuel assemblies with specified enrichment, burnup and cooling times. Region 2 is designed to accommodate fuel of 4.95 (± 0.05) wt% initial enrichment burned to at least 30.27 megawatt days per kilo gram uranium (MWD/KgU) (assembly average), or fuel of other enrichment with a burnup yielding an equivalent reactivity in the fuel racks. Region 3 is designed to accommodate fuel of 4.95 (± 0.05) wt% initial enrichment or fuel assemblies of any lower reactivity in a 2-out-of-4 checkerboard arrangement with water-filled cells.

3 **INSERT 2**

accidental mishandling of a fresh fuel assembly face adjacent to a fresh fuel assembly of Region 3. This could potentially increase the criticality of Region 3. To mitigate these postulated criticality related accidents, boron is dissolved in the pool water. The soluble boron concentration required to maintain k_{eff} ≤ 0.95 under normal conditions is 300 ppm and 700 ppm under the most severe postulated fuel mis-location accident. Safe operation of the spent fuel storage racks

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BASES

APPLICABLE SAFETY ANALYSES

~~The hypothetical accidents can only take place during or as a result of the movement of an assembly (Ref. 4). For these accident occurrences, the presence of soluble boron in the spent fuel storage pool (controlled by LCO 3.7.16, "Fuel Storage Pool Boron Concentration") prevents criticality in both regions. By closely controlling the movement of each assembly and by checking the location of each assembly after movement, the time period for potential accidents may be limited to a small fraction of the total operating time. During the remaining time period with no potential for accidents, the operation may be under the auspices of the accompanying LCO.~~ INSERT 3 3

The configuration of fuel assemblies in the fuel storage pool satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

The restrictions on the placement of fuel assemblies within the spent fuel pool, in accordance with Figure s 3.7.~~17~~ 15 -1 through 3.7.15-4 and Tables 3.7.15-1 through 3.7.15-3, in the accompanying LCO, ensures the k_{eff} of the spent fuel storage pool will always remain ~~<~~ ≤ 0.95, assuming the pool to be flooded with unborated water. ~~Fuel assemblies not meeting the criteria of Figure [3.7.17-1] shall be stored in accordance with Specification 4.3.1.1 in Section 4.3.~~ INSERT 4 3

APPLICABILITY

This LCO applies whenever any fuel assembly is stored in ~~[Region 2]~~ Regions 1 through 3 of the fuel storage pool. 1

ACTIONS

A.1

Required Action A.1 is modified by a Note indicating that LCO 3.0.3 does not apply.

When the configuration of fuel assemblies stored in ~~[Region 2]~~ Regions 1 through 3 of the spent fuel storage pool is not in accordance with Figure s 3.7.~~17~~ 15 -1 through 3.7.15-4 and Tables 3.7.15-1 through 3.7.15-3, ~~or paragraph 4.3.1.1,~~ the immediate action is to initiate action to make the necessary fuel assembly movement(s) to bring the configuration into compliance with Figure s 3.7.~~17~~ 15 -1 through 3.7.15-4 and Tables 3.7.15-1 through 3.7.15-3 ~~or Specification 4.3.1.1~~. 1 3

If unable to move irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not be applicable. If unable to move irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the action is independent of reactor operation. Therefore, inability to move fuel assemblies is not sufficient reason to require a reactor shutdown.

3 **INSERT 3**

Most accident conditions do not result in an increase in the reactivity of any one of the three regions (Ref. 2). Examples of these accident conditions are the loss of cooling and the dropping of a fuel assembly on the top of the rack. However, accidents can be postulated that could increase the reactivity. This increase in reactivity is unacceptable with unborated water in the storage pool. Thus, for these accident occurrences, the presence of soluble boron in the storage pool prevents criticality in all regions. The most limiting postulated accident with respect to the storage configurations assumed in the spent fuel rack criticality analysis is the misplacement of a nominal 4.95 (± 0.05) wt% U-235 fuel assembly into an empty storage cell location in the Region 3 checkerboard storage arrangement. The amount of soluble boron required to maintain $k_{eff} \leq 0.95$ due to this fuel misload accident is 700 ppm.

3 **INSERT 4**

The arrangements in the spent fuel storage pool have the following definitions:

Region 1 is designed to accommodate new fuel with a maximum enrichment of 4.95 (± 0.05) wt% U-235, (or spent fuel regardless of the fuel burnup), in a 1-in-4 checkerboard arrangement of 1 fresh assembly with 3 spent fuel assemblies with enrichment-burnup and cooling times illustrated in Figure 3.7.15-3 and defined by the equations in Table 3.7.15-1. Cooling time is defined as the period since reactor shutdown at the end of the last operating cycle for the discharged spent fuel assembly. The presence of a removable, non-fissile insert such as a burnable poison rod assembly (BPRA) or either gadolinia or integral fuel burnable absorber (IFBA) in a fresh fuel assembly does not affect the applicability of Figure 3.7.15-3 or Table 3.7.15-1.

Two alternative storage arrays (or sub-arrays) are acceptable in Region 1 if the fresh fuel assemblies contain rods with either gadolinia or IFBA. For these types of assemblies, the minimum burnup of the spent fuel in the 1-of-4 sub-array are defined by the equations in Table 3.7.15-2.

For Region 1, any of the three sub-arrays illustrated in Figure 3.7.15-2 may be used in any combination provided that:

a. Each sub-array of 4 fuel assemblies includes, in addition to the fresh fuel assembly, 3 assemblies with enrichment and minimum burnup requirements defined by the equations in Tables 3.7.15-1 and 3.7.15-2, as appropriate.

b. The arrangement of Region 1 sub-arrays must not allow a configuration with fresh assemblies adjacent to each other.

c. If Region 1 arrays are used in conjunction with Region 2 or Region 3 arrangements (see below), the arrangements shall not allow fresh fuel assemblies to be adjacent to each other (see also Figure 3.7.15-1).

3 **INSERT 4 (Continued)**

Region 2 is designed to accommodate fuel of 4.95 (± 0.05) wt% U-235 initial enrichment burned to at least 30.27 MWD/KgU (assembly average), or fuel of other enrichments with a burnup yielding an equivalent reactivity in the fuel racks. The minimum required assembly average burnup in MWD/KgU and cooling time is given by the equations in Table 3.7.15-3 in terms of E, where E is the initial enrichment in the axial zone of highest enrichment (wt% U-235). The minimum required burnups are illustrated in Figure 3.7.15-4 in terms of the initial enrichment and cooling time.

The following restrictions apply to the storage of spent fuel in the Region 2 cells:

a. The spent fuel shall conform to the minimum burnup requirements defined by the equations in Table 3.7.15-3. Linear interpolation between cooling times may be made if desired.

b. For the interface with Region 1 storage cells, fresh fuel in Region 1 shall not be stored adjacent to spent fuel assemblies in the Region 2 storage cells.

Region 3 is designed to accommodate fuel of 4.95 (± 0.05) wt% U-235 initial enrichment (or fuel assemblies of any lower reactivity) in a 2-out-of-4 checkerboard arrangement with water-filled cells. The water-filled cells shall not contain any components bearing any fissile material, but may accommodate miscellaneous items or equipment.

The following restrictions apply to the storage of spent fuel in the Region 3 cells:

a. For the interface between Region 1 and Region 3 storage regions, fresh fuel assemblies shall not be stored adjacent to each other.

b. If miscellaneous items or equipment are stored in the water cells of Region 3, the total volume of the miscellaneous items shall be no more than 75% of the storage cell volume.

c. No fuel rods, assemblies, or items containing fissile material shall be stored in the water cells of Region 3.

An empty cell is less reactive than any cell containing fuel and therefore may be used as a Region 1, Region 2, or Region 3 cell in any arrangement.

Region 2 array described above may be used in the 15 x 15 storage rack module in the cask loading area of the cask pit.

A nominal concentration of 2000 ppm boron in the pool water. This concentration of soluble boron provides a margin sufficient to allow timely detection of a boron dilution accident and corrective action before the minimum concentration (700 ppm) required to protect against the most severe postulated fuel handling accident or before the minimum concentration (300 ppm) required to maintain the storage configuration design basis (k_{eff} less than 0.95) is reached.

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.~~17~~ 15.1

This SR verifies by administrative means that the initial enrichment and burnup of the fuel assembly is in accordance with Figure s ~~[~~3.7.~~17~~ 15-1~~]~~ through 3.7.15-4 and Tables 3.7.15-1 through 3.7.15-3 in the accompanying LCO. ~~For fuel assemblies in the unacceptable range of Figure 3.7.17-1, performance of this SR will ensure compliance with Specification 4.3.1.1.~~

REFERENCES

~~[1. Callaway FSAR, Appendix 9.1A, "The Maximum Density Rack (MDR) Design Concept."~~

~~2. Description and Evaluation for Proposed Changes to Facility Operating Licenses DPR-39 and DPR-48 (Zion Power Station).]~~

~~3~~ 1. Double contingency principle of ANSI N16.1-1975, as specified in the April 14, 1978 NRC letter (Section 1.2) and implied in the proposed revision to Regulatory Guide 1.13 (Section 1.4, Appendix A).

~~4~~ 2. U FSAR, Section ~~[15.7.4]~~ 4.3.2.7.

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.15 BASES, SPENT FUEL POOL STORAGE

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

2. Sequoyah Nuclear Plant (SQN) design does not include ISTS 3.7.12, "Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)" and ISTS 3.7.14, "Penetration Room Exhaust Air Cleanup System (PREACS)." Therefore, ISTS 3.7.17, "Spent Fuel Pool Storage" has been renumbered as ITS 3.7.15, "Spent Fuel Pool Storage."

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

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.7.15, SPENT FUEL POOL STORAGE

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 16

ITS 3.7.16, SECONDARY SPECIFIC ACTIVITY

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

PLANT SYSTEMS

Secondary Specific

ACTIVITY

A01

LIMITING CONDITION FOR OPERATION

LCO 3.7.16 3.7.1.4 The specific activity of the secondary coolant system shall be less than or equal to 0.10 microcuries/gram DOSE EQUIVALENT I-131.

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

ACTION:

ACTIONS A With the specific activity of the secondary coolant system greater than 0.10 microcuries/gram DOSE EQUIVALENT I-131, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

SR 3.7.16.1 4.7.1.4 The specific activity of the secondary coolant system shall be determined to be within the limit ~~by performance of the sampling and analysis program of Table 4.7-2~~.

A02

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A01

~~TABLE 4.7-2~~

~~SECONDARY COOLANT SYSTEM SPECIFIC ACTIVITY SAMPLE AND ANALYSIS PROGRAM~~ A02

TYPE OF MEASUREMENT AND ANALYSIS	SAMPLE AND ANALYSIS FREQUENCY
~~1. Gross Activity Determination~~	~~At least once per 72 hours~~
SR 3.7.16.1 ~~2. Isotopic Analysis for~~ DOSE EQUIVALENT I-131 Concentration	~~a) 1 per 31 days, whenever the gross activity determination indicates iodine concentrations greater than 10% of the allowable limit.~~ ~~b) 1 per 6 months, whenever the gross activity determination indicates iodine concentrations below 10% of the allowable limit.~~ in accordance with the Surveillance Frequency Control Program.

L01

LA01

M01

LA02

PLANT SYSTEMS

Secondary Specific

ACTIVITY

A01

LIMITING CONDITION FOR OPERATION

LCO 3.7.16 3.7.1.4 The specific activity of the secondary coolant system shall be less than or equal to 0.10 microcuries/gram DOSE EQUIVALENT I-131.

APPLICABILITY APPLICABILITY: Modes 1, 2, 3, and 4.

ACTION:

ACTIONS A With the specific activity of the secondary coolant system greater than 0.10 microcuries/gram DOSE EQUIVALENT I-13l, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

SR 3.7.16.1 4.7.1.4 The specific activity of the secondary coolant system shall be determined to be within the limit ~~by performance of the sampling and analysis program of Table 4.7-1~~. A02

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~~TABLE 4.7-1~~

~~SECONDARY COOLANT SYSTEM SPECIFIC ACTIVITY~~
~~SAMPLE AND ANALYSIS PROGRAM~~

A02

TYPE OF MEASUREMENT AND ANALYSIS	SAMPLE AND ANALYSIS FREQUENCY
~~1. Gross Activity Determination~~	~~At least once per 72 hours.~~
SR 3.7.16.1 ~~2. Isotopic Analysis for~~ DOSE EQUIVALENT I-131 Concentration	~~a) 1 per 31 days, whenever the gross activity determination indicates iodine concentrations greater than 10% of the allowable limit.~~ ~~b) 1 per 6 months, whenever the gross activity determination indicates iodine concentrations below 10% of the allowable limit.~~ in accordance with the Surveillance Frequency Control Program.

L01

LA01

M01

LA02

DISCUSSION OF CHANGES
ITS 3.7.16, SECONDARY SPECIFIC ACTIVITY

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 4.7.1.4 requires the specific activity of the secondary coolant system to be verified within limit in accordance with Table 4.7-2 (Unit 1) and Table 4.7-1 (Unit 2). CTS Table 4.7-2 (Unit 1) and Table 4.7-1 (Unit 2) provide the secondary coolant system sample analysis measurement and frequency requirements. ITS SR 3.7.16.1 requires verification that the secondary coolant specific activity is less than or equal to 0.10 microcuries per gram DOSE EQUIVALENT I-131 at a Frequency that is in accordance with the Surveillance Frequency Control Program. (See DOC LA01 for the discussion of moving the sample Frequency to the Surveillance Frequency Control Program.) This changes the CTS by moving the secondary coolant system sample analysis measurement and frequency requirements from a table and placing the information within the Surveillance Requirement.

The purpose of CTS 4.7.1.4 and Table 4.7-2 (Unit 1) and Table 4.7-1 (Unit 2) is to conduct a specific activity analysis on the secondary coolant system to monitor primary to secondary leakage and confirm secondary activity is within the initial assumptions of the accident analyses. This change is acceptable because moving the secondary coolant sample analysis measurement and frequency requirements from a table to within the Surveillance Requirement, ITS SR 3.7.16.1, centralizes the requirements. This change is designated as administrative, because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS Table 4.7-2, Item 2 (Unit 1) and Table 4.7-1, Item 2 (Unit 2) require the secondary coolant system DOSE EQUIVALENT I-131 sampling frequency to be once per 31 days, whenever the gross activity determination indicates iodine concentration greater than 10% of the allowable limit. CTS Table 4.7-2, Item 2 (Unit 1) and Table 4.7-1, Item 2 (Unit 2) allow the sampling frequency for the secondary coolant system DOSE EQUIVALENT I-131 to be extended to once per 6 months, whenever the gross activity determination indicates iodine concentrations below 10% of the allowable limits. ITS SR 3.7.16.1 does not provide this extended period for determining secondary coolant system DOSE EQUIVALENT I-131, and requires verification of secondary coolant system specific activity every 31 days. This changes the CTS by deleting the allowance to perform less frequent secondary coolant system specific activity analyses

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when gross activity determination indicates iodine concentrations below 10% of the allowable limits.

The purpose of CTS 4.7.1.4 and Table 4.7-2 (Unit 1) and Table 4.7-1 (Unit 2) is to conduct a specific activity analysis on the secondary coolant system to monitor primary to secondary leakage and confirm secondary activity is within the initial assumptions of the accident analyses. This change is acceptable because the 31 day Frequency is appropriate to detect trends in the level of DOSE EQUIVALENT I-131 and allows appropriate action to be taken to maintain levels below the LCO limit. This change is designated as more restrictive, because Surveillances will be performed more frequently under the ITS than under the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS Table 4.7-2, Item 2 (Unit 1), and Table 4.7-1, Item 2 (Unit 2) requires an isotopic analysis to determine whether DOSE EQUIVALENT I-131 concentration is within limit. ITS SR 3.7.16.1 requires the verification that specific activity of the secondary coolant is within limit. This changes the CTS by moving the detail that an isotopic analysis must be performed to satisfy the requirements of the Surveillance to the Bases.

The removal of this detail for performing a Surveillance Requirement from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. ITS SR 3.7.16.1 retains the requirement to verify secondary coolant DOSE EQUIVALENT I-131 is within limit. In addition, this change is acceptable because this type of procedural detail will be adequately controlled in the ITS Bases. The Technical Specification Bases Control Program in Chapter 5 controls changes to the Bases. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LA02 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.7.1.4 requires that the specific activity of the secondary coolant system shall be determined to be within the limit by performance of the sampling and analysis program of Table 4.7-2 (Unit 1) and Table 4.7-1 (Unit 2). CTS Table 4.7-2, Item 2 (Unit 1) and Table 4.7-1, Item 2 (Unit 2), lists a sample frequency of 1 per 31 days that can be extended if the gross activity determination indicates iodine concentration is below 10% of the allowable limit. (See DOC M01 for discussion on the deletion of the allowance to extend the sampling frequency.) ITS SR 3.7.16.1 requires a similar Surveillance and

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DISCUSSION OF CHANGES
ITS 3.7.16, SECONDARY SPECIFIC ACTIVITY

specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequency for this SR and associated Bases (1 per 31 days) to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequency is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 5 – Deletion of Surveillance Requirement)* CTS Table 4.7-2, Item 1 (Unit 1) and Table 4.7-1, Item 1 (Unit 2), require the secondary coolant system be tested for gross activity at least once per 72 hours. ITS 3.7.16 does not contain this Surveillance Requirement. This changes the CTS by deleting this Surveillance Requirement.

The purpose of CTS Table 4.7-2, Item 1 (Unit 1) and Table 4.7-1, Item 1 (Unit 2), is to sample the secondary coolant on a 72-hour basis and measure the gross activity. The results of this analysis is used to determine the frequency for sampling the secondary coolant for DOSE EQUIVALENT I-131. This change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the values used to meet the LCO are consistent with the safety analyses because the gross beta or gamma activity of the secondary coolant is not used in the accident analyses. The accident analyses use dose equivalent iodine I-131 (DEI-131). ITS SR 3.7.16.1 requires the DOSE EQUIVALENT I-131 to be determined in accordance with the Surveillance Frequency Control Program. (See DOC LA02 for the relocated frequency.) Therefore, appropriate values (i.e., the secondary coolant DOSE EQUIVALENT I-131) continue to be tested in a manner and at a Frequency necessary to give confidence that the assumptions in the safety analyses are protected since the secondary coolant DOSE EQUIVALENT I-131 is used in the accident analyses. This change is designated as less restrictive because a Surveillance that is required in the CTS will not be required in the ITS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.7 PLANT SYSTEMS

3.7.~~18~~ 16 Secondary Specific Activity 1

3.7.1.4 LCO 3.7.~~18~~ 16 The specific activity of the secondary coolant shall be ≤ ~~[~~0.10~~]~~ μCi/gm DOSE EQUIVALENT I-131. 1 2

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Specific activity not within limit.	A.1 Be in MODE 3. AND A.2 Be in MODE 5.	6 hours 36 hours

ACTION

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
4.7.1.4 SR 3.7.~~18~~ 16.1 Verify the specific activity of the secondary coolant is ≤ ~~[~~0.10~~]~~ μCi/gm DOSE EQUIVALENT I-131.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~

1 2 4

4

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CTS

3.7 PLANT SYSTEMS

3.7.~~18~~ 16 Secondary Specific Activity 1

3.7.1.4 LCO 3.7.~~18~~ 16 The specific activity of the secondary coolant shall be ≤ ~~[~~0.10~~]~~ μCi/gm DOSE EQUIVALENT I-131. 1 2

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Specific activity not within limit.	A.1 Be in MODE 3. AND A.2 Be in MODE 5.	6 hours 36 hours

ACTION

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.~~18~~16.1 Verify the specific activity of the secondary coolant is ≤ ~~[~~0.10~~]~~ μCi/gm DOSE EQUIVALENT I-131.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~

4.7.1.4 1 2 4 4

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JUSTIFICATION FOR DEVIATIONS
ITS 3.7.16, Secondary Specific Activity

1. Sequoyah Nuclear Plant (SQN) design does not include ISTS 3.7.12, "Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)" and ISTS 3.7.14, "Penetration Room Exhaust Air Cleanup System (PREACS)." Therefore, ISTS 3.7.18, "Secondary Specific Activity" has been renumbered as ITS 3.7.16, "Secondary Specific Activity."

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

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

4. ISTS SR 3.7.18.1 (ITS SR 3.7.16.1) provides two options for controlling the Surveillance Requirement Frequency. SQN is proposing to control the Surveillance Frequency under the Surveillance Frequency Control Program.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.7 PLANT SYSTEMS

B 3.7.~~18~~ 16 Secondary Specific Activity 1

BASES

BACKGROUND

Activity in the secondary coolant results from steam generator tube outleakage from the Reactor Coolant System (RCS). Under steady state conditions, the activity is primarily iodines with relatively short half lives and, thus, indicates current conditions. During transients, I-131 spikes have been observed as well as increased releases of some noble gases. Other fission product isotopes, as well as activated corrosion products in lesser amounts, may also be found in the secondary coolant.

A limit on secondary coolant specific activity during power operation minimizes releases to the environment because of normal operation, anticipated operational occurrences, and accidents.

This limit is lower than the activity value that might be expected from a 1 gpm tube leak (LCO 3.4.13, "RCS Operational LEAKAGE") of primary coolant at the limit of ~~[1.0]~~ 0.35 μCi/gm (LCO 3.4.16, "RCS Specific Activity"). The steam line failure is assumed to result in the release of the noble gas and iodine activity contained in the steam generator inventory, the feedwater, and the reactor coolant LEAKAGE. Most of the iodine isotopes have short half lives (i.e., < 20 hours). 2

With the specified activity limit, the resultant ~~2~~ 8 hour thyroid dose to a person at the exclusion area boundary (EAB) would be about ~~0.58~~ 5.4 rem ~~if the main steam safety valves (MSSVs) open~~ for ~~2~~ 8 hours following a trip from full power, with a steam line break and a loss of AC power to plant auxiliaries. 3

Operating a unit at the allowable limits could result in a ~~2~~ 8 hour EAB exposure of a small fraction of the 10 CFR 100 (Ref. 1) limits, or the limits established as the NRC staff approved licensing basis.

APPLICABLE SAFETY ANALYSES

The accident analysis of the main steam line break (MSLB), as discussed in the U FSAR, Chapter ~~[~~15~~]~~ (Ref. 2) assumes the initial secondary coolant specific activity to have a radioactive isotope concentration of ~~[~~0.10~~]~~ μCi/gm DOSE EQUIVALENT I-131. This assumption is used in the analysis for determining the radiological consequences of the postulated accident. The accident analysis, based on this and other assumptions, shows that the radiological consequences of an MSLB do not exceed a small fraction of the unit EAB limits (Ref. 1) for whole body and thyroid dose rates. 4 2 2

With the loss of offsite power, the remaining steam generators are available for core decay heat dissipation by venting steam to the atmosphere through the MSSVs and steam generator atmospheric ~~dump~~ relief valves (~~ADVs~~ ARVs). The Auxiliary Feedwater System supplies the necessary 4

BASES

APPLICABLE SAFETY ANALYSES (continued)

makeup to the steam generators. Venting continues until the reactor coolant temperature and pressure have decreased sufficiently for the Residual Heat Removal System to complete the cooldown.

In the evaluation of the radiological consequences of this accident, the activity released from the steam generator connected to the failed steam line is assumed to be released directly to the environment. The unaffected steam generators ~~is~~ are assumed to discharge steam and any entrained activity through the MSSVs and ~~ADVs~~ ARVs during the event. Since no credit is taken in the analysis for activity plateout or retention, the resultant radiological consequences represent a conservative estimate of the potential integrated dose due to the postulated steam line failure. 4

Secondary specific activity limits satisfy Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

As indicated in the Applicable Safety Analyses, the specific activity of the secondary coolant is required to be ≤ ~~[~~0.10~~]~~ μCi/gm DOSE EQUIVALENT I-131 to limit the radiological consequences of a Design Basis Accident (DBA) to a small fraction of the required limit (Ref. 1). 2

Monitoring the specific activity of the secondary coolant ensures that when secondary specific activity limits are exceeded, appropriate actions are taken in a timely manner to place the unit in an operational MODE that would minimize the radiological consequences of a DBA.

APPLICABILITY

In MODES 1, 2, 3, and 4, the limits on secondary specific activity apply due to the potential for secondary steam releases to the atmosphere.

In MODES 5 and 6, the steam generators are not being used for heat removal. Both the RCS and steam generators are depressurized, and primary to secondary LEAKAGE is minimal. Therefore, monitoring of secondary specific activity is not required.

ACTIONS

A.1 and A.2

DOSE EQUIVALENT I-131 exceeding the allowable value in the secondary coolant, is an indication of a problem in the RCS and contributes to increased post accident doses. If the secondary specific activity cannot be restored to within limits within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

1

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.~~18~~ 16.1 1

This SR verifies that the secondary specific activity is within the limits of the accident analysis. A gamma isotopic analysis of the secondary coolant, which determines DOSE EQUIVALENT I-131, confirms the validity of the safety analysis assumptions as to the source terms in post accident releases. It also serves to identify and trend any unusual isotopic concentrations that might indicate changes in reactor coolant activity or LEAKAGE. ~~[The 31 day Frequency is based on the detection of increasing trends of the level of DOSE EQUIVALENT I-131, and allows for appropriate action to be taken to maintain levels below the LCO limit.~~ 5

~~OR~~

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 6
~~-----]~~ 5

REFERENCES

1. 10 CFR 100.11.

2. U FSAR, Chapter ~~[~~15~~]~~. 4 2

B 3.7 PLANT SYSTEMS

B 3.7.~~18~~ 16 Secondary Specific Activity 1

BASES

BACKGROUND

Activity in the secondary coolant results from steam generator tube outleakage from the Reactor Coolant System (RCS). Under steady state conditions, the activity is primarily iodines with relatively short half lives and, thus, indicates current conditions. During transients, I-131 spikes have been observed as well as increased releases of some noble gases. Other fission product isotopes, as well as activated corrosion products in lesser amounts, may also be found in the secondary coolant.

A limit on secondary coolant specific activity during power operation minimizes releases to the environment because of normal operation, anticipated operational occurrences, and accidents.

This limit is lower than the activity value that might be expected from a 1 gpm tube leak (LCO 3.4.13, "RCS Operational LEAKAGE") of primary coolant at the limit of ~~[1.0]~~ 0.35 μCi/gm (LCO 3.4.16, "RCS Specific Activity"). 2 The steam line failure is assumed to result in the release of the noble gas and iodine activity contained in the steam generator inventory, the feedwater, and the reactor coolant LEAKAGE. Most of the iodine isotopes have short half lives (i.e., < 20 hours).

With the specified activity limit, the resultant ~~2~~ 8 hour thyroid dose to a person at the exclusion area boundary (EAB) would be about ~~0.58~~ 5.4 rem ~~if the main steam safety valves (MSSVs) open~~ for ~~2~~ 8 hours following a trip from full power, with a steam line break and a loss of AC power to plant auxiliaries. 3

Operating a unit at the allowable limits could result in a ~~2~~ 8 hour EAB exposure of a small fraction of the 10 CFR 100 (Ref. 1) limits, or the limits established as the NRC staff approved licensing basis.

APPLICABLE SAFETY ANALYSES

The accident analysis of the main steam line break (MSLB), as discussed in the U FSAR, Chapter ~~[~~15~~]~~ (Ref. 2) assumes the initial 4 2 secondary coolant specific activity to have a radioactive isotope concentration of ~~[~~0.10~~]~~ μCi/gm DOSE EQUIVALENT I-131. This 2 assumption is used in the analysis for determining the radiological consequences of the postulated accident. The accident analysis, based on this and other assumptions, shows that the radiological consequences of an MSLB do not exceed a small fraction of the unit EAB limits (Ref. 1) for whole body and thyroid dose rates.

With the loss of offsite power, the remaining steam generators are available for core decay heat dissipation by venting steam to the atmosphere through the MSSVs and steam generator atmospheric ~~dump~~ relief valves (~~ADVs~~ ARVs). The Auxiliary Feedwater System supplies the necessary 4

 1

BASES

APPLICABLE SAFETY ANALYSES (continued)

makeup to the steam generators. Venting continues until the reactor coolant temperature and pressure have decreased sufficiently for the Residual Heat Removal System to complete the cooldown.

In the evaluation of the radiological consequences of this accident, the activity released from the steam generator connected to the failed steam line is assumed to be released directly to the environment. The unaffected steam generators ~~is~~ are assumed to discharge steam and any entrained activity through the MSSVs and ~~ADVs~~ ARVs during the event. Since no credit is taken in the analysis for activity plateout or retention, the resultant radiological consequences represent a conservative estimate of the potential integrated dose due to the postulated steam line failure. 4

Secondary specific activity limits satisfy Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

As indicated in the Applicable Safety Analyses, the specific activity of the secondary coolant is required to be ≤ ~~[~~0.10~~]~~ μCi/gm DOSE EQUIVALENT I-131 to limit the radiological consequences of a Design Basis Accident (DBA) to a small fraction of the required limit (Ref. 1). 2

Monitoring the specific activity of the secondary coolant ensures that when secondary specific activity limits are exceeded, appropriate actions are taken in a timely manner to place the unit in an operational MODE that would minimize the radiological consequences of a DBA.

APPLICABILITY

In MODES 1, 2, 3, and 4, the limits on secondary specific activity apply due to the potential for secondary steam releases to the atmosphere.

In MODES 5 and 6, the steam generators are not being used for heat removal. Both the RCS and steam generators are depressurized, and primary to secondary LEAKAGE is minimal. Therefore, monitoring of secondary specific activity is not required.

ACTIONS

A.1 and A.2

DOSE EQUIVALENT I-131 exceeding the allowable value in the secondary coolant, is an indication of a problem in the RCS and contributes to increased post accident doses. If the secondary specific activity cannot be restored to within limits within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

 1

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.~~18~~ 16.1 1

This SR verifies that the secondary specific activity is within the limits of the accident analysis. A gamma isotopic analysis of the secondary coolant, which determines DOSE EQUIVALENT I-131, confirms the validity of the safety analysis assumptions as to the source terms in post accident releases. It also serves to identify and trend any unusual isotopic concentrations that might indicate changes in reactor coolant activity or LEAKAGE. ~~[The 31 day Frequency is based on the detection of increasing trends of the level of DOSE EQUIVALENT I-131, and allows for appropriate action to be taken to maintain levels below the LCO limit.~~ 5

~~OR~~

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 6
~~-----]~~ 5

REFERENCES

1. 10 CFR 100.11.
2. U FSAR, Chapter ~~[~~15~~]~~. 4 2

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.16 BASES, SECONDARY SPECIFIC ACTIVITY

1. Sequoyah Nuclear Plant (SQN) design does not include ISTS 3.7.12, "Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)" and ISTS 3.7.14, "Penetration Room Exhaust Air Cleanup System (PREACS)." Therefore, ISTS 3.7.18, "Secondary Specific Activity," has been renumbered as ITS 3.7.16, "Secondary Specific Activity."

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

3. Changes are made to reflect analysis performed for the Sequoyah Nuclear Plant. These values reflect the analysis described in Sequoyah's Updated Final Safety Analysis Report (UFSAR) Section 15.5.1, "Environmental Consequences of a Postulated Loss of A.C. Power to the Plant Auxiliaries."

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

5. ISTS SR 3.7.18.1 Bases (ITS 3.7.16.1 Bases) provides two options for controlling the Surveillance Requirement Frequency. SQN is proposing to control the Surveillance Frequency under the Surveillance Frequency Control Program. Additionally, the Surveillance Frequency description will be included in the Surveillance Frequency Control Program.

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

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.7.16, SECONDARY SPECIFIC ACTIVITY

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 17

ITS 3.7.17, CASK PIT POOL BORON CONCENTRATION

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

A01

ITS

ITS 3.7.17

PLANT SYSTEMS

3/4.7.14 CASK PIT POOL ~~MINIMUM~~ BORON CONCENTRATION

A01

LIMITING CONDITION FOR OPERATION

LCO 3.7.17

3.7.14 The cask pit pool boron concentration shall be ≥ 2000 ppm.

Applicability

APPLICABILITY: Whenever fuel assemblies are stored in the cask pit rack.

and a cask pit pool verification has not been performed since the last movement of fuel assemblies in the cask pit pool

L01

ACTION:

Add proposed Required Action A.2.2 and associated Completion Time

Required Action A.1 and A.2.1

Required Action A Note

a. With the requirements of the specification not satisfied, suspend all movement of fuel assemblies and initiate action to restore cask pit pool boron concentration to within limit. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

in accordance with the Surveillance Frequency Control Program

LA01

SR 3.7.17.1

4.7.14.1 Verify at least once per ~~7 days~~ the cask pit pool boron concentration is within limit.

~~4.7.14.2 Verify at least once per 72 hours during fuel movement the cask pit pool boron concentration is within limit and until the configuration of the assemblies in the storage rack is verified to comply with the criticality loading criteria specified in Design Feature 5.6.1.1.d.~~

L02

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A01

PLANT SYSTEMS

3/4.7.14 CASK PIT POOL ~~MINIMUM~~ BORON CONCENTRATION A01

LIMITING CONDITION FOR OPERATION

LCO 3.7.17 3.7.14 The cask pit pool boron concentration shall be ≥ 2000 ppm.

Applicability APPLICABILITY: Whenever fuel assemblies are stored in the cask pit rack and a cask pit pool verification has not been performed since the last movement of fuel assemblies in the cask pit pool. L01

ACTION:

Add proposed Required Action A.2.2 and associated Completion Time

Required Action A.1 and A.2.1 — a. With the requirements of the specification not satisfied, suspend all movement of fuel assemblies and initiate action to restore cask pit pool boron concentration to within limit.

Required Action A Note — The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

SR 3.7.17.1 4.7.14.1 Verify at least once per ~~7 days~~ in accordance with the Surveillance Frequency Control Program the cask pit pool boron concentration is within limit. LA01

~~4.7.14.2 Verify at least once per 72 hours during fuel movement the cask pit pool boron concentration is within limit and until the configuration of the assemblies in the storage rack is verified to comply with the criticality loading criteria specified in Design Feature 5.6.1.1.d~~. L02

DISCUSSION OF CHANGES
ITS 3.7.17, CASK PIT POOL BORON CONCENTRATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.7.14.1 requires verification at least once per 7 days that the cask pit pool boron concentration is within limit. ITS SR 3.7.17.1 requires a similar Surveillance but specifies the periodic Frequency as "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequency for the SR to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

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DISCUSSION OF CHANGES
ITS 3.7.17, CASK PIT POOL BORON CONCENTRATION

LESS RESTRICTIVE CHANGES

L01 *(Category 2 – Relaxation of Applicability)* CTS 3.7.14 requires the cask pit pool boron concentration to be within limits whenever fuel assemblies are stored in the cask pit rack. Additionally, CTS 3.7.14 ACTION a requires that with the requirements of the specification not satisfied, suspend all movement of fuel assemblies and initiate action to restore cask pit pool boron concentration to within limit. ITS 3.7.17 requires that the cask pit pool boron concentration shall be ≥ 2000 ppm when fuel assemblies are stored in the cask pit rack and a cask pit pool verification has not been performed since the last movement of fuel assemblies in the cask pit pool. Additionally, a new Required Action (Required Action A.2.2) has been added to allow the initiation of an action to perform a cask pit pool verification as an option to initiating an action to restore cask pit pool boron concentration to within limit. This changes the CTS by changing the Applicability and by adding an option for restoring the cask pit pool boron concentration to within its limit.

The purpose of CTS 3.7.14 is to ensure adequate dissolved boron is in the cask pit pool water to maintain the required subcriticality margin in the event of a fuel handling accident. This change is acceptable because the requirements continue to ensure that the boron concentration is maintained during the specified conditions assumed in the safety analyses and licensing basis (i.e., during fuel movement). Performing a cask pit pool verification provides assurance that no fuel assemblies have been inadvertently misplaced in the cask pit pool, thereby assuring a k_{eff} of less than 1.0 in the absence of soluble boron, including uncertainties, and a k_{eff} of less than 0.95 with at least 300 ppm boron (See HOLTEC Topical Report HI-992349 regarding boron credit in cask pit pool). Therefore, following performance of a cask pit pool verification, there is no potential for criticality and no need to restore the boron concentration. However, prior to resuming the movement of fuel assemblies, the concentration of boron must be restored. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

L02 *(Category 7 – Relaxation of Surveillance Frequency)* CTS 4.7.14.1 requires verification at least once per 7 days that the cask pit pool boron concentration is within limit. CTS 4.7.14.2 requires verification that the cask pit pool boron concentration is within limits at least once per 72 hours during fuel movement and until the configuration of the assemblies in the storage rack is verified to comply with the criticality loading criteria specified in Design Feature 5.6.1.1.d. ITS SR 3.7.17.1 requires verification of the boron concentration in the cask pit pool every 7 days. This changes the CTS by deleting the requirement to verify the cask pit pool boron concentration is within limits at least once per 72 hours during fuel movement and until the configuration of the assemblies in the storage rack is verified to comply with the criticality loading criteria specified in Design Feature 5.6.1.1.d.

The purpose of CTS 4.7.14.1 is to verify that the concentration of boron in the cask pit pool is within the required limit. ITS SR 3.7.17.1 will continue to verify that the boron concentration of the cask pit pool is within the required limit. The change in the Surveillance Frequencies is acceptable because once the boron concentration is verified; there should be no major additions of water to the fuel

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pool that would cause a change in the boron concentration. This change is designated as less restrictive because more time is allowed to perform Surveillances in the ITS than was allowed in the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

~~[Fuel Storage~~ Cask Pit Pool Boron Concentration~~]~~ 1 2
3.7.~~16~~ 17

3.7 PLANT SYSTEMS

3.7.~~16~~ 17 ~~[Fuel Storage~~ Cask Pit Pool Boron Concentration ~~]~~ 1 2

3.7.14	LCO 3.7.~~16~~ 17	The ~~fuel storage~~ cask pit pool boron concentration shall be ≥ ~~[2300]~~ 2000 ppm.	2 3 1
3.7.14 Applicability, DOC L01	APPLICABILITY:	When fuel assemblies are stored in the ~~fuel storage pool~~ cask pit rack and a ~~fuel storage~~ cask pit pool verification has not been performed since the last movement of fuel assemblies in the fuel storage pool.	3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ~~Fuel storage~~ cask pit pool boron concentration not within limit.	--------------------NOTE------------------- LCO 3.0.3 is not applicable. ---	
	A.1 Suspend movement of fuel assemblies in the ~~fuel storage~~ cask pit pool.	Immediately
	AND	
	A.2.1 Initiate action to restore ~~fuel storage~~ cask pit pool boron concentration to within limit.	Immediately
	OR	
	A.2.2 Initiate action to perform a ~~fuel storage~~ cask pit pool verification.	Immediately

Margin annotations: 3.7.14 ACTION a (Condition A) 3; A.1 3; A.2.1 3; DOC L01 (A.2.2) 3.

CTS

~~[Fuel Storage~~ Cask Pit Pool Boron Concentration~~]~~ 1 2
3.7.~~16~~ 17

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
4.7.14.1 SR 3.7.~~16~~ 17.1	Verify the ~~fuel storage~~ cask pit pool boron concentration is within limit.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 2 3 4

3.7 PLANT SYSTEMS

3.7.17 ~~16~~ Cask Pit ~~[Fuel Storage~~ Pool Boron Concentration ~~]~~ 1 2

3.7.14 LCO 3.7.17 ~~16~~ The cask pit ~~fuel storage~~ pool boron concentration shall be ≥ 2000 ~~[2300]~~ ppm. 2 3 1

3.7.14 Applicability, DOC L01 APPLICABILITY: When fuel assemblies are stored in the cask pit rack ~~fuel storage pool~~ and a cask pit ~~fuel storage~~ pool verification has not been performed since the last movement of fuel assemblies in the fuel storage pool. 3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
3.7.14 ACTION a: A. cask pit ~~Fuel storage~~ pool boron concentration not within limit.	--------------------NOTE------------------- LCO 3.0.3 is not applicable. ---	3
	A.1 Suspend movement of fuel assemblies in the cask pit ~~fuel storage~~ pool.	Immediately 3
	AND	
	A.2.1 Initiate action to restore cask pit ~~fuel storage~~ pool boron concentration to within limit.	Immediately 3
	OR	
DOC L01	A.2.2 Initiate action to perform a cask pit ~~fuel storage~~ pool verification.	Immediately 3

CTS

~~[Fuel Storage~~ Cask Pit Pool Boron Concentration~~]~~ 1 2
3.7.~~16~~ 17

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.7.14.1 SR 3.7.~~16~~ 17.1	Verify the ~~fuel storage~~ cask pit pool boron concentration is within limit.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 2 3 4

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JUSTIFICATION FOR DEVIATIONS
ITS 3.7.17, CASK PIT POOL BORON CONCENTRATION

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

2. Sequoyah Nuclear Plant (SQN) design includes a requirement for boron concentration in the cask pit pool to be within limits when spent fuel is stored in the cask pit racks. Therefore, in addition to ITS 3.7.14, "Fuel Storage Pool Boron Concentration," a new specification, ITS 3.7.17, "Cask Pit Pool Boron Concentration," has been added.

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

4. ISTS SR 3.7.16.1 (ITS SR 3.7.17.1) provides two options for controlling the Frequency of the Surveillance Requirement. SQN is proposing to control this Surveillance Frequency under the Surveillance Frequency Control Program.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.7 PLANT SYSTEMS

B 3.7.~~16~~ 17 ~~[Fuel Storage~~ Cask Pit Pool Boron Concentration ~~]~~ 2 1

BASES

BACKGROUND

INSERT 1 ~~In the Maximum Density Rack (MDR) [(Refs. 1 and 2)] design, the spent fuel storage pool is divided into two separate and distinct regions which, for the purpose of criticality considerations, are considered as separate pools. [Region 1], with [336] storage positions, is designed to accommodate new fuel with a maximum enrichment of [4.65] wt% U-235, or spent fuel regardless of the discharge fuel burnup. [Region 2], with [2670] storage positions, is designed to accommodate fuel of various initial enrichments which have accumulated minimum burnups within the acceptable domain according to Figure [3.7.17-1], in the accompanying LCO.~~ Fuel assemblies ~~not meeting the criteria of Figure [3.7.17-1]~~ shall be stored in accordance with INSERT 2 ~~paragraph 4.3.1.1 in Section 4.3, Fuel Storage~~. 3

The water in the ~~spent fuel storage~~ cask pit pool normally contains soluble boron, which results in large subcriticality margins under actual operating conditions. However, the NRC guidelines, based upon the accident condition in which all soluble poison is assumed to have been lost, specify that the limiting k_{eff} of ~~0.95~~ < 1.0 be evaluated in the absence of soluble boron. Hence, the design of ~~both regions~~ each region is based on the use of unborated water, which maintains each region in a subcritical condition during normal operation with the regions fully loaded. The double contingency principle discussed in ANSI N-16.1-1975 and the April 1978 NRC letter (Ref. ~~3~~ 2) allows credit for soluble boron under other abnormal or accident conditions, since only a single accident need be considered at one time. For example, the most severe accident scenario is associated with the INSERT 3 ~~movement of fuel from [Region 1 to Region 2], and accidental misloading of a fuel assembly in [Region 2]. This could potentially increase the criticality of [Region 2]. To mitigate these postulated criticality related accidents, boron is dissolved in the pool water. Safe operation of the MDR~~ with no movement of assemblies may therefore be achieved by controlling the location of each assembly in accordance with LCO 3.7.~~17, "Spent Fuel Assembly Storage."~~ 15. Prior to movement of an assembly, it is necessary to perform SR 3.7.~~16~~ 17.1. 3

APPLICABLE SAFETY ANALYSES

Most accident conditions do not result in an increase in the activity of ~~either of the two~~ any of the regions. Examples of these accident conditions are the loss of cooling (reactivity increase with decreasing water density) and the dropping of a fuel assembly on the top of the rack. However, accidents can be postulated that could increase the reactivity. This increase in reactivity is unacceptable with unborated water in the storage pool. Thus, for these accident occurrences, the presence of soluble boron in the 3

3 **INSERT 1**

The cask pit pool consists of a deep pool with adjacent shelf area. The cask pit is intended to be used for spent fuel shipment activities. High density spent fuel storage racks have been approved for addition and use in the cask loading area of the cask pit (Ref. 1). The 15 x 15 module could store 225 fuel assemblies and is designed to maintain stored fuel having an initial enrichment of up to 5 wt% U-235, in a safe, coolable, and sub-critical configuration during normal discharge, full core offload storages and postulated accident conditions.

A description of the spent fuel rack analysis is provided in the Bases for LCO 3.7.14, "Spent Fuel Pool Boron Concentration."

3 **INSERT 2**

LCO 3.7.15, "Spent Fuel Pool Storage." As described in the Bases for LCO 3.7.15, Region 2 arrays may be used in the 15 x 15 storage rack module in the cask loading area of the cask pit.

3 **INSERT 3**

accidental mishandling of a fresh fuel assembly face adjacent to a fresh fuel assembly of Region 3 in the spent fuel pool. This could potentially increase the criticality of Region 3. To mitigate these postulated criticality related accidents, boron is dissolved in the pool water. The soluble boron concentration required to maintain $k_{eff} \leq 0.95$ under normal conditions is 300 ppm and 700 ppm under the most severe postulated fuel mis-location accident. Safe operation of the spent fuel storage racks

BASES

APPLICABLE SAFETY ANALYSES (continued)

~~storage~~ cask pit pool prevents criticality in ~~both regions~~ Region 2. ~~The postulated accidents are basically of two types. A fuel assembly could be incorrectly transferred from [Region 1 to Region 2] (e.g., an unirradiated fuel assembly or an insufficiently depleted fuel assembly). The second type of postulated accidents is associated with a fuel assembly which is dropped adjacent to the fully loaded [Region 2] storage rack. This could have a small positive reactivity effect on [Region 2]. However, the negative reactivity effect of the soluble boron compensates for the increased reactivity caused by either one of the two postulated accident scenarios.~~ INSERT 4 3
The accident analyses ~~is~~ are provided in the UFSAR, Section ~~[15.7.4]~~ 4.3.2.7 (Ref. 4). 4 1

The concentration of dissolved boron in the ~~fuel storage~~ cask pit pool satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii). 3

LCO

The ~~fuel storage~~ cask pit pool boron concentration is required to be ≥ ~~[2300]~~ 2000 ppm. The specified concentration of dissolved boron in the ~~fuel storage~~ cask pit pool preserves the assumptions used in the analyses of the potential critical accident scenarios as described in Reference 4. This concentration of dissolved boron is the minimum required concentration for fuel assembly storage and movement within the ~~fuel storage~~ cask pit pool. 3 1

APPLICABILITY

This LCO applies whenever fuel assemblies are stored in the ~~spent fuel storage~~ cask pit pool, until a complete ~~spent fuel storage~~ cask pit pool verification has been performed following the last movement of fuel assemblies in the ~~spent fuel storage~~ cask pit pool. This LCO does not apply following the verification, since the verification would confirm that there are no misloaded fuel assemblies. With no further fuel assembly movements in progress, there is no potential for a misloaded fuel assembly or a dropped fuel assembly. 3

ACTIONS

A.1, A.2.1, and A.2.2

The Required Actions are modified by a Note indicating that LCO 3.0.3 does not apply.

When the concentration of boron in the ~~fuel storage~~ cask pit pool is less than required, immediate action must be taken to preclude the occurrence of an accident or to mitigate the consequences of an accident in progress. This is most efficiently achieved by immediately suspending the movement of fuel assemblies. The concentration of boron is restored simultaneously with suspending movement of fuel assemblies. Alternatively, beginning a verification of the ~~fuel storage~~ cask pit pool fuel locations, to ensure proper locations of the fuel, can be performed. However, prior to resuming movement of fuel assemblies, the concentration of boron must be restored. This does not preclude movement of a fuel assembly to a safe position. 3 3

3 **INSERT 4**

The most limiting postulated accident with respect to the cask pit pool has been determined to occur in the spent fuel pool. The postulated accident with respect to the storage configurations assumed in the spent fuel rack criticality analysis is the misplacement of a nominal 4.95 (± 0.05) wt% U-235 fuel assembly into a storage cell location in the Region 3 checkerboard storage arrangement for an irradiated fuel assembly.

The amount of soluble boron required to maintain $k_{eff} \leq 0.95$ due to either fuel misload accident is 700 ppm (Ref. 1).

A spent fuel boron dilution analysis was performed to ensure that sufficient time is available to detect and mitigate dilution of the spent fuel pool prior to exceeding the k_{eff} design basis limit of 0.95 (Ref. 3). The spent fuel pool boron dilution analysis concluded that an inadvertent or unplanned event that would result in a dilution of the spent fuel pool boron concentration from 2000 ppm to 700 ppm is not a credible event.

BASES

ACTIONS (continued)

If the LCO is not met while moving irradiated fuel assemblies in MODE 5 or 6, LCO 3.0.3 would not be applicable. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operation. Therefore, inability to suspend movement of fuel assemblies is not sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.7.~~16~~ 17.1

This SR verifies that the concentration of boron in the ~~fuel storage~~ cask pit pool is within the required limit. As long as this SR is met, the analyzed accidents are fully addressed. ~~[The 7 day Frequency is appropriate because no major replenishment of pool water is expected to take place over such a short period of time.~~

~~OR~~

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

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

REFERENCES

~~[1. Callaway FSAR, Appendix 9.1A, "The Maximum Density Rack (MDR) Design Concept."~~

~~2. Description and Evaluation for Proposed Changes to Facility Operating Licenses DPR-39 and DPR-48 (Zion Power Station).]~~

INSERT 5

2 ~~3~~. Double contingency principle of ANSI N16.1-1975, as specified in the April 14, 1978 NRC letter (Section 1.2) and implied in the proposed revision to Regulatory Guide 1.13 (Section 1.4, Appendix A).

INSERT 6

4. U FSAR, Section ~~[15.7.4]~~ 4.3.2.7.

3

INSERT 5

1. Stanely E. Turner (Holtec International), "Criticality Safety Analyses of Sequoyah Spent Fuel Racks with Alternative Arrangements," HI-992349.

3

INSERT 6

3. K K Niyogi (Holtec International), "Boron Dilution Analysis," HI-992302.

B 3.7 PLANT SYSTEMS

B 3.7.~~16~~ 17 ~~[Fuel Storage~~ Cask Pit Pool Boron Concentration ~~]~~ 2 1

BASES

BACKGROUND

INSERT 1 ~~In the Maximum Density Rack (MDR) [(Refs. 1 and 2)] design, the spent fuel storage pool is divided into two separate and distinct regions which, for the purpose of criticality considerations, are considered as separate pools. [Region 1], with [336] storage positions, is designed to accommodate new fuel with a maximum enrichment of [4.65] wt% U-235, or spent fuel regardless of the discharge fuel burnup. [Region 2], with [2670] storage positions, is designed to accommodate fuel of various initial enrichments which have accumulated minimum burnups within the acceptable domain according to Figure [3.7.17-1], in the accompanying LCO.~~ Fuel assemblies ~~not meeting the criteria of Figure [3.7.17-1]~~ shall be stored in accordance with INSERT 2 ~~paragraph 4.3.1.1 in Section 4.3, Fuel Storage~~. 3

The water in the ~~spent fuel storage~~ cask pit pool normally contains soluble boron, which results in large subcriticality margins under actual operating conditions. However, the NRC guidelines, based upon the accident condition in which all soluble poison is assumed to have been lost, specify that the limiting k_{eff} of ~~0.95~~ < 1.0 be evaluated in the absence of soluble boron. Hence, the design of ~~both regions~~ each region is based on the use of unborated water, which maintains each region in a subcritical condition during normal operation with the regions fully loaded. The double contingency principle discussed in ANSI N-16.1-1975 and the April 1978 NRC letter (Ref. ~~3~~ 2) allows credit for soluble boron under other abnormal or accident conditions, since only a single accident need be considered at one time. For example, the most severe accident scenario is associated with the INSERT 3 ~~movement of fuel from [Region 1 to Region 2], and accidental misloading of a fuel assembly in [Region 2]. This could potentially increase the criticality of [Region 2]. To mitigate these postulated criticality related accidents, boron is dissolved in the pool water. Safe operation of the MDR~~ with no movement of assemblies may therefore be achieved by controlling the location of each assembly in accordance with LCO 3.7.~~17, "Spent Fuel Assembly Storage."~~ 15 Prior to movement of an assembly, it is necessary to perform SR 3.7.~~16~~ 17.1. 3 3 3 3 3

APPLICABLE SAFETY ANALYSES

Most accident conditions do not result in an increase in the activity of ~~either of the two~~ any of the regions. Examples of these accident conditions are the loss of cooling (reactivity increase with decreasing water density) and the dropping of a fuel assembly on the top of the rack. However, accidents can be postulated that could increase the reactivity. This increase in reactivity is unacceptable with unborated water in the storage pool. Thus, for these accident occurrences, the presence of soluble boron in the 3

3 **INSERT 1**

The cask pit pool consists of a deep pool with adjacent shelf area. The cask pit is intended to be used for spent fuel shipment activities. High density spent fuel storage racks have been approved for addition and use in the cask loading area of the cask pit (Ref. 1). The 15 x 15 module could store 225 fuel assemblies and is designed to maintain stored fuel having an initial enrichment of up to 5 wt% U-235, in a safe, coolable, and sub-critical configuration during normal discharge, full core offload storages and postulated accident conditions.

A description of the spent fuel rack analysis is provided in the Bases for LCO 3.7.14, "Spent Fuel Pool Boron Concentration."

3 **INSERT 2**

LCO 3.7.15, "Spent Fuel Pool Storage." As described in the Bases for LCO 3.7.15, Region 2 arrays may be used in the 15 x 15 storage rack module in the cask loading area of the cask pit.

3 **INSERT 3**

accidental mishandling of a fresh fuel assembly face adjacent to a fresh fuel assembly of Region 3 in the spent fuel pool. This could potentially increase the criticality of Region 3. To mitigate these postulated criticality related accidents, boron is dissolved in the pool water. The soluble boron concentration required to maintain $k_{eff} \leq 0.95$ under normal conditions is 300 ppm and 700 ppm under the most severe postulated fuel mis-location accident. Safe operation of the spent fuel storage racks

BASES

APPLICABLE SAFETY ANALYSES (continued)

~~storage~~ cask pit pool prevents criticality in ~~both regions~~ Region 2. ~~The postulated accidents are basically of two types. A fuel assembly could be incorrectly transferred from [Region 1 to Region 2] (e.g., an unirradiated fuel assembly or an insufficiently depleted fuel assembly). The second type of postulated accidents is associated with a fuel assembly which is dropped adjacent to the fully loaded [Region 2] storage rack. This could have a small positive reactivity effect on [Region 2]. However, the negative reactivity effect of the soluble boron compensates for the increased reactivity caused by either one of the two postulated accident scenarios.~~ INSERT 4 3
The accident analyses ~~is~~ are provided in the U FSAR, Section ~~[15.7.4]~~ 4.3.2.7 (Ref. 4). 4 1

The concentration of dissolved boron in the ~~fuel storage~~ cask pit pool satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii). 3

LCO

The ~~fuel storage~~ cask pit pool boron concentration is required to be ≥ ~~[2300]~~ 2000 ppm. The specified concentration of dissolved boron in the ~~fuel storage~~ cask pit pool preserves the assumptions used in the analyses of the potential critical accident scenarios as described in Reference 4. This concentration of dissolved boron is the minimum required concentration for fuel assembly storage and movement within the ~~fuel storage~~ cask pit pool. 3 1

APPLICABILITY

This LCO applies whenever fuel assemblies are stored in the ~~spent fuel storage~~ cask pit pool, until a complete ~~spent fuel storage~~ cask pit pool verification has been performed following the last movement of fuel assemblies in the ~~spent fuel storage~~ cask pit pool. This LCO does not apply following the verification, since the verification would confirm that there are no misloaded fuel assemblies. With no further fuel assembly movements in progress, there is no potential for a misloaded fuel assembly or a dropped fuel assembly. 3

ACTIONS

A.1, A.2.1, and A.2.2

The Required Actions are modified by a Note indicating that LCO 3.0.3 does not apply.

When the concentration of boron in the ~~fuel storage~~ cask pit pool is less than required, immediate action must be taken to preclude the occurrence of an accident or to mitigate the consequences of an accident in progress. This is most efficiently achieved by immediately suspending the movement of fuel assemblies. The concentration of boron is restored simultaneously with suspending movement of fuel assemblies. Alternatively, beginning a verification of the ~~fuel storage~~ cask pit pool fuel locations, to ensure proper locations of the fuel, can be performed. However, prior to resuming movement of fuel assemblies, the concentration of boron must be restored. This does not preclude movement of a fuel assembly to a safe position. 3 3

3 **INSERT 4**

The most limiting postulated accident with respect to the cask pit pool has been determined to occur in the spent fuel pool. The postulated accident with respect to the storage configurations assumed in the spent fuel rack criticality analysis is the misplacement of a nominal 4.95 (± 0.05) wt% U-235 fuel assembly into a storage cell location in the Region 3 checkerboard storage arrangement for an irradiated fuel assembly.

The amount of soluble boron required to maintain $k_{eff} \leq 0.95$ due to either fuel misload accident is 700 ppm (Ref. 1).

A spent fuel boron dilution analysis was performed to ensure that sufficient time is available to detect and mitigate dilution of the spent fuel pool prior to exceeding the k_{eff} design basis limit of 0.95 (Ref. 3). The spent fuel pool boron dilution analysis concluded that an inadvertent or unplanned event that would result in a dilution of the spent fuel pool boron concentration from 2000 ppm to 700 ppm is not a credible event.

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BASES

ACTIONS (continued)

If the LCO is not met while moving irradiated fuel assemblies in MODE 5 or 6, LCO 3.0.3 would not be applicable. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operation. Therefore, inability to suspend movement of fuel assemblies is not sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.7.~~16~~ 17.1 2

This SR verifies that the concentration of boron in the ~~fuel storage~~ cask pit pool is within the required limit. As long as this SR is met, the analyzed accidents are fully addressed. ~~[The 7 day Frequency is appropriate because no major replenishment of pool water is expected to take place over such a short period of time.~~ 3 5

~~OR~~

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 6

REFERENCES

~~[1. Callaway FSAR, Appendix 9.1A, "The Maximum Density Rack (MDR) Design Concept."~~

~~2. Description and Evaluation for Proposed Changes to Facility Operating Licenses DPR-39 and DPR-48 (Zion Power Station).]~~ 1

INSERT 5 3 1

2 ~~3~~. Double contingency principle of ANSI N16.1-1975, as specified in the April 14, 1978 NRC letter (Section 1.2) and implied in the proposed revision to Regulatory Guide 1.13 (Section 1.4, Appendix A).

INSERT 6 3

4. U FSAR, Section ~~[15.7.4]~~ 4.3.2.7. 3 1

3 **INSERT 5**

1. Stanely E. Turner (Holtec International), "Criticality Safety Analyses of Sequoyah Spent Fuel Racks with Alternative Arrangements," HI-992349.

3 **INSERT 6**

3. K K Niyogi (Holtec International), "Boron Dilution Analysis," HI-992302.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.7.17 BASES, CASK PIT POOL BORON CONCENTRATION

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

2. Sequoyah Nuclear Plant (SQN) design includes a requirement for boron concentration in the cask pit pool to be within limits when spent fuel is stored in the cask pit racks. Therefore, in addition to ITS 3.7.14, "Fuel Storage Pool Boron Concentration," a new specification, ITS 3.7.17, "Cask Pit Pool Boron Concentration," has been added.

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

4. Typographical/grammatical error corrected.

5. ISTS SR 3.7.16.1 (ITS SR 3.7.17.1) provides two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program.

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

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.7.17, CASK PIT POOL BORON CONCENTRATION

There are no specific No Significant Hazards Considerations for this Specification.

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ATTACHMENT 18

Improved Standard Technical Specifications (ISTS) Not Adopted in the Sequoyah ITS

ISTS 3.7.12, EMERGENCY CORE COOLING SYSTEM (ECCS) PUMP ROOM EXHAUST AIR CLEANUP SYSTEM (PREACS)

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

~~3.7 PLANT SYSTEMS~~

~~3.7.12 Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)~~

~~LCO 3.7.12 Two ECCS PREACS trains shall be OPERABLE.~~

~~-----NOTE-----~~
~~The ECCS pump room boundary may be opened intermittently under administrative control.~~
~~----------~~

~~APPLICABILITY: MODES 1, 2, 3, and 4.~~

~~ACTIONS~~

~~CONDITION~~	~~REQUIRED ACTION~~	~~COMPLETION TIME~~
~~A. One ECCS PREACS train inoperable.~~	~~A.1 Restore ECCS PREACS train to OPERABLE status.~~	~~7 days~~ 1
~~B. Two ECCS PREACS trains inoperable due to inoperable ECCS pump room boundary.~~	~~B.1 Restore ECCS pump room boundary to OPERABLE status.~~	~~24 hours~~
~~C. Required Action and associated Completion Time not met.~~	~~C.1 Be in MODE 3.~~ ~~AND~~ ~~C.2 Be in MODE 5.~~	~~6 hours~~ ~~36 hours~~

~~SURVEILLANCE REQUIREMENTS~~

~~SURVEILLANCE~~		~~FREQUENCY~~
~~SR 3.7.12.1~~	~~Operate each ECCS PREACS train for [≥ 10 continuous hours with the heaters operating or (for systems without heaters) ≥ 15 minutes].~~	~~[31 days~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~
~~SR 3.7.12.2~~	~~Perform required ECCS PREACS filter testing in accordance with the [Ventilation Filter Testing Program (VFTP)].~~	~~In accordance with the [VFTP]~~
~~SR 3.7.12.3~~	~~Verify each ECCS PREACS train actuates on an actual or simulated actuation signal.~~	~~[[18] months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~
~~SR 3.7.12.4~~	~~Verify one ECCS PREACS train can maintain a pressure ≤ [-0.125] inches water gauge relative to atmospheric pressure during the [post accident] mode of operation at a flow rate of ≤ [3000] cfm.~~	~~[[18] months on a STAGGERED TEST BASIS~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~

1

~~SURVEILLANCE REQUIREMENTS (continued)~~

~~SURVEILLANCE~~		~~FREQUENCY~~
~~SR 3.7.12.5~~	~~[Verify each ECCS PREACS filter bypass damper can be closed.~~	~~[[18] months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~

1

JUSTIFICATION FOR DEVIATIONS
ISTS 3.7.12, EMERGENCY CORE COOLING SYSTEM (ECCS) PUMP ROOM EXHAUST AIR CLEANUP SYSTEM (PREACS)

1. Sequoyah Nuclear Plant (SQN) design does not include the Emergency Core Cooling System Pump Room Exhaust Air Cleanup System. The engineered safety feature (ESF) pump rooms are controlled as part of the Auxiliary Building Gas Treatment System. Therefore, ISTS 3.7.12, "Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)," is not included in the SQN design.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

~~B 3.7 PLANT SYSTEMS~~

~~B 3.7.12 Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)~~

~~BASES~~

~~BACKGROUND~~

~~The ECCS PREACS filters air from the area of the active ECCS components during the recirculation phase of a loss of coolant accident (LOCA). The ECCS PREACS, in conjunction with other normally operating systems, also provides environmental control of temperature and humidity in the ECCS pump room area and the lower reaches of the Auxiliary Building.~~

~~The ECCS PREACS consists of two independent and redundant trains. Each train consists of a heater, a prefilter or demister, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of gaseous activity (principally iodines), and a fan. Ductwork, valves or dampers, and instrumentation also form part of the system, as well as demisters functioning to reduce the relative humidity of the air stream. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provide backup in case the main HEPA filter bank fails. The downstream HEPA filter is not credited in the accident analysis, but serves to collect charcoal fines, and to back up the upstream HEPA filter should it develop a leak. The system initiates filtered ventilation of the pump room following receipt of a safety injection (SI) signal.~~ 1

~~The ECCS PREACS is a standby system, aligned to bypass the system HEPA filters and charcoal adsorbers. During emergency operations, the ECCS PREACS dampers are realigned, and fans are started to begin filtration. Upon receipt of the actuating Engineered Safety Feature Actuation System signal(s), normal air discharges from the ECCS pump room isolate, and the stream of ventilation air discharges through the system filter trains. The prefilters remove any large particles in the air, and any entrained water droplets present, to prevent excessive loading of the HEPA filters and charcoal adsorbers.~~

~~The ECCS PREACS is discussed in the FSAR, Sections [6.5.1], [9.4.5], and [15.6.5] (Refs. 1, 2, and 3, respectively) since it may be used for normal, as well as post accident, atmospheric cleanup functions. The primary purpose of the heaters is to maintain the relative humidity at an acceptable level, consistent with iodine removal efficiencies per Regulatory Guide 1.52 (Ref. 4).~~

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~~BASES~~

~~APPLICABLE SAFETY ANALYSES~~

~~The design basis of the ECCS PREACS is established by the large break LOCA. The system evaluation assumes a passive failure of the ECCS outside containment, such as an SI pump seal failure, during the recirculation mode. In such a case, the system limits radioactive release to within the 10 CFR 100 (Ref. 5) limits, or the NRC staff approved licensing basis (e.g., a specified fraction of Reference 5 limits). The analysis of the effects and consequences of a large break LOCA is presented in Reference 3. The ECCS PREACS also actuates following a small break LOCA, in those cases where the ECCS goes into the recirculation mode of long term cooling, to clean up releases of smaller leaks, such as from valve stem packing.~~

~~Two types of system failures are considered in the accident analysis: complete loss of function, and excessive LEAKAGE. Either type of failure may result in a lower efficiency of removal for any gaseous and particulate activity released to the ECCS pump rooms following a LOCA.~~

~~The ECCS PREACS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).~~

~~LCO~~

~~Two independent and redundant trains of the ECCS PREACS are required to be OPERABLE to ensure that at least one is available, assuming that a single failure disables the other train coincident with loss of offsite power. Total system failure could result in the atmospheric release from the ECCS pump room exceeding 10 CFR 100 limits in the event of a Design Basis Accident (DBA).~~ 1

~~ECCS PREACS is considered OPERABLE when the individual components necessary to maintain the ECCS pump room filtration are OPERABLE in both trains.~~

~~An ECCS PREACS train is considered OPERABLE when its associated:~~

~~a. Fan is OPERABLE,~~

~~b. HEPA filter and charcoal adsorbers are not excessively restricting flow, and are capable of performing their filtration functions, and~~

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

~~The LCO is modified by a Note allowing the ECCS pump room boundary to be opened intermittently under administrative controls. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for ECCS pump room isolation is indicated.~~

~~BASES~~

~~APPLICABILITY~~

~~In MODES 1, 2, 3, and 4, the ECCS PREACS is required to be OPERABLE consistent with the OPERABILITY requirements of the ECCS.~~

~~In MODE 5 or 6, the ECCS PREACS is not required to be OPERABLE since the ECCS is not required to be OPERABLE.~~

~~ACTIONS~~

~~A.1~~

~~With one ECCS PREACS train inoperable, action must be taken to restore OPERABLE status within 7 days. During this time, the remaining OPERABLE train is adequate to perform the ECCS PREACS function.~~

~~The 7 day Completion Time is appropriate because the risk contribution is less than that for the ECCS (72 hour Completion Time), and this system is not a direct support system for the ECCS. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period, and ability of the remaining train to provide the required capability.~~

~~Concurrent failure of two ECCS PREACS trains would result in the loss of functional capability; therefore, LCO 3.0.3 must be entered immediately.~~

1

~~B.1~~

~~-----REVIEWER'S NOTE-----~~
~~Adoption of Condition B is dependent on a commitment from the licensee to have written procedures available describing compensatory measures to be taken in the event of an intentional or unintentional entry into Condition B.~~
~~----------~~

~~If the ECCS pump room boundary is inoperable, the ECCS PREACS trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE ECCS pump room boundary within 24 hours. During the period that the ECCS pump room boundary is inoperable, appropriate compensatory measures [consistent with the intent, as applicable, of GDC 19, 60, 64 and 10 CFR Part 100] should be utilized to protect plant personnel from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the ECCS pump room boundary.~~

~~BASES~~

~~ACTIONS (continued)~~

~~C.1 and C.2~~

~~If the ECCS PREACS train or ECCS pump room boundary cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.~~

~~SURVEILLANCE REQUIREMENTS~~

~~SR 3.7.12.1~~

~~Standby systems should be checked periodically to ensure that they function properly. As the environment and normal operating conditions on this system are not severe, testing each train once a month provides an adequate check on this system. Monthly heater operations dry out any moisture that may have accumulated in the charcoal from humidity in the ambient air. [Systems with heaters must be operated ≥10 continuous hours with the heaters energized. Systems without heaters need only be operated for ≥15 minutes to demonstrate the function of the system.]~~ 1
~~[The 31 day Frequency is based on the known reliability of equipment and the two train redundancy available.~~

~~OR~~

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

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

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BASES

~~SURVEILLANCE REQUIREMENTS (continued)~~

~~SR 3.7.12.2~~

~~This SR verifies that the required ECCS PREACS testing is performed in accordance with the [Ventilation Filter Testing Program (VFTP)]. The [VFTP] includes testing HEPA filter performance, charcoal adsorbers efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test Frequencies and additional information are discussed in detail in the [VFTP].~~

~~SR 3.7.12.3~~

~~This SR verifies that each ECCS PREACS train starts and operates on an actual or simulated actuation signal. [The [18] month Frequency is consistent with that specified in Reference 4.~~

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~ 1

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

~~SR 3.7.12.4~~

~~This SR verifies the integrity of the ECCS pump room enclosure. The ability of the ECCS pump room to maintain a negative pressure, with respect to potentially uncontaminated adjacent areas, is periodically tested to verify proper functioning of the ECCS PREACS. During the [post accident] mode of operation, the ECCS PREACS is designed to maintain a slight negative pressure in the ECCS pump room, with respect to adjacent areas, to prevent unfiltered LEAKAGE. The ECCS PREACS is designed to maintain a ≤[-0.125] inches water gauge relative to atmospheric pressure at a flow rate of [3000] cfm from the ECCS pump room. [The Frequency of [18] months is consistent with the guidance provided in NUREG-0800, Section 6.5.1 (Ref. 6).~~

~~BASES~~

~~SURVEILLANCE REQUIREMENTS (continued)~~

~~This test is conducted with the tests for filter penetration; thus, an [18] month Frequency on a STAGGERED TEST BASIS is consistent with that specified in Reference 4.~~

~~OR~~

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

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

~~[SR 3.7.12.5~~

~~Operating the ECCS PREACS bypass damper is necessary to ensure that the system functions properly. The OPERABILITY of the ECCS PREACS bypass damper is verified if it can be specified in Reference 4. [An [18] month Frequency is consistent with that specified in Reference 4.~~

1

~~OR~~

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

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

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~~BASES~~

~~REFERENCES~~

1. ~~FSAR, Section [6.5.1].~~
2. ~~FSAR, Section [9.4.5].~~
3. ~~FSAR, Section [15.6.5].~~
4. ~~Regulatory Guide 1.52 (Rev. 2).~~
5. ~~10 CFR 100.11.~~
6. ~~NUREG-0800, Section 6.5.1, Rev. 2, July 1981.~~

1

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JUSTIFICATION FOR DEVIATIONS
ITS 3.7.12 BASES, EMERGENCY CORE COOLING SYSTEM (ECCS) PUMP ROOM EXHAUST AIR CLEANUP SYSTEM (PREACS)

1. Sequoyah Nuclear Plant (SQN) design does not include the Emergency Core Cooling System Pump Room Exhaust Air Cleanup System. The engineered safety feature (ESF) pump rooms are controlled as part of the Auxiliary Building Gas Treatment System. Therefore, ISTS 3.7.12, "Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)," is not included in the SQN design.

ISTS 3.7.14, PENETRATION ROOM EXHAUST AIR CLEANUP SYSTEM (PREACS)

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

~~3.7 PLANT SYSTEMS~~

~~3.7.14 Penetration Room Exhaust Air Cleanup System (PREACS)~~

~~LCO 3.7.14 Two PREACS trains shall be OPERABLE.~~

~~-----NOTE-----~~
~~The penetration room boundary may be opened intermittently under administrative control.~~
~~----------~~

~~APPLICABILITY: MODES 1, 2, 3, and 4.~~

~~ACTIONS~~

~~CONDITION~~	~~REQUIRED ACTION~~	~~COMPLETION TIME~~
~~A. One PREACS train inoperable.~~	~~A.1 Restore PREACS train to OPERABLE status.~~	~~7 days~~
~~B. Two PREACS trains inoperable due to inoperable penetration room boundary.~~	~~B.1 Restore penetration room boundary to OPERABLE status.~~	~~24 hours~~
~~C. Required Action and associated Completion Time not met.~~	~~C.1 Be in MODE 3.~~ ~~AND~~ ~~C.2 Be in MODE 5.~~	~~6 hours~~ ~~36 hours~~

1

~~SURVEILLANCE REQUIREMENTS~~

~~SURVEILLANCE~~		~~FREQUENCY~~
~~SR 3.7.14.1~~	~~Operate each PREACS train for [≥ 10 continuous hours with heaters operating or (for systems without heaters) ≥ 15 minutes].~~	~~[31 days~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~
~~SR 3.7.14.2~~	~~Perform required PREACS filter testing in accordance with the [Ventilation Filter Testing Program (VFTP)].~~	~~In accordance with the [VFTP]~~
~~SR 3.7.14.3~~	~~[Verify each PREACS train actuates on an actual or simulated actuation signal.~~	~~[[18] months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~
~~SR 3.7.14.4~~	~~[Verify one PREACS train can maintain a pressure ≤ [-0.125] inches water gauge relative to atmospheric pressure during the [post accident] mode of operation at a flow rate of ≤ [3000] cfm.~~	~~[[18] months on a STAGGERED TEST BASIS~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~

1

~~SURVEILLANCE REQUIREMENTS (continued)~~

~~SURVEILLANCE~~		~~FREQUENCY~~
~~SR 3.7.14.5~~	~~[Verify each PREACS filter bypass damper can be closed.~~	~~[[18] months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~

1

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JUSTIFICATION FOR DEVIATIONS
ITS 3.7.14, PENETRATION ROOM EXHAUST AIR CLEANUP SYSTEM (PREACS)

1. Sequoyah Nuclear Plant (SQN) design does not include the Penetration Room Exhaust Air Cleanup System. Therefore, ISTS 3.7.14, "Penetration Room Exhaust Air Cleanup System (PREACS)" is not included in the ITS.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

~~B 3.7 PLANT SYSTEMS~~

~~B 3.7.14 Penetration Room Exhaust Air Cleanup System (PREACS)~~

~~BASES~~

~~BACKGROUND~~

~~The PREACS filters air from the penetration area between containment and the Auxiliary Building.~~

~~The PREACS consists of two independent and redundant trains. Each train consists of a heater, a prefilter or demister, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of gaseous activity (principally iodines), and a fan. Ductwork, valves or dampers, and instrumentation, as well as demisters, functioning to reduce the relative humidity of the air stream, also form part of the system. A second bank of HEPA filters, which follows the adsorber section, collects carbon fines and provides backup in case of failure of the main HEPA filter bank. The downstream HEPA filter, although not credited in the accident analysis, collects charcoal fines and serves as a backup should the upstream HEPA filter develop a leak. The system initiates filtered ventilation following receipt of a safety injection signal.~~

~~The PREACS is a standby system, parts of which may also operate during normal unit operations. During emergency operations, the PREACS dampers are realigned and fans are started to initiate filtration. Upon receipt of the actuating signal(s), normal air discharges from the penetration room, the penetration room is isolated, and the stream of ventilation air discharges through the system filter trains. The prefilters remove any large particles in the air, as well as any entrained water droplets, to prevent excessive loading of the HEPA filters and charcoal adsorbers.~~ 1

~~The PREACS is discussed in the FSAR, Sections [6.5.1], [9.4.5], and [15.6.5] (Refs. 1, 2, and 3, respectively) since it may be used for normal, as well as post accident, atmospheric cleanup functions. Heaters may be included for moisture removal on systems operating in high humidity conditions. The primary purpose of the heaters is to maintain the relative humidity at an acceptable level consistent with iodine removal efficiencies per Regulatory Guide 1.52 (Ref. 4).~~

~~APPLICABLE SAFETY ANALYSES~~

~~The PREACS design basis is established by the large break loss of coolant accident (LOCA). The system evaluation assumes a passive failure outside containment, such as valve packing leakage during a Design Basis Accident (DBA). In such a case, the system restricts the failure outside containment, such as valve packing leakage during a~~

~~BASES~~

~~APPLICABLE SAFETY ANALYSES (continued)~~

~~Design Basis Accident (DBA). In such a case, the system restricts the radioactive release to within the 10 CFR 100 (Ref. 4) limits, or the NRC staff approved licensing basis (e.g., a specified fraction of 10 CFR 100 limits). The analysis of the effects and consequences of a large break LOCA are presented in Reference 3.~~

~~Two types of system failures are considered in the accident analysis: a complete loss of function, and excessive LEAKAGE. Either type of failure may result in less efficient removal of any gaseous or particulate material released to the penetration room following a LOCA.~~

~~The PREACS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).~~

~~LCO~~

~~Two independent and redundant trains of the PREACS are required to be OPERABLE to ensure that at least one train is available, assuming there is a single failure disabling the other train coincident with a loss of offsite power.~~

~~The PREACS is considered OPERABLE when the individual components necessary to control radioactive releases are OPERABLE in both trains. A PREACS train is considered OPERABLE when its associated:~~ 1

~~a. Fan is OPERABLE,~~

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

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

~~The LCO is modified by a Note allowing the penetration room boundary to be opened intermittently under administrative controls. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for penetration room isolation is indicated.~~

~~APPLICABILITY~~

~~In MODES 1, 2, 3, and 4, the PREACS is required to be OPERABLE, consistent with the OPERABILITY requirements of the Emergency Core Cooling System (ECCS).~~

~~In MODE 5 or 6, the PREACS is not required to be OPERABLE since the ECCS is not required to be OPERABLE.~~

~~BASES~~

~~ACTIONS~~ ~~A.1~~

~~With one PREACS train inoperable, the action must be taken to restore OPERABLE status within 7 days. During this period, the remaining OPERABLE train is adequate to perform the PREACS function. The 7 day Completion Time is appropriate because the risk contribution of the PREACS is less than that of the ECCS (72 hour Completion Time), and this system is not a direct support system for the ECCS. The 7 day Completion Time is based on the low probability of a DBA occurring during this period, and the remaining train providing the required capability.~~

~~B.1~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Adoption of Condition B is dependent on a commitment from the licensee to have guidance available describing compensatory measures to be taken in the event of an intentional and unintentional entry into Condition B.~~
~~---~~

~~If the penetration room boundary is inoperable, the PREACS trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE penetration room boundary within 24 hours. During the period that the penetration room boundary is inoperable, appropriate compensatory measures [consistent with the intent, as applicable, of GDC 19, 60, 64 and 10 CFR Part 100] should be utilized to protect plant personnel from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the penetration room boundary.~~ 1

~~C.1 and C.2~~

~~If the inoperable train or penetration room boundary cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 within 36 hours. The Completion Times are reasonable, based~~

~~BASES~~

~~ACTIONS (continued)~~

~~on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.~~

~~SURVEILLANCE REQUIREMENTS~~

~~SR 3.7.14.1~~

~~Standby systems should be checked periodically to ensure that they function properly. As the environmental and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on this system. Monthly heater operation dries out any moisture that may have accumulated in the charcoal as a result of humidity in the ambient air. [Systems with heaters must be operated for ≥10 continuous hours with the heaters energized. Systems without heaters need only be operated for ≥15 minutes to demonstrate the function of the system.] [The 31 day Frequency is based on the known reliability of equipment and the two train redundancy available.~~

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~ 1

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

~~SR 3.7.14.2~~

~~This SR verifies that the required PREACS testing is performed in accordance with the [Ventilation Filter Testing Program (VFTP)]. The [VFTP] includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the [VFTP].~~

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~~BASES~~

~~SURVEILLANCE REQUIREMENTS (continued)~~

~~[SR 3.7.14.3~~

~~This SR verifies that each PREACS starts and operates on an actual or simulated actuation signal. [The [18] month Frequency is consistent with that specified in Reference 5.~~

~~OR~~

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

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

~~[SR 3.7.14.4~~

1

~~This SR verifies the integrity of the penetration room enclosure. The ability of the penetration room to maintain a negative pressure, with respect to potentially uncontaminated adjacent areas, is periodically tested to verify proper function of PREACS. During the [post accident] mode of operation, the PREACS is designed to maintain a ≤[-0.125] inches water gauge relative to atmospheric pressure at a flow rate of [3000] cfm in the penetration room, with respect to adjacent areas, to prevent unfiltered LEAKAGE.~~

~~The minimum system flow rate maintains a slight negative pressure in the penetration room area, and provides sufficient air velocity to transport particulate contaminants, assuming only one filter train is operating. The number of filter elements is selected to limit the flow rate through any individual element to about [3000] cfm. This may vary based on filter housing geometry. The maximum limit ensures that the flow through, and pressure drop across, each filter element are not excessive.~~

~~The number and depth of the adsorber elements ensure that, at the maximum flow rate, the residence time of the air stream in the charcoal bed achieves the desired adsorption rate. At least a [0.125] second residence time is necessary for an assumed [99]% efficiency.~~

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~~BASES~~

~~SURVEILLANCE REQUIREMENTS (continued)~~

~~The filters have a certain pressure drop at the design flow rate when clean. The magnitude of the pressure drop indicates acceptable performance, and is based on manufacturers' recommendations for the filter and adsorber elements at the design flow rate. An increase in pressure drop or a decrease in flow indicates that the filter is being loaded or that there are other problems with the system.~~

~~[This test is conducted along with the tests for filter penetration; thus, the [18] month Frequency is consistent with that specified in Reference 5. The Frequency of [18] months is also consistent with the guidance provided in NUREG-0800 (Ref. 6).~~

~~OR~~

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

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

1

~~[SR 3.7.14.5~~

~~It is necessary to operate the PREACS filter bypass damper to ensure that the system functions properly. The OPERABILITY of the PREACS filter bypass damper is verified if it can be closed. [An [18] month Frequency is consistent with that specified in Reference 5.~~

~~OR~~

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

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

~~BASES~~

~~REFERENCES~~

1. ~~FSAR, Section [6.5.1].~~

2. ~~FSAR, Section [9.4.5].~~

3. ~~FSAR, Section [15.6.5].~~

4. ~~10 CFR 100.~~

5. ~~Regulatory Guide 1.52, Rev. [2].~~

6. ~~NUREG-0800, Section 6.5.1, Rev. 2, July 1981.~~

1

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.14 BASES, PENETRATION ROOM EXHAUST AIR CLEANUP SYSTEM (PREACS)

1. Sequoyah Nuclear Plant (SQN) design does not include the Penetration Room Exhaust Air Cleanup System. Therefore, ISTS 3.7.14, "Penetration Room Exhaust Air Cleanup System (PREACS)" is not included in the ITS.

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ENCLOSURE 2

VOLUME 13

SEQUOYAH NUCLEAR PLANT
UNIT 1 AND UNIT 2

IMPROVED TECHNICAL SPECIFICATIONS CONVERSION

ITS SECTION 3.8
ELECTRICAL POWER SYSTEMS

LIST OF ATTACHMENTS

ATTACHMENT 1

ITS 3.8.1, AC SOURCES - OPERATING

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS | A01 | ITS 3.8.1

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.8.1 3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

LCO 3.8.1.a a. Two ~~physically independent~~ qualified circuits between the offsite transmission network and the onsite Class 1E distribution system~~@~~, and LA01 A02

LCO 3.8.1.b b. Four ~~separate and independent~~ diesel generator sets each with: LA01

1. ~~Two diesels driving a common generator~~

SR 3.8.1.4 2. Two engine-mounted fuel tanks containing a minimum volume of 250 gallons of fuel, per tank

3. A separate fuel storage system containing a minimum volume of 62,000 gallons of fuel, See ITS 3.8.3

SR 3.8.1.6 4. A separate fuel transfer pump, and

5. A separate 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger. See ITS 3.8.4 and 3.8.9

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

ACTION: Add proposed ACTIONS NOTE 2 A03

VKG026

Add proposed Condition A L01

ACTION A a. ~~With one offsite A.C. circuit of the above required A.C. electrical power source inoperable,~~ demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter. Restore ~~at least two~~ offsite circuit~~s~~ to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. L01 L02

G ACTION ~~K~~

~~Add proposed Condition B~~ ~~L01~~

STET

ACTION B b.~~#~~ ~~With diesel generator set(s) 1A-A and/or 2A-A or 1B-B and/or 2B-B of the above required A.C. electrical power sources inoperable,~~* demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter, and determining OPERABLE diesel generator sets are not inoperable due to common cause failure or performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours; restore ~~at least four~~ diesel generator set~~s~~ to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. ~~L01~~ STET

G ACTION ~~K~~

Add proposed ACTION~~S~~ C ~~and D~~ L01

~~# Required actions, to verify OPERABLE diesel generator sets are not inoperable due to common cause failure or perform SR 4.8.1.1.2.a.4, shall be completed if this action is entered.~~ L02

SR 3.8.1.3 Note 3 * No more than one diesel generator may be made simultaneously inoperable on a pre-planned basis for ~~maintenance, modifications, or~~ surveillance testing. L03

~~@ Offsite circuits utilizing USST 2A and USST 2B as the normal power sources require CSST A and CSST C to be available as the alternate power sources via automatic transfer at the associated 6.9 kV Unit Boards. (CSST B can be substituted for CSST A or CSST C.) This Note remains in effect until November 30, 2013, or until the USST modifications are implemented on Units 1 and 2, whichever occurs first.~~ A02

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ITS A01 ITS 3.8.1

VKG026 ELECTRICAL POWER SYSTEMS

~~Add proposed ACTION F Note~~ ~~A03~~

ACTION (Continued)

Add proposed Condition ~~F~~ E L01

ACTION ~~F~~ E c. ~~With one offsite circuit and one diesel generator set of the above required A.C. electrical power sources inoperable~~, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter, and Surveillance Requirement 4.8.1.1.2.a.4 within ~~8~~ 24 hours; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. L04

ACTION A, ACTION B, ACTION ~~F~~ E

ACTION ~~K~~ G

ACTION ~~E~~ D d. With two of the above required offsite A.C. circuits inoperable, ~~demonstrate the OPERABILITY of 4 diesel generator sets by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours, unless the diesel generator sets are already operating~~; restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and MODE 5 within 36 hours L05 M01

ACTION ~~K~~ G

ACTION ~~J~~ F e. With either diesel generator sets 1A-A and/or 2A-A inoperable simultaneously with 1B-B and/or 2B-B, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least 1) 1A-A and 2A-A or 2) 1B-B and 2B-B to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. ~~L01~~

ACTION B

ACTION ~~J~~ F

ACTION ~~K~~ G

~~Add proposed ACTIONS G, H, and I~~ ~~L01~~

ACTIONS Note f. LCO 3.0.4.b is not applicable to diesel generators.

Add proposed ACTIONS ~~L~~ H and ~~M~~ I A04

SURVEILLANCE REQUIREMENTS

SR 3.8.1.1 4.8.1.1.1 Each of the above required ~~independent~~ circuits between the offsite transmission network and the onsite Class 1E distribution system shall be: LA01

SR 3.8.1.1 a. Determined OPERABLE ~~at least once per 7 days~~ by verifying correct breaker alignments and indicated power availability.

In accordance with the Surveillance Frequency Control Program LA02

SR 3.8.1.8 b. Demonstrated OPERABLE ~~at least once per 18 months~~# by manually and automatically transferring the power supply to each 6.9 kV Unit Board## from the normal supply to the alternate supply.

SR 3.8.1.8 Note 1 # For the 1A, 1B, 1C and 1D 6.9 kV Unit Boards, this Surveillance shall not be performed in MODES 1 and 2.

Add proposed SR 3.8.1.8 Note 1, second and third sentences. L06

SR 3.8.1.8 Note 2 ## Transfer capability is only required to be met for 6.9 kV Unit Boards that require normal and alternate power supplies.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

4.8.1.1.2 Each diesel generator set shall be demonstrated OPERABLE:

In accordance with the Surveillance Frequency Control Program LA02

SR 3.8.1.2, SR 3.8.1.3, SR 3.8.1.4, SR 3.8.1.6, and SR 3.8.1.7 a. ~~At least once per 31 days~~ ~~on a staggered test basis~~ by: L07

SR 3.8.1.4 1. Verifying the fuel level in the engine-mounted day tanks.

2. Verifying the fuel level in the 7 day tank. See ITS 3.8.3

SR 3.8.1.6 3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the engine mounted fuel tanks

Add proposed Note 1 to SR 3.8.1.2 and Note to SR 3.8.1.7. A05

SR 3.8.1.2 and SR 3.8.1.7 / SR 3.8.1.7 / SR 3.8.1.2 and SR 3.8.1.7 4. *Verifying the diesel starts from ambient condition and achieves in less than or equal to 10 seconds voltage and frequency of ≥ 6800 volts and ≥ 58.8 Hz and achieves a steady state voltage and frequency of ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz. ~~The diesel generator shall be started for this test by using one of the following signals with startup on each signal verified at least once per 124 days:~~

~~a) Manual.~~

~~b) Simulated loss of offsite power by itself.~~

~~c) An ESF actuation test signal by itself.~~

L08

Add proposed SR 3.8.1.3 Note 2 L09

Add proposed SR 3.8.1.3 Note 4 M02

SR 3.8.1.3 5. *Verifying the generator is synchronized, loaded between 3960 kw and 4400 kw ~~in less than or equal to 60 seconds~~, and operates for greater than or equal to 60 minutes, and

as recommended by the manufacturer A06

~~6. Verifying the diesel generator is aligned to provide standby power to the associated shutdown boards.~~ LA03

In accordance with the Surveillance Frequency Control Program LA02

SR 3.8.1.5 b. ~~At least once per 31 days~~ ~~and after each operation of the diesel where the period of operation was greater than or equal to 1 hour~~ by checking for and removing accumulated water from the engine-mounted fuel tanks. L10

c. At a frequency in accordance with the Diesel Fuel Oil Testing Program, verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits specified in the Diesel Fuel Oil Testing Program. See ITS 3.8.3

A06

SR 3.8.1.3, SR 3.8.1.7 / SR 3.8.1.2 Note 2 and SR 3.8.1.3 Note 1

* The diesel generator start (10 sec) ~~and load (60 sec)~~ from standby conditions shall be performed ~~at least once per 184 days~~ in these surveillance tests. All other diesel generator engine starts and loading for the purpose of this surveillance testing may be preceded by an engine idle start, followed by gradual acceleration to synchronous speed ~~(approximately 900 rpm)~~, synchronization, and gradual loading. In this latter case, 10 second requirements do not apply.

In accordance with the Surveillance Frequency Control Program LA02

LA04

as recommended by the manufacturer A06

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ITS

A01

ITS 3.8.1

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

In accordance with the Surveillance Frequency Control Program — LA02

SR 3.8.1.11, SR 3.8.1.12, SR 3.8.1.13, SR 3.8.1.16, SR 3.8.1.17 and SR 3.8.1.18

d. ~~At least once per 18 months~~ ~~during shutdown~~ by: — L11

1. This surveillance is deleted.

2. This surveillance has been relocated to SR 4.8.1.1.2.g.1.

3. This surveillance has been relocated to SR 4.8.1.1.2.g.2.

Add proposed SR 3.8.1.11 Note 1 — A05

Add proposed SR 3.8.1.11 Note 2 — L11

SR 3.8.1.11

4. Simulating a loss of offsite power by itself, and:

or an actual signal — L12

a) Verifying de-energization of the shutdown boards and load shedding from the shutdown boards.

b) Verifying the diesel starts on the auto-start signal, energizes the shutdown boards with permanently connected loads within 10 seconds, energizes the auto-connected shutdown loads through the load sequencers and operates for greater than or equal to 5 minutes while its generator is loaded with the shutdown loads. After energization, the steady state voltage and frequency of the shutdown boards shall be maintained at ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz during this test.

Add proposed SR 3.8.1.12 Note 1 — A05

Add proposed SR 3.8.1.12 Note 2 — L11

actual or simulated — L12

SR 3.8.1.12

5. Verifying that on a ESF actuation ~~test~~ signal ~~(without loss of offsite power)~~ the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The generator voltage and frequency shall be ≥ 6800 volts and ≥ 58.8 Hz within 10 seconds after the auto-start signal. After energization, the steady state generator voltage and frequency shall be maintained at ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz during this test.

A07

M03

Add proposed SR 3.8.1.12.d and e — A05

Add proposed SR 3.8.1.18 Note 1

Add proposed SR 3.8.1.18 Note 2 — L11

SR 3.8.1.18

6. Simulating a loss of offsite power in conjunction with an ESF actuation ~~test~~ signal, and

actual or simulated

or an actual signal — L12

a) Verifying de-energization of the shutdown boards and load shedding from the shutdown boards.

b) Verifying the diesel starts on the auto-start signal, energizes the shutdown boards with permanently connected loads within 10 seconds, energizes the auto-connected emergency (accident) loads through the load sequencers and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After energization, the steady state voltage and frequency of the shutdown boards shall be maintained at ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz during this test.

Add proposed SR 3.8.1.13 Note — L11

non-critical

SR 3.8.1.13

c) Verifying that all automatic diesel generator trips, ~~except engine overspeed and generator differential,~~ are automatically bypassed upon loss of voltage on the shutdown board and/or safety injection actuation signal.

LA05

actual or simulated — L12

7. This surveillance has been relocated to SR 4.8.1.1.2.g.3 and SR 4.8.1.1.2.g.4.

ITS A01 ITS 3.8.1

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

~~8. Verifying that the auto-connected loads to each diesel generator do not exceed the continuous rating of 4400 kW.~~ L13

Add proposed SR 3.8.1.16 Note L11

SR 3.8.1.16 9. Verifying the diesel generator's capability to:

a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power.

b) Transfer its loads to the offsite power source, and

c) Be restored to its shutdown status.

SR 3.8.1.17 10. Verifying that the automatic load sequence timers are OPERABLE with the setpoint for each sequence timer within ± 5 percent of its design setpoint.#

11. This surveillance is deleted.

Add proposed SR 3.8.1.19 Note A05

In accordance with the Surveillance Frequency Control Program LA02

SR 3.8.1.19 e. ~~At least once per 10 years or after any modifications which could affect diesel generator interdependence~~ by starting the diesel generators simultaneously and verifying that each diesel generator achieves in less than or equal to 10 seconds, ≥ 6800 volts and ≥ 58.8 Hz. L14

f. At least once per 10 years by:

1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank. See ITS 3.8.3

In accordance with the Surveillance Frequency Control Program LA02

SR 3.8.1.9, SR 3.8.1.10 g. ~~At least once per 18 months~~ by:

Add proposed SR 3.8.1.9 Notes ~~1 and 2~~ M04 SII

its associated single largest post-accident load

SR 3.8.1.9 1. Verifying the generator capability to reject a load of greater than or equal to ~~600 kw~~ while maintaining voltage ~~at within ± 10 percent of the initial pretest voltage~~ and frequency at 60 ± 1.2 Hz. ~~At no time shall the transient voltage exceed 8276V.~~ LA06

≥ 6800 V and ≤ 7260 V M05

Add proposed recovery time and maximum frequency.

SR 3.8.1.10 2. Verifying the generator capability to reject a load of 4400 kw without tripping. The generator voltage shall not exceed 8880V during and following the load rejection. L15

≥ 3960 and ≤ L16

Add proposed SR 3.8.1.10 Notes ~~1 and 2~~ M04 SII

SR 3.8.1.17 Note #May be performed in Modes 1, 2, 3 & 4 ~~if the associated equipment is out of service for maintenance or testing~~

to re-establish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. M06

ITS

A01

ITS 3.8.1

ELECTRICAL POWER SYSTEMS

Add proposed SR 3.8.1.14 Note 1 L09

Add proposed SR 3.8.1.14 Notes 2 ~~and 3~~ M04 SII

SURVEILLANCE REQUIREMENTS (Continued)

For ≥ L17

SR 3.8.1.14

3. Verifying the diesel generator operates for at least 24 hours. ~~During the first~~ 2 hours ~~to 2.25 hours~~ of this test, the diesel generator shall be loaded between 4620 kw and 4840 kw and between 2380 kvar and 2600 kvar and during the remaining hours of this test, the diesel generator shall be loaded between 3960 kw and 4400 kw and between 2140 kvar and 2370 kvar.

~~The generator voltage and frequency shall be ≥ 6800 volts and ≥ 58.8 Hz within 10 seconds after the start signal. After energization, the steady state generator voltage and frequency shall be maintained ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz during this test.~~ L17

Add proposed SR 3.8.1.15 Note 1, Part 2 L09

Add proposed SR 3.8.1.15 Note 2 A05

SR 3.8.1.15 Note, Part 1

SR 3.8.1.15

4. Within 5 minutes of shutting down the diesel generator after it has operated ≥ 2 hours loaded between 3960 kw and 4400 kw and between 2140 kvar and 2370 kvar, verify that the diesel generator starts within 10 seconds after receipt of the start signal and ~~operates for greater than or equal to 5 minutes~~. After energization, the steady state voltage and frequency shall be maintained ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz during this test.

L18

achieves voltage ≥ 6800 V and frequency ≥ 58.8 Hz L19

4.8.1.1.3 The 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger for each diesel generator shall be demonstrated OPERABLE:

a. At least once per 7 days by verifying:

1. That the parameters in Table 4.8-1a meet the Category A limits.

2. That the total battery terminal voltage is greater than or equal to 124-volts on float charge.

b. At least once per 92 days by:

See ITS 3.8.6

1. Verifying that the parameters in Table 4.8-1a meet the Category B limits,

2. Verifying there is no visible corrosion at either terminals or connectors, or the cell to terminal connection resistance of these items is less than 150 x 10^{-6} ohms, and

3. Verifying that the average electrolyte temperature of 6 connected cells is above 60°F.

c. At least once per 18 months by verifying that:

1. The cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration.

2. The battery to battery and terminal connections are clean, tight and coated with anti-corrosion material.

3. The resistance of each cell to terminal connection is less than or equal to 150 x 10^{-6} ohms.

4.8.1.1.4 This surveillance has been deleted.

3/4 LIMITING CONDITIONS FOR OPEATION AND SURVEILLANCE REQUIREMENTS

3/4.0 APPLICABILITY

LIMITING CONDITION FOR OPERATION

3.0.1 Compliance with the Limiting Conditions for Operation contained in the succeeding Specifications is required during the OPERATIONAL MODES or other conditions specified therein; except that upon failure to meet the Limiting Conditions for Operation, the associated ACTION requirements shall be met and as provided in LCO 3.0.7.

3.0.2 Noncompliance with a Specification shall exist when the requirements of the Limiting Condition for Operation and associated ACTION requirements are not met within the specified time intervals. If the Limiting Conditions for Operation is restored prior to expiration of the specified time intervals, completion of the ACTION requirements is not required.

3.0.3 When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within one hour action shall be initiated to place the unit in a MODE in which the Specification does not apply by placing it, as applicable, in:

1. At least HOT STANDBY within the next 6 hours,
2. At least HOT SHUTDOWN within the following 6 hours, and
3. At least COLD SHUTDOWN within the subsequent 24 hours.

See ITS 3.0

Where corrective measures are completed that permit operation under the ACTION requirements, the ACTION may be taken in accordance with the specified time limits as measured from the time of failure to meet the Limiting Condition for Operation. Exceptions to these requirements are stated in the individual Specifications.

3.0.4 When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made:

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time;

b. After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate; exceptions to this Specification are stated in the individual Specifications, or

c. When an allowance is stated in the individual value, parameter, or other Specification.

This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

Required Actions A.2, B.2, ~~E.1~~, and associated Completion Times

C.2, D.1

3.0.5 When a system, subsystem, train, component or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of its applicable Limiting Condition for Operation, provided: (1) its corresponding normal or emergency power source is OPERABLE; and (2) all of its redundant system(s), subsystem(s), train(s), component(s) and device(s) are OPERABLE, or likewise satisfy the requirements of this Specification. Unless both

VKG026

VKG027

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ITS

A01

ITS 3.8.1

APPLICABILITY

LIMITING CONDITION FOR OPERATION (Continued)

, C.2

VKG027

VKG026

24 hours for Required Action A.2
4 hours for Required Action B.2
12 hours for Required Action ~~E~~.1

D

3.0.5 (Continued)

conditions (1) and (2) are satisfied, within ~~2 hours~~ ~~action shall be initiated to place the unit in a MODE in which the applicable Limiting Condition for Operation does not apply by placing it as applicable in~~:

L20

~~1. At least HOT STANDBY within the next 6 hours,~~
~~2. At least HOT SHUTDOWN within the following 6 hours, and~~
~~3. At least COLD SHUTDOWN within the subsequent 24 hours.~~

Declare required features inoperable.

~~This Specification is not applicable in MODES 5 or 6.~~

A08

3.0.6 Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.1 and 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

3.0.7 When one or more required snubbers are unable to perform their associated support function(s), any affected supported LCO(s) are not required to be declared not met solely for this reason if risk is assessed and managed, and:

a. the snubbers not able to perform their associated support function(s) are associated with only one train or subsystem of a multiple train or subsystem supported system or are associated with a single train or subsystem supported system and are able to perform their associated support function within 72 hours; or

b. the snubbers not able to perform their associated support function(s) are associated with more than one train or subsystem of a multiple train or subsystem supported system and are able to perform their associated support function within 12 hours.

At the end of the specified period the required snubbers must be able to perform their associated support function(s), or the affected supported system LCO(s) shall be declared not met.

See ITS 3.0

SURVEILLANCE REQUIREMENTS

4.0.1 Surveillance Requirements shall be met during the MODES or other specified conditions in the Applicability for individual Limiting Condition for Operation, unless otherwise stated in the individual Surveillance Requirement. Failure to meet a Surveillance Requirement, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the Limiting Condition for Operation. Failure to perform a Surveillance within the specified surveillance interval shall be failure to meet the Limiting Conditions for Operation except as provided in Specification 4.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.

4.0.2 Each Surveillance Requirement shall be performed within the specified surveillance interval with a maximum allowable extension not to exceed 25 percent of the specified surveillance interval.

4.0.3 If it is discovered that a Surveillance was not performed within its specified surveillance interval (including the allowed extension per Specification 4.0.2), then compliance with the requirement to declare the Limiting Condition for Operation not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified surveillance interval, whichever is greater. This delay period is permitted to allow performance of the Surveillance. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours and the risk impact shall be managed.

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ITS A01 ITS 3.8.1

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.8.1 3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE: LA01

LCO 3.8.1.a a. Two ~~physically independent~~ qualified circuits between the offsite transmission network and the onsite Class 1E distribution system~~@~~, and A02

LCO 3.8.1.b b. Four ~~separate and independent~~ diesel generator sets each with: LA01

1. ~~Two diesels driving a common generator~~

SR 3.8.1.4 2. Two engine-mounted fuel tanks containing a minimum volume of 250 gallons of fuel, per tank

3. A separate fuel storage system containing a minimum volume of 62,000 gallons of fuel, See ITS 3.8.3

SR 3.8.1.6 4. A separate fuel transfer pump, and

5. A separate 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger. See ITS 3.8.4 and 3.8.9

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

Add proposed ACTIONS NOTE 2 A03

ACTION:

Add proposed Condition A L01

VKG026

ACTION A a. ~~With one offsite A.C. circuit of the above required A.C. electrical power sources inoperable,~~ demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter. Restore ~~at least two~~ offsite circuit~~s~~ to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. L01 L02

ACTION ~~K~~ G

~~Add proposed Condition B~~ ~~L01~~

STET

ACTION B b.# ~~With diesel generator set(s) 1A-A and/or 2A-A or 1B-B and/or 2B-B of the above required A.C. electrical power sources inoperable,~~* demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter, and determining OPERABLE diesel generator sets are not inoperable due to common cause failure or performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours; restore ~~at least four~~ diesel generator set~~s~~ to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. ~~L01~~ STET

ACTION ~~K~~ G

Add proposed ACTIONS C ~~and D~~ L01

~~# Required actions, to verify OPERABLE diesel generator sets are not inoperable due to common cause failure or perform SR 4.8.1.1.2.a.4, shall be completed if this action is entered.~~ L02

SR 3.8.1.3 Note 3 * No more than one diesel generator may be made simultaneously inoperable on a pre-planned basis for ~~maintenance, modifications, or~~ surveillance testing. L03

~~@ Offsite circuits utilizing USST 2A and USST 2B as the normal power sources require CSST A and CSST C to be available as the alternate power sources via automatic transfer at the associated 6.9 kV Unit Boards. (CSST B can be substituted for CSST A or CSST C.) This Note remains in effect until November 30, 2013, or until the USST modifications are implemented on Units 1 and 2, whichever occurs first.~~ A02

ELECTRICAL POWER SYSTEMS

VKG026

ACTION (Continued)

Add proposed ACTION F Note A03

E

Add proposed Condition F L01

ACTION F E

c. ~~With one offsite circuit and one diesel generator set of the above required A.C. electrical power sources inoperable,~~ demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter, and Surveillance Requirement 4.8.1.1.2.a.4 within ~~8~~ 24 hours; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. L04

ACTION A, ACTION B, ACTION F E

ACTION K G

d. With two of the above required offsite A.C. circuits inoperable, ~~demonstrate the OPERABILITY of 4 diesel generator sets by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours, unless the diesel generator sets are already operating~~; restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and MODE 5 within 36 hours L05 M01

ACTION E D

ACTION K G

e. With either diesel generator sets 1A-A and/or 2 A-A inoperable simultaneous with 1B-B and/or 2B-B, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least 1) 1A-A and 2A-A or 2) 1B-B and 2B-B to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. ~~L01~~

ACTION J F

ACTION B

ACTION J F

ACTION K G

~~Add proposed ACTIONS G, H, and I~~ ~~L01~~

ACTIONS Note

f. LCO 3.0.4.b is not applicable to diesel generators.

Add proposed ACTIONS ~~L~~ and ~~M~~ A04

H I

SURVEILLANCE REQUIREMENTS

SR 3.8.1.1 4.8.1.1.1 Each of the above required ~~independent~~ circuits between the offsite transmission network and the onsite Class 1E distribution system shall be: LA01

SR 3.8.1.1 a. Determined OPERABLE ~~at least once per 7 days~~ by verifying correct breaker alignments and indicated power availability.

In accordance with the Surveillance Frequency Control Program LA02

SR 3.8.1.8 b. Demonstrated OPERABLE ~~at least once per 18 months~~# by manually and automatically transferring the power supply to each 6.9 kV Unit Board ## from the normal supply to the alternate supply.

SR 3.8.1.8 Note 1 # For the 2A, 2B, 2C and 2D 6.9 kV Unit Boards this Surveillance shall not be performed in MODES 1 and 2.

Add proposed SR 3.8.1.8 Note 1, second and third sentences. L06

SR 3.8.1.8 Note 2 ## Transfer capability is only required to be met for 6.9 kV Unit Boards that require normal and alternate power supplies.

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ITS A01 ITS 3.8.1

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

4.8.1.1.2 Each diesel generator set shall be demonstrated OPERABLE:

In accordance with the Surveillance Frequency Control Program LA02

SR 3.8.1.2, SR 3.8.1.3, SR 3.8.1.4, SR 3.8.1.6, and SR 3.8.1.7

a. ~~At least once per 31 days~~ ~~on a staggered test basis~~ by: L07

SR 3.8.1.4

1. Verifying the fuel level in the engine-mounted day tanks.

2. Verifying the fuel level in the 7 day tank. See ITS 3.8.3

SR 3.8.1.6

3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the engine mounted fuel tanks

Add proposed Note 1 to SR 3.8.1.2 and Note to SR 3.8.1.7. A05

SR 3.8.1.2 and SR 3.8.1.7

SR 3.8.1.7

SR 3.8.1.2 and SR 3.8.1.7

4. *Verifying the diesel starts from ambient condition and achieves in less than or equal to 10 seconds generator voltage and frequency of ≥ 6800 volts and ≥ 58.8 Hz and achieves a steady state voltage and frequency of ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz. ~~The diesel generator shall be started for this test by using one of the following signals with startup on each signal verified at least once per 124 days:~~

~~a) Manual.~~

L08

~~b) Simulated loss of offsite power by itself.~~

L09

~~c) An ESF actuation test signal by itself.~~

Add proposed SR 3.8.1.3 Note 2

Add proposed SR 3.8.1.3 Note 4 M02

SR 3.8.1.3

5. *Verifying the generator is synchronized, loaded between 3960 kw and 4400 kw ~~in less than or equal to 60 seconds~~, and operates for greater than or equal to 60 minutes, and A06

as recommended by the manufacturer

~~6. Verifying the diesel generator is aligned to provide standby power to the associated shutdown boards.~~ LA03

In accordance with the Surveillance Frequency Control Program LA02

SR 3.8.1.5

b. ~~At least once per 31 days~~ ~~and after each operation of the diesel where the period of operation was greater than or equal to 1 hour~~ by checking for and removing accumulated water from the engine-mounted fuel tanks. L10

c. At a frequency in accordance with the Diesel Fuel Oil Testing Program, verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits specified in the Diesel Fuel Oil Testing Program. See ITS 3.8.3

A06

SR 3.8.1.3, SR3.8.1.7

SR 3.8.1.2 Note 2 and SR 3.8.1.3 Note 1

* The diesel generator start (10 sec) ~~and load (60 sec)~~ from standby conditions shall be performed ~~at least once per 184 days~~ in these surveillance tests. All other diesel generator engine starts and loading for the purpose of this surveillance testing may be preceded by an engine idle start, followed by gradual acceleration to synchronous speed ~~(approximately 900 rpm)~~, synchronization, and gradual loading. In this latter case, 10 second requirements do not apply.

In accordance with the Surveillance Frequency Control Program LA02

LA04

as recommended by the manufacturer A06

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

In accordance with the Surveillance Frequency Control Program LA02

SR 3.8.1.11, SR 3.8.1.12, SR 3.8.1.13, SR 3.8.1.16, SR 3.8.1.17 and SR 3.8.1.18

d. ~~At least once per 18 months~~ ~~during shutdown~~ by: L11

1. This surveillance is deleted.

2. This surveillance has been relocated to SR 4.8.1.1.2.g.1.

3. This surveillance has been relocated to SR 4.8.1.1.2.g.2.

Add proposed SR 3.8.1.11 Note 1 A05

Add proposed SR 3.8.1.11 Note 2 L11

SR 3.8.1.11

4. Simulating a loss of offsite power by itself, and: or an actual signal L12

a) Verifying de-energization of the shutdown boards and load shedding from the shutdown boards.

b) Verifying the diesel starts on the auto-start signal, energizes the shutdown boards with permanently connected loads within 10 seconds, energizes the auto-connected shutdown loads through the load sequencers and operates for greater than or equal to 5 minutes while its generator is loaded with the shutdown loads. After energization, the steady state voltage and frequency of the shutdown boards shall be maintained at ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz during this test.

Add proposed SR 3.8.1.12 Note 1 A05

Add proposed SR 3.8.1.12 Note 2 L11

SR 3.8.1.12

5. Verifying that on a ESF actuation ~~test~~ actual or simulated L12 signal, ~~without loss of offsite power~~ A07, the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The generator voltage and frequency shall be ≥ 6800 volts and ≥ 58.8 Hz within 10 seconds after the auto-start signal. After energization, the steady state generator voltage and frequency shall be maintained at ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz during this test. Add proposed SR 3.8.1.12.d and e M03 A05

Add proposed SR 3.8.1.18 Note 1

Add proposed SR 3.8.1.18 Note 2 L11

SR 3.8.1.18

6. Simulating a loss of offsite power in conjunction with an ESF actuation ~~test~~ actual or simulated signal, and: or an actual signal L12

a) Verifying de-energization of the shutdown boards and load shedding from the shutdown boards.

b) Verifying the diesel starts on the auto-start signal, energizes the shutdown boards with permanently connected loads within 10 seconds, energizes the auto-connected emergency (accident) loads through the load sequencers and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After energization, the steady state voltage and frequency of the shutdown boards shall be maintained at ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz during this test.

Add proposed SR 3.8.1.13 Note L11

SR 3.8.1.13

c) Verifying that all non-critical automatic diesel generator trips, ~~except engine overspeed and generator differential,~~ LA05 are automatically bypassed upon loss of voltage on the shutdown board and/or actual or simulated L12 safety injection actuation signal.

7. This surveillance has been relocated to SR 4.8.1.1.2.g.3 and SR 4.8.1.1.2.g.4.

ITS A01 ITS 3.8.1

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

~~8. Verifying that the auto-connected loads to each diesel generator do not exceed the continuous rating of 4400 kw.~~ L13

Add proposed SR 3.8.1.16 Note L11

SR 3.8.1.16

9. Verifying the diesel generator's capability to:

a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power.

b) Transfer its loads to the offsite power source, and

c) Be restored to its shutdown status.

SR 3.8.1.17

10. Verifying that the automatic load sequence timers are OPERABLE with the setpoint for each sequence timer within ± 5 percent of its design setpoint.#

Add proposed SR 3.8.1.19 Note. A05

11. This surveillance is deleted.

In accordance with the Surveillance Frequency Control Program LA02

SR 3.8.1.19

e. ~~At least once per 10 years or after any modifications which could affect diesel generator interdependence~~ by starting the diesel generators simultaneously and verifying that each diesel generator achieves in less than or equal to 10 seconds, ≥ 6800 volts and ≥ 58.8 Hz. L14

f. At least once per 10 years by:

1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank. See ITS 3.8.3

In accordance with the Surveillance Frequency Control Program LA02

SR 3.8.1.9, SR 3.8.1.10

g. ~~At least once per 18 months~~ by: Add proposed SR 3.8.1.9 Notes ~~1 and 2.~~ M04 SII

its associated single largest post-accident load LA06

SR 3.8.1.9

1. Verifying the generator capability to reject a load of greater than or equal to ~~600 kw~~ while maintaining voltage ~~at within ± 10 percent of the initial pretest voltage~~ and frequency at 60 ± 1.2 Hz. ~~At no time shall the transient voltage exceed 8276V.~~

≥ 6800 V and ≤ 7260 V M05

Add proposed recovery time and maximum frequency. L15

SR 3.8.1.10

2. Verifying the generator capability to reject a load of 4400 kw without tripping. The generator voltage shall not exceed 8880V during and following the load rejection.

≥ 3960 and ≤ L16 SII

Add proposed SR 3.8.1.10 Notes ~~1 and 2.~~ M04

SR 3.8.1.17 Note

May be performed in Modes 1, 2, 3 & 4 ~~if the associated equipment is out of service for maintenance or testing~~.

to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. M06

ELECTRICAL POWER SYSTEMS

Add proposed SR 3.8.1.14 Note 1 L09

Add proposed SR 3.8.1.14 Notes 2 ~~and 3~~ M04 SII

SURVEILLANCE REQUIREMENTS (Continued)

For ≥ L17

SR 3.8.1.14

3. Verifying the diesel generator operates for at least 24 hours. ~~During the first~~ 2 hours ~~to 2.25 hours~~ of this test, the diesel generator shall be loaded between 4620 kw and 4840 kw and between 2380 kvar and 2600 kvar and during the remaining hours of this test, the diesel generator shall be loaded between 3960 kw and 4400 kw and between 2140 kvar and 2370 kvar.

~~The generator voltage and frequency shall be ≥ 6800 volts and ≥ 58.8 Hz within 10 seconds after the start signal. After energization, the steady state generator voltage and frequency shall be maintained ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz during this test.~~ L17

Add proposed SR 3.8.1.15 Note 1, Part 2 L09

Add proposed SR 3.8.1.15 Note 2 A05

SR 3.8.1.15 Note, Part 1

SR 3.8.1.15

4. Within 5 minutes of shutting down the diesel generator after it has operated ≥ 2 hours loaded between 3960 kw and 4400 kw and between 2140 kvar and 2370 kvar, verify that the diesel generator starts within 10 seconds after receipt of the start signal and ~~operates for greater than or equal to 5 minutes~~. After energization, the steady state voltage and frequency shall be maintained ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz during this test.

L18

achieves voltage ≥ 6800 V and frequency ≥ 58.8 Hz L19

4.8.1.1.3 The 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger for each diesel generator shall be demonstrated OPERABLE:

a. At least once per 7 days by verifying:

1. That the parameters in Table 4.8-1a meet the Category A limits.

2. That the total battery terminal voltage is greater than or equal to 124 volts on float charge.

b. At least once per 92 days by:

1. Verifying that the parameters in Table 4.8-1a meet the Category B limits,

2. Verifying there is no visible corrosion at either terminals or connectors, or the cell to terminal connection resistance of these items is less than 150 x 10^{-6} ohms, and

3. Verifying that the average electrolyte temperature of 6 connected cells is above 60°F.

c. At least once per 18 months by verifying that:

1. The cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration.

2. The battery to battery and terminal connections are clean, tight and coated with anti-corrosion material.

3. The resistance of each cell to terminal connection is less than or equal to 150 x 10^{-6} ohms.

See ITS 3.8.6

SURVEILLANCE REQUIREMENTS (Continued)

4.8.1.1.4 This surveillance has been deleted.

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ITS

A01

ITS 3.8.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

3/4.0 APPLICABILITY

LIMITING CONDITION FOR OPERATION

3.0.1 Compliance with the Limiting Conditions for Operation contained in the succeeding Specifications is required during the OPERATIONAL MODES or other conditions specified therein; except that upon failure to meet the Limiting Conditions for Operation, the associated ACTION requirements shall be met and as provided in LCO 3.0.7.

3.0.2 Noncompliance with a Specification shall exist when the requirements of the Limiting Condition for Operation and associated ACTION requirements are not met within the specified time intervals. If the Limiting Conditions for Operation is restored prior to expiration of the specified time intervals, completion of the ACTION requirements is not required.

3.0.3 When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within one hour action shall be initiated to place the unit in a MODE in which the Specification does not apply by placing it, as applicable, in:

1. At least HOT STANDBY within the next 6 hours,
2. At least HOT SHUTDOWN within the following 6 hours, and
3. At least COLD SHUTDOWN within the subsequent 24 hours.

Where corrective measures are completed that permit operation under the ACTION requirements, the ACTION may be taken in accordance with the specified time limits as measured from the time of failure to meet the Limiting Condition for Operation. Exceptions to these requirements are stated in the individual Specifications.

See ITS 3.0

3.0.4 When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made:

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time;

b. After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate; exceptions to this Specification are stated in the individual Specifications, or

c. When an allowance is stated in the individual value, parameter, or other Specification.

This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

Required Actions A.2, B.2, ~~E.1,~~ C.2, D.1 and associated Completion Times

3.0.5 When a system, subsystem, train, component or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of its applicable Limiting Condition for Operation, provided: (1) its corresponding normal or emergency power source is OPERABLE; and (2) all of its redundant system(s), subsystem(s), train(s), component(s) and device(s) are OPERABLE, or likewise satisfy the requirements of this Specification. Unless both

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ITS 3.8.1

APPLICABILITY

VKG-027

LIMITING CONDITION FOR OPERATION

, C.2

24 hours for Required Action A.2
4 hours for Required Action B.2
12 hours for Required Action ~~E~~.1

D

VKG026

3.0.5 (Continued)

conditions (1) and (2) are satisfied, within ~~2 hours~~ ~~action shall be initiated to place the unit in a MODE in which the applicable Limiting Condition for Operation does not apply by placing it as applicable in:~~

~~1. At least HOT STANDBY within the next 6 hours~~
~~2. At least HOT SHUTDOWN within the following 6 hours, and~~
~~3. At least COLD SHUTDOWN within the subsequent 24 hours.~~

Declare required features inoperable.

L20

~~This Specification is not applicable in MODES 5 or 6.~~

A08

3.0.6 Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.1 and 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

3.0.7 When one or more required snubbers are unable to perform their associated support function(s), any affected supported LCO(s) are not required to be declared not met solely for this reason if risk is assessed and managed, and:

a. the snubbers not able to perform their associated support function(s) are associated with only one train or subsystem of a multiple train or subsystem supported system or are associated with a single train or subsystem supported system and are able to perform their associated support function within 72 hours; or

b. the snubbers not able to perform their associated support function(s) are associated with more than one train or subsystem of a multiple train or subsystem supported system and are able to perform their associated support function within 12 hours.

At the end of the specified period the required snubbers must be able to perform their associated support function(s), or the affected supported system LCO(s) shall be declared not met.

See ITS 3.0

SURVEILLANCE REQUIREMENTS

4.0.1 Surveillance Requirements shall be met during the MODES or other specified conditions in the Applicability for individual Limiting Condition for Operation, unless otherwise stated in the individual Surveillance Requirement. Failure to meet a Surveillance Requirement, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the Limiting Condition for Operation. Failure to perform a Surveillance within the specified surveillance interval shall be failure to meet the Limiting Conditions for Operation except as provided in Specification 4.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.

4.0.2 Each Surveillance Requirement shall be performed within the specified surveillance interval with a maximum allowable extension not to exceed 25 percent of the specified surveillance interval.

4.0.3 If it is discovered that a Surveillance was not performed within its specified surveillance interval (including the allowed extension per Specification 4.0.2), then compliance with the requirement to declare the Limiting Condition for Operation not met may be delayed, from the time of discovery,

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DISCUSSION OF CHANGES
ITS 3.8.1, AC SOURCES - OPERATING

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.8.1.1.a Note @ has an expiration date of November 30, 2013. As it is anticipated that the SQN ITS Conversion License Amendment Request will not be approved by the NRC before this date, Note @ has been deleted. As such, these changes are administrative.

VKG026

A03 CTS 3.8.1.1 ACTION c applies when one offsite circuit and one diesel generator (DG) are inoperable. In this condition, one or more required electrical boards may be de-energized. CTS 3.8.2.1 provides an ACTION for a de-energized required electrical board. ITS 3.8.1 ~~ACTION F Note in the Required Actions column~~ ACTIONS NOTE 2 states, "Enter applicable Conditions and Required Action of LCO 3.8.9, "Distribution System - Operating," when ~~Condition F~~ any Condition(s) is entered with no AC power source to ~~any train~~ any shutdown board resulting in a de-energized shutdown board." This changes the CTS by specifically requiring the compensatory actions for Distribution System - Operating to be taken, if a ~~distribution train~~ shutdown board is made inoperable and de-energized by inoperable AC Sources.

VKG026

This change is acceptable because no changes are made to CTS requirements. CTS 3.0.1 requires the associated ACTION requirements to be met when an LCO is not met. With the addition of ITS LCO 3.0.6, an exception to ITS LCO 3.0.2 (CTS 3.0.1) was created, whereby ACTION requirements associated with an unmet LCO are not required to be met. Therefore, in the event AC Sources are inoperable such that a distribution subsystem is de-energized, ITS LCO 3.0.6 would allow taking only the AC Sources ACTIONS; taking exception to complying with the Distribution System ACTIONS. Since the AC Sources ACTIONS may not be sufficiently conservative in the event of an entire train without power, specific direction to take appropriate ACTIONS for the Distribution System is added (ITS 3.8.1, ~~Note to ACTION F~~ ACTIONS NOTE 2) for the condition of no power for any shutdown board ~~a train~~. This format and construction implements the existing treatment of this condition within the framework of the ITS methods. This change is designated as administrative because it does not result in a technical change to the CTS.

A04 CTS 3.8.1.1 does not contain an ACTION for multiple offsite circuits and DGs inoperable. Having multiple offsite circuits and DGs inoperable requires entering CTS LCO 3.0.3. ITS 3.8.1 ACTION ~~L~~ H requires entering LCO 3.0.3 immediately, if two offsite circuits are inoperable concurrent with one or more inoperable Train A or Train B DG(s). ITS 3.8.1 ACTION ~~M~~ I requires entering LCO 3.0.3 immediately, if one offsite circuit is inoperable concurrent with one or more inoperable Train A and Train B DGs. This changes the CTS by adding specific ACTIONS requiring entry into LCO 3.0.3.

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The change is acceptable because the CTS ACTIONS for multiple offsite circuits and DGs inoperable are the same as the ITS ACTIONS. The change is necessary due to the format of the ITS. This change is designated as administrative, because it does not result in a technical change to the CTS.

A05 CTS 4.8.1.1.2.a.4, CTS 4.8.1.1.2.d.4, CTS 4.8.1.1.2.d.5, CTS 4.8.1.1.2.d.6, CTS 4.8.1.1.2.e, and CTS 4.8.1.1.2.g.4 require the DGs to be started. ITS SR 3.8.1.2, SR 3.8.1.7, SR 3.8.1.11, SR 3.8.1.12, SR 3.8.1.15, SR 3.8.1.18, and SR 3.8.1.19 also require the DGs to be started. However, each of the ITS Surveillances include a Note concerning a prelube. ITS SR 3.8.1.2 Note 1 states that all DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. The Note to SR 3.8.1.7 and SR 3.8.1.19, Note 1 to SR 3.8.1.11, SR 3.8.1.12, and SR 3.8.1.18, and Note 2 to SR 3.8.1.15 state that all DG starts may be preceded by an engine prelube period. This changes the CTS by adding the Notes to the applicable Surveillance Requirements.

A Note has been added to various Surveillances that allows all DG starts to be preceded by an engine prelube period to minimize wear and tear on the DGs during testing. The addition of the Note is considered administrative, since the DGs at SQN run in a continuous prelube mode of operation. In addition, the Note to ITS SR 3.8.1.2 allows a warmup period prior to loading. The addition of this part of the Note is considered administrative, because the DGs are not immediately loaded upon startup, but are allowed to warmup for a short time after startup while the operations staff performs post startup DG checks. This change is designated as administrative, because it does not result in a technical change to the CTS.

A06 CTS 4.8.1.1.2.a.4 requires, in part, a manual start of each DG from ambient conditions and verification that the DG achieves a steady state voltage and frequency of ≥ 6800 V and ≤ 7260 V and ≥ 58.8 Hz and ≤ 61.2 Hz. CTS 4.8.1.1.2.a.5 requires that the DG is synchronized, loaded between 3960 kW and 4400 kW in less than or equal to 60 seconds, and operates for at least 60 minutes. These Surveillances are modified by Note * that states the DG start may be preceded by an engine idle start and followed by gradual acceleration to synchronous speed, synchronization, and gradual loading. ITS SR 3.8.1.2 and SR 3.8.1.3 require similar DG tests. The ITS SR 3.8.1.2 is modified by Note 2 that states a modified DG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. ITS SR 3.8.1.3 is modified by Note 1 that states DG loadings may include gradual loadings as recommended by the manufacturer. This changes the CTS by specifying the DG gradual acceleration to synchronous speed and DG gradual loading be performed "as recommended by the manufacturer."

The purpose of CTS 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 is to ensure each DG can be started and loaded from standby conditions. This change adds a specific requirement that DG gradual acceleration to synchronous speed may be used as recommended by the manufacturer. This change is consistent with current practice and is not precluded by CTS. Additionally, this change replaces the

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specific CTS DG loading requirement with a statement that DG loadings may include gradual loading as recommended by the manufacturer. This change is consistent with the recommendations of Generic Letter (GL) 93-05, "Line- Item Technical Specifications Improvements to Reduce Surveillance Requirements for Testing During Power Operation." GL 93-05, Section 10.1, states that DGs "should be loaded in accordance with vendor recommendations for all test purposes other than the refueling outage LOOP tests." The change is acceptable, because it will ensure the DGs will continue to be operated consistent with manufacturer recommendations. This change is designated as administrative, because it does not result in a technical change to the CTS.

A07 CTS 4.8.1.1.2.d.5 requires verification that on an ESF actuation test signal (without loss of offsite power), each DG starts and operates for at least 5 minutes. ITS SR 3.8.1.12 requires a similar test, but does not specify that the DG auto-start on an ESF actuation test signal is "without loss of offsite power." This changes the CTS by not specifying the DG auto-start on an ESF actuation test signal is without a loss of offsite power signal.

The purpose of CTS 4.8.1.1.2.d.5 is to demonstrate that each DG automatically starts on an ESF actuation test signal. The requirements of this Surveillance are retained in the ITS as SR 3.8.1.12. The purpose of CTS 4.8.1.1.2.d.6.b) is to verify that each DG starts on a loss of offsite power concurrent with an ESF actuation test signal. The requirements of this Surveillance are retained in the ITS as SR 3.8.1.18. This change is acceptable, because it is understood that the CTS 4.8.1.1.2.d.5 required DG start on an ESF actuation test signal is without a loss of offsite power signal. Therefore, it is unnecessary to provide this information in ITS SR 3.8.1.12. This change is designated as administrative, because it does not result in a technical change to the CTS.

A08 CTS 3.0.5 states that it is not applicable in MODE 5 or 6. CTS 3.0.5 has been incorporated into the ACTIONS of ITS 3.8.1. This changes the CTS by incorporating the allowances of CTS 3.0.5 in ITS 3.8.1.

This change is acceptable because ITS 3.8.1 is only applicable in MODES 1, 2, 3, and 4. Therefore, the statement in CTS 3.0.5, that states that the Specification is not applicable in MODE 5 or 6, is no longer necessary and is deleted. This change is designated as administrative, because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.8.1.1 ACTION d specifies the compensatory actions for two inoperable offsite circuits. The action requires restoration of at least one of the offsite sources within 24 hours, and if it is not restored within the allowed time, the unit VKG026
is required to be in at least HOT STANDBY within the next 6 hours. ITS 3.8.1
D ACTION ~~E~~ requires restoration of at least one offsite circuit to OPERABLE status
within 24 hours, otherwise ITS 3.8.1 ACTION ~~K~~ requires the unit to be in MODE G
3 within 6 hours and MODE 5 within 36 hours. This changes the CTS by adding the requirement to be in MODE 5 within 36 hours.

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The purpose of CTS 3.8.1.1 ACTION d is to provide the appropriate compensatory actions for two inoperable offsite circuits. However, the current action does not place the unit outside the MODE of Applicability of the Specification, if the Required Action and Completion Time are not met. Other CTS 3.8.1.1 ACTIONS require the unit to be placed outside the MODE of Applicability of the Specification (i.e., MODE 5). The action to exit the MODE of Applicability of the Specification is also appropriate for two inoperable offsite circuits. This change is designated as more restrictive, because additional requirements are being imposed that limit unit operation in the event of two inoperable offsite circuits.

M02 CTS 4.8.1.1.2.a.5 requires each DG to be synchronized, loaded, and operated for at least 60 minutes. ITS SR 3.8.1.3 requires the same test, however an additional Note has been added that places a restriction on the test. ITS SR 3.8.1.3 Note 4 modifies the CTS requirements by stating that the SR shall be preceded by and immediately follow, without a shut down of the DG, a successful performance of ITS SR 3.8.1.2 or ITS SR 3.8.1.7. This changes the CTS by adding a restriction when performing this test.

The purpose of CTS 4.8.1.1.2.a.5 is to ensure the DG can supply the emergency loads. This change is acceptable because DG loading during performance of CTS 4.8.1.1.2.a.5 is usually conducted without shut down after a successful start during performance of CTS 4.8.1.1.2.a.4. This change is designated as more restrictive, because an explicit restriction is added to the DG load test.

M03 CTS 4.8.1.1.2.d.5 requires each DG to auto-start on an ESF actuation test signal and operate for greater than or equal to 5 minutes. The generator voltage and frequency shall be ≥ 6800 V and frequency ≥ 58.8 Hz within 10 seconds. After energization the steady state voltage and frequency of the shutdown boards shall be ≥ 6800 V and ≤ 7260 V and ≥ 58.8 Hz and ≤ 61.2 Hz. ITS SR 3.8.1.12 requires the verification that each DG auto-start from standby condition and; a) in ≤ 10 seconds the DG achieves voltage ≥ 6800 V and frequency ≥ 58.8 Hz; b) achieves steady state voltage ≥ 6800 V and ≤ 7260 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz; c) operates for ≥ 5 minutes; d) permanently connected loads remain energized from the offsite power system; and e) emergency loads are energized from the offsite power system. This changes the CTS by adding additional performance requirements for the ESF actuation test.

The purpose of the CTS 4.8.1.1.2.d.5 is to test the performance of each DG on an ESF actuation test signal. The proposed change adds explicit requirements to verify the permanently connected loads and emergency loads are energized from the offsite electrical power system on an ESF signal without loss of offsite power. The change is acceptable, because verifying the connection of the permanent loads and emergency loads will confirm the DG loading logic. This change is designated as more restrictive, because additional acceptance criteria have been added to the CTS.

M04 CTS 4.8.1.1.2.g.1 requires the testing of each DG with a load rejection greater than or equal to 600 kW. CTS 4.8.1.1.2.g.2 requires the testing of each DG with a load rejection of 4400 kW. CTS 4.8.1.1.2.g.3 requires verifying the diesel generator operates for at least 24 hours under specific loaded conditions. These

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Surveillances do not specify that the testing be performed under certain unit conditions, nor that a DG shall be tested at a specific power factor. ITS SR 3.8.1.9 requires the verification that each DG can reject a load equal to or greater than its associated single largest post-accident load. ITS SR 3.8.1.10 requires the verification that each DG can reject a load of ≥ 3960 kW and ≤ 4400 kW. ITS SR 3.8.1.14 requires verifying each DG operates for ≥ 24 hours; for ≥ 2 hours loaded ≥ 4620 kW and ≤ 4840 kW and for the remaining hours of the test loaded ≥ 3960 kW and ≤ 4400 kW. ~~Two Notes modify these SRs. Note 1 states that for the associated unit's DGs, the Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Finally, credit may be taken for unplanned events that satisfy this SR. Note 2 states~~ A Note modifies these Surveillances and states that if the Surveillance is performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.89. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. This changes the CTS requirement by specifying ~~conditions for when the associated unit DGs are normally tested and by specifying~~ a power factor of ≤ 0.89, if the testing is conducted by synchronizing with the offsite sources. Other changes to CTS 4.8.1.1.2.g.1 (ITS SR 3.8.1.9) are discussed in DOCs M05, LA06, and L15, while other changes to CTS 4.8.1.1.2.g.2 (ITS SR 3.8.1.1.10) are discussed in DOC L16. SII

~~The addition of Note 1 is acceptable, because performance of the Surveillance for the associated unit's DGs could cause perturbations to the electrical distribution systems. Restricting normal performance of the Surveillance on the associated unit's DGs during MODES 1 and 2 minimizes challenges to continued steady state operation and, as a result, the unit's safety systems. However, if an assessment of the risks indicates plant safety is maintained or enhanced, the Surveillance can be performed to reestablish OPERABILITY.~~ The addition of the Note ~~2~~ is acceptable, because the testing should be conducted as close as possible to the conditions that would be experienced by a DG following an accident. Loading the DG solely with the inductive characteristics of a large motor will create a power factor less than unity. The design of the DG is set for full power operation with a power factor of ≥ 0.8. Therefore, testing of the DG for a loss of the single largest load and at full load is acceptable with a power factor ≤ 0.89. This change is designated as more restrictive, because the testing required by the CTS does not currently contain these limitations.

M05 CTS 4.8.1.1.2.g.1 requires verification of the generator capability to reject a load greater than or equal to the specified value while maintaining voltage within ± 10 percent of the initial pretest voltage and frequency at 60 ± 1.2 Hz. Additionally, CTS 4.8.1.1.2.g.1 requires that at no time shall the transient voltage exceed 8276 V. ITS SR 3.8.1.9 requires verification that following load rejection, frequency is ≤ 66.5 Hz, and within 3 seconds following load rejection voltage is ≥ 6800 V and ≤ 7260 V and frequency is ≥ 58.8 Hz and ≤ 61.2 Hz. This changes the CTS in that the steady state voltage range has been reduced from "within ± 10 percent of the initial pretest voltage" to "≥ 6800 V and ≤ 7260 V." The deletion of the maximum voltage limit for the first 3 seconds following load rejection and

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adoption of a higher frequency excursion limit for the first 3 seconds following load rejection are described in DOC L15.

The purpose of the CTS 4.8.1.1.2.g.1 is to demonstrate the DG load response characteristics and capability to reject the largest single load without exceeding the appropriate limitations for voltage and frequency while maintaining margin to the overspeed trip. This change imposes a reduced steady state voltage range after the first 3 seconds following load rejection. The more restrictive steady state voltage limit provides assurance that the ESF pumps have the appropriate level of voltage available, so that they are assured of achieving adequate fluid flow to meet their safety and accident mitigation functions. This change is designated as more restrictive, because the proposed voltage range limit has been reduced.

M06 CTS 4.8.1.1.2.d.10 requires verification that the automatic load sequence timers are OPERABLE at least once per 18 months during shutdown. This Surveillance is modified by Note # that allows the test to be performed in MODES 1, 2, 3, and 4 if the associated equipment is out of service for maintenance or testing. ITS SR 3.8.1.17 requires a similar test that is modified by a Note stating the Surveillance shall not normally be performed for the associated unit's DGs in MODE 1, 2, 3, or 4. The Note also states that the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. It further states that credit may be taken for unplanned events that satisfy this SR. This changes the CTS by only allowing relaxation of the performance restriction to reestablish OPERABILITY provided the associated assessment is performed or provided that an unplanned event satisfies the requirements of the Surveillance.

The purpose of CTS 4.8.1.1.2.d.10 is to confirm the OPERABILITY of the automatic load sequence timers. The purpose of Note # is to limit performance of the Surveillance during MODES 1, 2, 3, and 4 when perturbations to the electrical distribution system may occur that could challenge safety systems. This change is acceptable, because the revised Note will continue to limit performance of the Surveillance while operating in MODES 1, 2, 3, and 4. Additionally, the Surveillance will only be performed in MODES 1, 2, 3 and 4 to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced, or credit for satisfying the Surveillance is being taken for an unplanned event. Lastly, the proposed Surveillance Note still restricts planned performance of the Surveillances to MODES other than MODE 1, 2, 3, or 4. This change is designated as more restrictive, because the plant conditions that the Surveillance may be performed in have been reduced.

RELOCATED SPECIFICATIONS

None

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REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.8.1.1.a requires two "physically independent" circuits between the offsite network and the onsite Class 1E AC Electrical Distribution System to be OPERABLE. CTS 3.8.1.1.b requires four "separate and independent" DG sets to be OPERABLE, each with "two diesels driving a common generator." CTS 4.8.1.1.1 requires the determination of OPERABILITY for each "independent" circuit between the offsite transmission network and the onsite Class 1E AC Electrical Distribution System. ITS LCO 3.8.1 requires two qualified circuits between the offsite network and the onsite Class 1E AC Electrical Distribution System, four DGs capable of supplying the onsite Class 1E AC Electrical Distribution System. ITS SR 3.8.1.1 requires verification of the correct breaker alignment for each offsite circuit. This changes the CTS by moving the details that the offsite circuits are "independent" or "physically independent," that the DGs are "separate and independent," and that each DG includes "two diesels driving a common generator" from the CTS to the Bases.

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

LA02 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.8.1.1.1.a requires verification of the correct breaker alignment between the offsite transmission network and the onsite Class 1E AC Electrical Distribution System at least once per 7 days. ITS SR 3.8.1.1 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.8.1.1.1.b requires demonstration of manual and automatic transfer from the normal power supply to the alternate power supply to each 6.9 kV Unit Board once per 18 months. ITS SR 3.8.1.8 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.8.1.1.2.a.1 requires verification of the fuel level in the engine-mounted fuel tanks at least once per 31 days ON A STAGGERED BASIS. ITS SR 3.8.1.4 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.8.1.1.2.a.3 requires verification that the fuel transfer pump can be started and transfers fuel from the storage system to the engine-mounted fuel tanks at least once per 31 days ON A STAGGERED BASIS. ITS SR 3.8.1.6 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.8.1.1.2.a.4 requires verification that each DG can be started from ambient conditions and achieves voltage and frequency within specified values at least every 31 days ON A

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STAGGERED BASIS. Furthermore, the DG starts are required to be verified to occur within 10 seconds at least once per 184 days. ITS SR 3.8.1.2 and SR 3.8.1.7 require similar Surveillances with each SR specifying a periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.8.1.1.2.a.5 requires verification that each DG synchronizes and loads between 3960 kW and 4400 kW and operates for ≥ 60 minutes at least every 31 days ON A STAGGERED BASIS. ITS SR 3.8.1.3 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.8.1.1.2.b requires checking for and removing accumulated water from each DG engine-mounted fuel tank at least once per 31 days. ITS SR 3.8.1.5 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.8.1.1.2.d.4 requires verification of DG start on a loss of offsite power at least once per 18 months. ITS SR 3.8.1.11 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.8.1.1.2.d.5 requires verification of DG start on a safety injection signal at least once per 18 months. ITS SR 3.8.1.12 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.8.1.1.2.d.6 requires verification of DG start on a loss of offsite power coincident with a safety injection signal at least once per 18 months. ITS SR 3.8.1.18 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.8.1.1.2.d.6.c) requires verification that DG noncritical automatic trips are bypassed on loss of voltage signal and a safety injection signal at least once per 18 months. ITS SR 3.8.1.13 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.8.1.1.2.d.9 requires verification of each DG's capability to synchronize with offsite power while loaded with its emergency loads upon a simulated restoration of offsite power, transfer its loads to the offsite power source, and restoration to its shutdown status at least once per 18 months. ITS SR 3.8.1.16 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.8.1.1.2.d.10 requires verification that each automatic load sequence timer setpoint is within 5 percent of its design setpoint at least once per 18 months. ITS SR 3.8.1.17 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.8.1.1.2.e requires verification that the DGs achieve the specified voltage and frequency within 10 seconds when started simultaneously at least once per 10 years. ITS SR 3.8.1.19 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.8.1.1.2.g.1 requires verification of each DG's capability to reject a load of at least 600 kW and maintain voltage and frequency within specified values at least once per 18 months. ITS SR 3.8.1.9 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.8.1.1.2.g.2 requires verification of each DG's capability to reject a load of 4400 kW without tripping and without exceeding 8880 V at least once per 18 months. ITS SR 3.8.1.10 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.8.1.1.2.g.3 requires verification that each DG operates for at least 24

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hours at the specified loads at least once per 18 months. ITS SR 3.8.1.14 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program."
CTS 4.8.1.1.2.g.4 requires verification that within 5 minutes of shutting down each DG after it has operated for at least 2 hours at the specified load that the DG starts within 10 seconds after receipt of a start signal and achieves voltage and frequency within specified values at a Frequency of at least once per 18 months. ITS SR 3.8.1.15 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for the SRs and the Bases to the Surveillance Frequency Control Program. (The change of the requirement to perform Surveillances ON A STAGGERED TEST BASIS is discussed in DOC L07).

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LA03 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.8.1.1.2.a.6 requires the verification that each DG is aligned to provide standby power to the associated shutdown boards. ITS 3.8.1 does not contain this requirement. This changes the CTS by moving the detail that each DG is aligned to provide standby power to the associated shutdown boards from the CTS to the ITS Bases.

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

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LA04 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.8.1.1.2.a.4 requires verification that each DG can be started from ambient conditions and achieve voltage and frequency within specified values. CTS 4.8.1.1.2.a.4 footnote * states, in part, that DG engine start and loading for the purpose of this Surveillance may be preceded by an engine idle start, followed by gradual acceleration to synchronous speed (approximately 900 rpm). ITS SR 3.8.1.2 requires a similar DG test, and is modified by a Note (Note 2) that states, in part, a modified DG start involving idling and gradual acceleration to synchronous speed may be used for the Surveillance. This changes the CTS by moving the detail that synchronous speed is approximately 900 rpm to the ITS Bases.

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

LA05 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.8.1.1.2.d.6.c) requires verification that each DG's automatic trips, except engine overspeed and generator differential, are automatically bypassed upon loss of voltage on the shutdown board and/or safety injection actuation signal. ITS SR 3.8.1.13 requires a similar verification, but instead of specifying the DG automatic trips that are not bypassed, the Surveillance refers to the trips that are bypassed as "noncritical." This changes the CTS by moving the detail of the specific DG trips that are not bypassed to the SQN UFSAR.

The removal of these details related to system design from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS retains the requirement to verify that the noncritical DG trips are bypassed on a loss of voltage signal concurrent with a safety injection signal. This change is acceptable because the UFSAR contains a complete listing of the DG electrical and mechanical trips and indicates the trips that are required whenever the DGs are required and the trips that are only required during the exercise mode of operation. In addition, SQN procedures periodically verify the capability of the DG trip relays and associated instrumentation to actuate a DG trip. The removed requirements will be adequately controlled in the UFSAR as any changes to the UFSAR are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change, because information relating to system design is being removed from the Technical Specifications.

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LA06 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.8.1.1.2.g.1 requires verification of each DG's capability to reject a load of greater than or equal to 600 kW while maintaining voltage and frequency within specified ranges. ITS SR 3.8.1.9 requires a similar verification, but does not specify the value of the single largest post-accident load to reject. This changes the CTS by moving the detail of the single largest load to the ITS Bases.

The removal of these details related to system design from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS retains the requirement to verify that each DG is capable of maintaining voltage and frequency within specified ranges upon reject of the single largest post-accident load. The removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change, because information relating to system design is being removed from the Technical Specifications.

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L01 CTS 3.8.1.1 ACTION a provides actions for one inoperable offsite circuit and allows 72 hours to restore the inoperable offsite circuit to OPERABLE status before requiring the unit to be shut down and cooled down. ~~CTS 3.8.1.1 ACTION b provides actions for one or both DGs in a train inoperable and allows 7 days to restore the inoperable DG(s) to OPERABLE status before requiring the unit to be shut down and cooled down.~~ CTS 3.8.1.1 ACTION c provides actions for one inoperable offsite circuit and one inoperable DG and allows 12 hours to restore at least one of the inoperable AC sources to OPERABLE status before requiring the unit to be shut down and cooled down. ~~CTS 3.8.1.1 ACTION d provides actions for two inoperable offsite circuits and allows 24 hours to restore at least one of the inoperable offsite circuits to OPERABLE status before requiring the unit to be shut down. CTS 3.8.1.1 ACTION e provides actions for one or two inoperable DGs in both trains and allows 2 hours to restore the inoperable DG(s) in one train to OPERABLE status before requiring the unit to be shut down and cooled down. CTS 3.8.1.1 ACTION f states LCO 3.0.4.b is not applicable to DGs. The ITS ACTIONS are modified by a Note stating LCO 3.0.4.b is not applicable to DGs.~~ ITS 3.8.1 ACTION A provides actions for one inoperable offsite circuit for reasons other than Condition C, and allows 72 hours to restore the inoperable offsite power source to OPERABLE status. ~~ITS 3.8.1 ACTION B provides actions for one inoperable associated unit's DG or both DGs in one train inoperable, and allows 7 days to restore the inoperable DG(s) to OPERABLE status.~~ ITS 3.8.1 ACTION C provides actions for one offsite circuit inoperable solely due to an inoperable offsite power source to an opposite unit's 6.9 kV Shutdown Board, and ~~requires declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours. Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the offsite circuit cannot be~~

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requires: 1) performance of ITS SR 3.8.1.1 for the OPERABLE offsite circuit in 1 hour and once per 8 hours thereafter, 2) declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours, and 3) restoration of the offsite circuit to OPERABLE status in 7 days.

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~~restored to an OPERABLE status. ITS 3.8.1 ACTION D requires declaration that the affected required feature(s) with no OPERABLE DG are inoperable when its redundant required feature is inoperable in 4 hours. Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the DG cannot be restored to an OPERABLE status. ITS 3.8.1 ACTION E requires declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 12 hours. Otherwise, one offsite circuit is required to be restored to an OPERABLE status in 24 hours.~~ ITS 3.8.1 ACTION ~~F~~ E provides actions for one associated unit's offsite circuit inoperable concurrent with one associated unit's DG inoperable, and allows 12 hours to restore one of the inoperable AC sources to OPERABLE status. For the condition of one offsite circuit inoperable solely due to an inoperable power source to an opposite unit's 6.9 kV Shutdown Board concurrent with an inoperable DG (similar to CTS 3.8.1.1 Action c), ITS 3.8.1 Conditions B and C would be entered concurrently. ITS 3.8.1 ACTIONS B and C require, in part, restoration of the inoperable AC sources (circuit and DG) to an OPERABLE status in 7 days. This changes the CTS by providing a new ITS 3.8.1 ACTION C to allow 7 days to restore an inoperable offsite circuit to an OPERABLE status, if the offsite circuit is inoperable solely due to an inoperable power source to an opposite unit's Shutdown Board (e.g., for Unit 1 an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B is inoperable). ~~ITS ACTION G requires declaring the required feature(s) on the opposite unit's 6.9 kV Shutdown Board with no offsite power available inoperable in 7 days. ITS~~

~~more Train B DGs inoperable and allows 2 hours to restore one Train of DGs to OPERABLE status. ITS 3.8.1 ACTION K requires the unit to be shut down and cooled down if a Required Action and associated Completion Time of Condition A, B, E, F, I, or J is not met. These changes to the CTS provide separate ACTIONS to declare the required features powered from the opposite unit's Class 1E AC Electrical Power Distribution System inoperable as the remedial measures for the inoperable AC sources.~~

The purpose of the CTS 3.8.1.1 ACTIONS is to limit the time the unit can remain operating with different combinations of inoperable offsite circuits and DGs. The onsite Class 1E AC Electrical Distribution System supplies electrical power to two power trains shared between the two units. The core cooling and containment cooling system loads (e.g., Safety Injection (SI) pumps, Auxiliary Feedwater (AFW) pumps, Residual Heat Removal (RHR) pumps, Centrifugal Charging pumps, Containment Spray pumps, and Air Return System (ARS) fans) are unitized to the respective unit's 6.9 kV Shutdown Boards. However, some safety-related systems (e.g., Essential Raw Cooling Water (ERCW), Component Cooling (CCS), Emergency Gas Treatment (EGTS), Auxiliary Building Gas Treatment, (ABGTS), Control Room Emergency Ventilation (CREVs), and Control Room HVAC (CRACS)) are shared between the units. The AC sources for the shared loads are distributed across both unit's shutdown boards. Therefore, two qualified offsite circuits and four DGs capable of supplying the onsite Class 1E AC Electrical Distribution System are required to be OPERABLE. However, the impacts of an inoperable offsite power source or DG on an opposite unit's 6.9 kV Shutdown Board differ from the impacts of an inoperable offsite power source or DG on an associated unit's 6.9 kV Shutdown Board, due to the loads powered from the respective board.

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For example, with SQN Unit 1 in MODES 1, 2, 3, and 4, 6.9 kV Shutdown Boards 1A-A and 1B-B, and the associated offsite power sources and DGs are required to be OPERABLE to provide electrical power to the ESF systems powered from those boards. Additionally, 6.9 kV Shutdown Boards 2A-A and 2B-B and associated offsite power sources and DGs are required to be OPERABLE to provide electrical power to any required shared components required for Unit 1. If it is necessary to de-energize 6.9 kV Shutdown Board 2A-A or 2B-B, the redundant shared systems can be aligned prior to de-energizing the shutdown board to ensure no loss of safety function will occur. Upon removing the shutdown board from service, the applicable Conditions and Required Actions for the affected shared system LCOs will be entered and tracked and either the offsite power source or the DG is required to be restored to an OPERABLE status in 7 days.

, and restoration of the offsite circuit to OPERABLE status in 7 days

In

, and restoration of the DG to OPERABLE status in 7 days

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In the event of an unplanned loss of an offsite power source to an opposite unit's 6.9 kV Shutdown Board, the proposed actions require declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours. ~~Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the offsite power source cannot be restored to an OPERABLE status. Similarly, in~~ the event of an unplanned loss of a DG ~~to an opposite unit 6.9 kV Shutdown Board~~, the proposed actions require declaration that the affected required feature(s) with no OPERABLE DG are inoperable when its redundant required feature is inoperable in 4 hours. ~~Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the DG cannot be restored to an OPERABLE status.~~ In both cases, the ACTIONS require performance of SR 3.8.1.1 for the required OPERABLE offsite circuit(s) within 1 hour and once per 8 hours thereafter.

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ITS 3.8.1 ACTION G is entered and the unit is required to be shut down to MODE 3 in 6 hours and MODE 5 in 36 hours.

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offsite circuit

The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. These changes are acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation, while providing time to repair inoperable features. If the necessary repairs cannot be made within the established Completion Time, ~~the associated required features are declared inoperable and the applicable Conditions and Required Actions for the affected shared system LCOs are entered and tracked~~. This change is acceptable because the provided ACTIONS effect restoration of the opposite unit's ~~AC sources~~ commensurate with the importance of maintaining ~~these AC sources~~ capable of supporting the associated unit's required feature(s). This change is designated as less restrictive, because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L02 *(Category 4 – Relaxation of Required Action)* CTS 3.8.1.1 ACTION b requires with DG set(s) 1A-A and/or 2A-A or 1B-B and/or 2B-B inoperable, determination that OPERABLE DGs are not inoperable due to common cause failure or through performance of CTS 4.8.1.1.2.a.4. This ACTION is modified by Note #, requiring completion of the required action once the ACTION is entered. ITS 3.8.1

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ACTION B requires with ~~an associated unit's DG inoperable (or with both~~ DGs in a train inoperable~~)~~, determination that OPERABLE DGs are not inoperable due to common cause failure or through performance of SR 3.8.1.2. However, ITS does not specify completion of the ACTIONS if the Condition is exited. This changes the CTS by removing a requirement to complete the ACTIONS once the ACTION is entered.

The purpose of CTS 3.8.1.1 ACTION b is to provide compensatory measures to be taken in response to inoperable DG set(s), including demonstration that the OPERABLE DGs are not inoperable. The Note requiring completion of the actions to verify the remaining DGs are OPERABLE once the ACTION is entered was added to the CTS with License Amendments 205 (Unit 1) and 195 (Unit 2), dated June 29, 1995 (ADAMS Accession No. ML013320017). TVA license amendment request TS 94-19, submitted on April 6, 1995, stated that the addition of this Note was being made to align with the requirements contained in NUREG-1431, LCO 3.8.1. On April 7, 1995, NUREG-1431, Rev. 1 was issued. The Note modifying LCO 3.8.1 ACTION B that required completion of Required Actions B.3.1 and B.3.2 (demonstration of DG OPERABILITY) was removed from NUREG-1431 in Revision 1. The requirement to complete the actions to demonstrate the OPERABLE DGs are not inoperable is an exception to ITS LCO 3.0.2 (CTS LCO 3.0.2). Completing the ACTIONS to verify the OPERABILITY of the remaining OPERABLE DGs is not required to restore compliance with the LCO. This change is acceptable because completion of the ACTIONS to evaluate the possibility of a DG common cause failure will be tracked as an item in the corrective action program. This change is designated as less restrictive, because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L03 *(Category 4 – Relaxation of Required Action)* CTS 3.8.1.1 ACTION b provides actions for one or both DGs in a train inoperable. ACTION b is modified by Note * stating that no more than one DG may be made simultaneously inoperable on a pre-planned basis for maintenance, modifications, or surveillance testing. ITS SR 3.8.1.3 verifies each DG can be started, synchronized, loaded, and operated for at least 60 minutes. SR 3.8.1.3 is modified by Note 3 stating the Surveillance shall be conducted on only one DG at a time. This changes the CTS by deleting the restriction for not making more than one DG simultaneously inoperable on a pre-planned basis, with the exception of the performance of SR 3.8.1.3.

The purpose of CTS 3.8.1.1 ACTION b is to provide required actions for one or both DGs in a train inoperable. The purpose of Note * is to ensure pre-planned activities that may result in an inoperable DG (i.e., maintenance, modifications, or surveillance testing) are not performed on both DGs in a train at the same time. The proposed required actions do not include the restriction for limiting pre-planned activities to one DG at a time. The control of pre-planned maintenance, modifications, or surveillance testing is an issue for procedures and scheduling. This change is designated as less restrictive, because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L04 *(Category 3 – Relaxation of Completion Time)* CTS 3.8.1.1 ACTION b requires, in part, with one or both DG(s) in a train inoperable to demonstrate the

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OPERABILITY of the remaining DGs by performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours. CTS 3.8.1.1 ACTION c requires, in part, with one offsite circuit and one DG inoperable to demonstrate the OPERABILITY of the remaining DGs by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours. ITS 3.8.1 ACTION B requires with one or both DG(s) in a train inoperable to perform SR 3.8.1.2 for OPERABLE DGs within 24 hours. This changes the CTS by extending the time allowed to demonstrate the OPERABILITY of the OPERABLE DGs with one offsite circuit and one DG inoperable from 8 hours to 24 hours.

The purpose of the CTS 3.8.1.1 ACTIONS b and c is to ensure that the OPERABLE DGs are not inoperable as a result of a similar, yet undetected, failure (i.e., due to a common mode failure). CTS 3.0.1 states that upon failure to meet an LCO, the associated ACTION requirements shall be met. In the instance of one offsite circuit and one DG inoperable, the condition of one inoperable DG also exists. Therefore, in addition to meeting the requirements of CTS 3.8.1.1 ACTION c, the requirements of CTS 3.8.1.1 ACTION b are required to be met. However, this results in conflicting time requirements for performing CTS 4.8.1.1.2.a.4 on the OPERABLE DGs. A 24 hour Completion Time for performing DG common mode failure checks is consistent with the guidance provided in Generic Letter 84-15. This change is acceptable, since the vast majority of DG start tests demonstrate that the DG is OPERABLE. This change is designated as less restrictive, because additional time is allowed to demonstrate the OPERABILITY of the OPERABLE DGs for the condition of one offsite circuit and one DG inoperable under the ITS than under the CTS.

L05 *(Category 4 – Relaxation of Required Action)* CTS 3.8.1.1 ACTION d states, in part, with two offsite circuits inoperable demonstrate the OPERABILITY of the DGs by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours, unless
VKG026 the DGs are already operating. CTS 4.8.1.1.2.a.4 requires verification that each
D DG starts and achieves voltage and frequency within established ranges within 10 seconds. ITS 3.8.1 ACTION ~~E~~ does not contain this requirement. This changes the CTS by deleting the requirement to test each DG when two offsite circuits are inoperable.

The purpose of the CTS 4.8.1.1.2.a.4 requirement in CTS 3.8.1.1 ACTION c is to ensure that the DGs are OPERABLE in the case of a loss of offsite power. Since the DGs are tested on monthly basis, there is no reason to suspect that they would not perform their intended safety function. Furthermore, the inoperability of two offsite circuits does not affect the OPERABILITY of the DGs, since the DGs are independent of the offsite circuits. Therefore, there is no need to subject the DGs to additional testing. This change is designated as less restrictive because the CTS requirement to perform testing on the DGs when both offsite circuits are inoperable is not being retained in the ITS.

L06 *(Category 8 – Deletion of Surveillance Requirement Shutdown Performance Requirements)* CTS 4.8.1.1.1.b requires the demonstration of a manual and automatic transfer of the power supply to each 6.9 kV Unit Board from the normal to alternate once per 18 months. Note # specifies that the Surveillance shall not be performed on the associated unit's 6.9 kV Unit Boards in MODES 1 and 2. This test has been incorporated in ITS SR 3.8.1.8. ITS SR 3.8.1.8 includes a

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Note that states the Surveillance shall not normally be performed in MODES 1 and 2. The Note also states that the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. This changes the CTS by allowing the test to be performed in MODES 1 and 2 as long as the associated assessment is performed.

The purpose of CTS 4.8.1.1.1.b is to confirm OPERABILITY of the offsite circuits. This change is acceptable because performance of the Surveillance will continue to be limited to conditions where an assessment has determined that plant safety will either be maintained or enhanced. Control of the plant conditions appropriate to perform the test is an issue for procedures and scheduling, and has been determined by the NRC Staff to be unnecessary as a Technical Specification restriction. As indicated in Generic Letter 91-04, allowing this control is consistent with the vast majority of other Technical Specification Surveillances that do not dictate plant conditions for the Surveillance. This change is designated as less restrictive because the Surveillance may be performed at plant conditions other than shutdown.

L07 *(Category 7 – Relaxation of Surveillance Frequency)* CTS 4.8.1.1.2.a requires, in part, performance of the following Surveillances for each DG to be demonstrated OPERABLE at a Frequency of at least once per 31 days on a STAGGERED TEST BASIS: 1. Verification of the fuel level in the engine-mounted fuel tanks; 3. Verification of the fuel transfer pump capability to transfer fuel from the storage system to the engine-mounted fuel tanks; 4. Verification that each DG starts from ambient conditions and achieves voltage and frequency within the specified values; and 5. Verification that each DG synchronizes and loads the specified amount of kilowatts and operates for at least 60 minutes. ITS SR 3.8.1.2, SR 3.8.1.3, SR 3.8.1.4, and SR 3.8.1.6 require similar verifications of each DG at a Frequency of "in accordance with the Surveillance Frequency Control Program." The discussion of moving the Surveillance Frequency to the Surveillance Frequency Control Program as discussed in DOC LA02. This changes the CTS by deleting the requirement to test on a STAGGERED TEST BASIS.

The purpose of CTS 4.8.1.1.2.a is to ensure each DG is OPERABLE and available to mitigate design basis accidents and transients and maintain the unit in a safe shutdown condition. CTS 1.35, STAGGERED TEST BASIS definition, defines a testing schedule for n systems, subsystems, or trains by dividing the specified test interval into n equal subintervals, with the testing of one system, subsystem, or train occurring at the beginning of each subinterval. In other words, a Surveillance Requirement to verify the OPERABILITY of each train in a two train system at a Frequency of 31 days on a STAGGERED TEST BASIS would result in each train being verified OPERABLE every 31 days, with one train being verified in alternating 15.5 day subintervals. Removal of the STAGGERED TEST BASIS scheduling requirement does not change the requirement to verify the OPERABLILITY of each train every 31 days, but rather removes the requirement to schedule testing every 15.5 days. The new Surveillance Frequency will not change the testing Frequency of each train. The intent of the current staggered testing requirement is to evenly distribute testing of each DG across the system. However, as each DG is independent, no increase in

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reliability or safety is achieved by evenly staggering the testing subintervals. This change is acceptable, because removal of the staggered testing requirement will increase operational and scheduling flexibility without decreasing safety or system reliability. This change is designated as less restrictive, because the intervals between performances of the Surveillances for the DGs can be larger or smaller under the ITS than under the CTS.

L08 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.8.1.1.2.a.4 requires verification that each DG starts and achieves voltage and frequency within the specified limits. Additionally, the Surveillance requires the DG to be started for the test by using one of the following signals with startup on each signal verified at least once per 124 days: manual, simulated loss of offsite power by itself, and an ESF actuation test signal by itself. ITS SR 3.8.1.2 requires a similar test, but does not include the requirement to vary the start signal between manual, loss of offsite power, and ESF actuation. This changes the CTS by deleting the requirement to use different start signals in the performance of the DG start Surveillance.

The purpose of CTS 4.8.1.1.2.a.4 is to verify the capability of each DG to start and achieve voltage and frequency with the specified limits. This change is acceptable because the deleted requirement is not necessary to verify that the equipment used to meet the LCO can perform its required functions. Equipment cannot discriminate between the origin of the start signal. Therefore, the results of the test are unaffected by the type of signal used to initiate the test. Each DG will continue to be tested in a manner to ensure the safety analyses assumption will be met. This change is designated as less restrictive because a Surveillance which is required in the CTS will not be required in the ITS.

L09 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.8.1.1.2.a.5 requires verification that each DG can be started and is operated within a specified loading range for at least 60 minutes. CTS 4.8.1.1.2.g.3 requires verification that each DG can be started and is operated within specified loading ranges over a duration of at least 24 hours. CTS 4.8.1.1.2.g.4 requires verification that each DG can be started within 10 seconds following loading within a specified range for at least 2 hours. ITS SR 3.8.1.3, SR 3.8.1.14 and SR 3.8.1.15 require similar tests. ITS SR 3.8.1.3 is modified by a Note stating that momentary transients outside the load range do not invalidate the test. ITS SR 3.8.1.14 is modified by a Note stating that momentary transients outside the load and power factor ranges do not invalidate the test. ITS SR 3.8.1.15 is modified by a Note stating that the restart is to follow operation for at least 2 hours at a specified loading, and that momentary transients outside the load range do not invalidate the test. This changes the CTS by adding explicit Surveillance Notes to allow momentary transients outside the load range and/or power factor range that do not invalidate the test.

The purpose of CTS 4.8.1.1.2.a.5 and 4.8.1.1.2.g.3 is to verify the capability of each DG to operate at a loading that approximates the loading that would occur during accident conditions while avoiding routine overloading. The purpose of CTS 4.8.1.1.2.g.4 is to verify the capability of each DG to restart following operation where the DG has achieved hot conditions. This change is acceptable because it has been determined that the relaxed Surveillance Requirement

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acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. The Notes modifying these Surveillances acknowledge that during performance of these Surveillances changes in bus loads may occur that result in DG operation outside of the specified loading and/or power factor ranges. These momentary transients are not cause for invalidating the Surveillances, as successful performance of the Surveillances is not dependent on maintaining DG operation within the loading and power factor ranges for the entire specified duration to demonstrate DG OPERABILITY. This change is acceptable since each DG will continue to be tested as close as practicable to design conditions. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L10 *(Category 7 – Relaxation of Surveillance Frequency)* CTS 4.8.1.1.2.b requires the removal of accumulated water from the engine-mounted fuel tanks at least once per 31 days and "after each operation of the diesel where the period of operation was greater than or equal to 1 hour." ITS SR 3.8.1.5 requires the same Surveillance to be performed at a Frequency of "in accordance with the Surveillance Frequency Control Program." The discussion of moving the Surveillance Frequency to the Surveillance Frequency Control Program as discussed in DOC LA02. This changes the CTS by deleting the conditional requirement to test for accumulated water after each operation of the DG for greater than or equal to one hour.

The purpose of CTS 4.8.1.1.2.b is to provide a degree of assurance that the engine-mounted fuel tanks are free of accumulated water each time the associated DG is operated for an hour or more. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. Water condensation within the engine-mounted fuel tanks is a time dependent process, not a process dependent on the transfer of fuel oil during DG operation. Since it is the expectation that the DG will not be operated except for the nominal monthly OPERABILITY tests (based on experience), and that the fuel oil storage tanks are also periodically checked for water, no increased Frequency is necessary. This change is designated as less restrictive because the explicit requirement to remove accumulated water in the engine-mounted fuel tanks after a DG run of greater than or equal to one hour has been deleted.

L11 *(Category 8 – Deletion of Surveillance Requirement Shutdown Performance Requirements)* CTS 4.8.1.1.2.d contains requirements to perform various tests "during shutdown." These tests have been incorporated into ITS SR 3.8.1.11, SR 3.8.1.12, SR 3.8.1.13, SR 3.8.1.16, and SR 3.8.1.18. ITS SR 3.8.1.11, SR 3.8.1.16, and SR 3.8.1.18 include a Note stating the Surveillance shall not normally be performed for the associated unit's DGs in MODE 1, 2, 3, or 4. ITS SR 3.8.1.12 and SR 3.8.1.13 include a Note stating the Surveillance shall not normally be performed for the associated unit's DGs in MODE 1 or 2. The Notes also state that portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. It further states that credit may be taken for unplanned events that satisfy this SR. This changes the CTS by deleting the requirement to perform the Surveillances during shutdown and replacing the shutdown

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requirement with a Note stating when the Surveillances are not normally performed, but allowing the test to be performed in these MODES as long as the associated assessment is performed or provided that an unplanned event satisfies the requirements of the Surveillance.

The purpose of CTS 4.8.1.1.2.d is to confirm the OPERABILITY of each DG. This change is acceptable, because the Surveillances, as modified by the revised Note, have been evaluated to ensure they provide an acceptable level of equipment reliability. The proposed Surveillances do not include the restriction on unit conditions at all times. It allows the unit to perform the Surveillances to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced and it allows the unit to credit an unplanned event for satisfying the Surveillances, provided the necessary data is obtained. Furthermore, the proposed Surveillance Note still restricts planned performance of the Surveillances to MODES other than MODE 1 or 2, or MODE 1, 2, 3, or 4, as applicable. The control of the unit conditions appropriate to perform the tests is an issue for procedures and scheduling, and has been determined by the NRC Staff to be unnecessary as a Technical Specification restriction. As indicated in Generic Letter 91-04, allowing this control is consistent with the vast majority of other Technical Specification Surveillances that do not dictate unit conditions for the Surveillance. This change is designated as less restrictive, because the Surveillances may be performed during plant conditions other than shutdown.

L12 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.8.1.1.2.d.4 requires verification of DG performance following a "simulated" loss of offsite power. CTS 4.8.1.1.2.d.5 requires verification of DG performance following an ESF actuation "test" signal. CTS 4.8.1.1.2.d.6 requires verification of DG performance following a "simulated" loss of offsite power in conjunction with an ESF actuation "test" signal. CTS 4.8.1.1.2.d.6.c) requires verification that all automatic DG trips, except engine overspeed and generator differential, are automatically bypassed upon loss of voltage on the shutdown board and/or safety injection actuation signal. ITS SR 3.8.1.11, SR 3.8.1.12, SR 3.8.1.13, and SR 3.8.1.18 specify that the signal may be from either an "actual or simulated." This changes the CTS by explicitly allowing the use of either an actual or simulated signal for the test.

The purpose of CTS 4.8.1.1.2.d.4, CTS 4.8.1.1.2.d.5, CTS 4.8.1.1.2.d.6, and CTS 4.8.1.1.2.d.6.c) is to ensure that the AC Sources operate correctly upon receipt of an actuation signal. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Equipment cannot discriminate between an "actual," "simulated," or "test" signal and, therefore, the results of the testing are unaffected by the type of signal used to initiate the test. This change allows taking credit for unplanned actuation if sufficient information is collected to satisfy the Surveillance test requirements. The change also allows a simulated signal to be used, if necessary. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

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L13 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.8.1.1.2.d.8 requires verification that the auto-connected loads to each DG do not exceed 4400 kW. ITS 3.8.1 does not require the verification of this loading limit to ensure OPERABILITY of the DGs. This changes the CTS by deleting the Surveillance Requirement.

This change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the equipment used to meet the LCO can perform its required functions. Thus, appropriate equipment continues to be tested in a manner and at a frequency necessary to give confidence that the equipment can perform its assumed safety function. Each DG will continue to be tested in a manner to ensure the safety analyses assumption will be met. Changes to the auto-connected loads will be controlled and evaluated by the design change control process to ensure the DG is not overloaded. This change is designated as less restrictive because a Surveillance which is required in the CTS will not be required in the ITS.

L14 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.8.1.1.2.e requires verification that the DGs achieve the specified voltage and frequency within 10 seconds when started simultaneously at least once per 10 years or after any modifications which could affect DG interdependence. ITS 3.8.1 does not include the requirement to test simultaneous start of the DGs after any modifications which could affect DG interdependence. This changes the CTS by deleting the requirement to simultaneously start the DGs after any modifications which could affect DG interdependence.

This change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the equipment used to meet the LCO is consistent with the safety analyses. Thus, appropriate equipment continues to be tested in a manner and at a Frequency necessary to give confidence that the assumptions in the safety analyses are protected. Following repair, maintenance, modification, or replacement of a component that may affect OPERABILITY, post maintenance testing is required to demonstrate OPERABILITY of the system or component. This is described in the Bases of ITS SR 3.0.1 and required under SR 3.0.1. The OPERABILITY requirements of the DGs are described in the Bases for Specification 3.8.1. In addition, the requirements of 10 CFR 50, Appendix B, Section XI (Test Control) provide adequate controls for test programs to ensure that testing incorporates applicable acceptance criteria. Compliance with 10 CFR 50 is required under the unit's operating license. As a result, post maintenance testing will continue to be performed and an explicit requirement in the Technical Specifications is not necessary. This change is designated as less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

L15 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.8.1.1.2.g.1 requires verification of the generator capability to reject a load greater than or equal to the specified value while maintaining voltage within ± 10 percent of the initial pretest voltage and frequency at 60 ± 1.2 Hz. Additionally, CTS 4.8.1.1.2.g.1 requires that at no time shall the transient voltage exceed 8276 V. ITS SR 3.8.1.9 requires verification that following load rejection, frequency is ≤ 66.5 Hz, and within 3 seconds following load rejection voltage is ≥

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6800 V and ≤ 7260 V and frequency is ≥ 58.8 Hz and ≤ 61.2 Hz. This changes the CTS in that the maximum voltage limit for the first 3 seconds following load rejection is deleted and a higher frequency limit for the first 3 seconds following load rejection is added. Reduction of the steady state voltage range more than 3 seconds after the load rejection is described in DOC M05.

The purpose of CTS 4.8.1.1.2.g.1 is to ensure the proper operation of the DG governor and load control circuits. These changes are acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. These changes to the CTS allow the transient frequency and voltage to exceed the current limit for the first 3 seconds following load rejection, but provide a time limit for the stabilization of voltage and frequency. Consistent with Regulatory Guide 1.9, the load rejection test is acceptable if the diesel speed does not exceed 75% of the difference between nominal speed and the overspeed trip setpoint, or 15% above nominal speed, whichever is lower. This corresponds to 66.5 Hz, which is the nominal speed plus 75% of the difference between nominal speed and the overspeed trip setpoint. The time to reach steady state voltage is also consistent with the recommendation of Regulatory Guide 1.9 for response during load sequence intervals. The 3 seconds specified is equal to approximately 60% of the 5 second load sequence interval associated with sequencing of the largest load. This change is acceptable since it is consistent with the recommendations of Regulatory Guide 1.9. This change is designated as less restrictive, because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L16 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.8.1.1.2.g.2 requires verification that the DG does not trip and generator voltage does not exceed 8880 V during and after a load rejection of 4400 kW. ITS SR 3.8.1.10 requires verification that the DG does not trip and voltage is maintained ≤ 8880 V during and following a load rejection of ≥ 3960 kW and ≤ 4400 kW. This changes the CTS by allowing the DGs to be tested at a lower load during the Surveillance.

The purpose of CTS 4.8.1.1.2.g.2 is to ensure the proper operation of the DG following a full load rejection test. This change allows the DGs to be tested at a lower load during the Surveillance. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. The proposed minimum value is consistent with Regulatory Guide 1.9, Regulatory Position C.2.2.8, which recommends a load range of 90% to 100% for the full load rejection test. The proposed values are 90% to 100% of the continuous load rating and therefore are consistent with the recommendations of Regulatory Guide 1.9. The values will preclude routine overloading of the DG and the lower value will still ensure the DG is at operating temperatures and that the maximum loads assumed in the safety analyses can be supported. This change is designated as less restrictive, because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

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L17 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.8.1.1.2.g.3 requires verification that each DG can operate for at least 24 hours, with loading at the 2 hour rating during the first 2 hours to 2.25 hours, and at a load equivalent of the continuous duty rating during the remaining hours of the test. The CTS further requires that voltage and frequency be ≥ 6800 volts and ≥ 58.8 Hz within 10 seconds after the start signal, and steady state voltage and frequency shall be maintained ≥ 6800 V and ≤ 7260 V and ≥ 58.8 Hz and ≤ 61.2 Hz during this test. ITS SR 3.8.1.14 requires a similar test, however it specifies the initial loading at the 2 hour rating for ≥ 2 hours, followed by loading at the continuous duty rating for the remaining hours of the test. This changes the CTS by providing a less specific duration for the initial loading of the DG at the 2 hour rating and removes the voltage and frequency limits from the Surveillance.

The purpose of CTS 4.8.1.1.2.g.3 is to verify the capability of each DG to start and run continuously at full load for at least 24 hours. Operation of the DG loaded at the 2 hour rating for greater than or equal to 2 hours will continue to avoid DG overloading that could lead to more frequent teardown inspections of the DG. DG operation with voltage and frequency within the specified limits will continue to be verified during performance of ITS SR 3.8.1.2, SR 3.8.1.7, SR 3.8.1.11, SR 3.8.1.12, SR 3.8.1.15, SR 3.8.1.18 and SR 3.8.1.19. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. The Surveillance will continue to verify that the DG is capable of running continuously at full load for an interval of not less than 24 hours, ≥ 2 hours of which is at the 2 hour rating, consistent with Regulatory Guide 1.108, Regulatory Position C.2.a.(3). This change is designated as less restrictive, because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L18 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.8.1.1.2.g.4 requires verification that each DG can be started within 10 seconds following loading within a specified range and continue to operate for at least 5 minutes. ITS SR 3.8.1.15 requires a similar test, but does not require the DG continue to operate for at least 5 minutes following the hot restart. This changes the CTS by removing the requirement that the DG operate for at least 5 minutes following a hot restart test.

The purpose of CTS 4.8.1.1.2.g.4 is to verify the capability of each DG to restart following operation where the DG has achieved hot conditions. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. The Surveillance will continue to verify that the DG is capable of restarting and achieving voltage and frequency within acceptable limits and time, consistent with Regulatory Guide 1.108, Regulatory Position C.2.a.(5). This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

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L19 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.8.1.1.2.g.4 requires demonstration of a DG hot restart and verification following energization that steady state voltage and frequency are maintained ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz during this test. ITS SR 3.8.1.15 requires demonstration of a DG hot restart and requires verification that within 10 seconds, voltage ≥ 6800 V and frequency ≥ 58.8 Hz, and steady state voltage ≥ 6800 V and ≤ 7260 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz. This changes the CTS by specifying a minimum voltage and frequency limit to be achieved within 10 seconds instead of a voltage and frequency range.

The purpose of CTS 4.8.1.1.2.g.4 is to test the ability of each DG to restart on an accident signal under hot conditions and achieve the appropriate voltage and frequency. This changes the CTS by specifying a minimum voltage and frequency limit to be achieved within 10 seconds instead of a voltage and frequency range. This effectively allows the upper voltage and frequency limits to be exceeded during DG acceleration and stabilization. As stated above, the proposed Surveillance will require the establishment of the minimum frequency (58.8 Hz) and voltage (6800 V) within the given time frame. The accident analyses require that the DGs be capable of being loaded within 10 seconds. This can be accomplished at 58.8 Hz and 6800 V. While the upper level requirement regarding the frequency and voltage acceptance criterion is being eliminated, the requirement to establish a steady state voltage and frequency has been retained. Verification that the minimum voltage and frequency limits are met within the proper time is sufficient to ensure the DG can perform its design function. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L20 *(Category 3 – Relaxation of Completion Time)* CTS 3.0.5 allows a system, subsystem, train, component, or device to be considered OPERABLE with an inoperable emergency or normal power source provided its corresponding normal or emergency power source is OPERABLE and its redundant system(s), subsystem(s), train(s), component(s), and device(s) are OPERABLE. CTS 3.0.5 requires a unit shut down to start within two hours with these requirements not met. CTS 3.0.5 also provides an explicit time period to be in HOT STANDBY (MODE 3), HOT SHUTDOWN (MODE 4), and COLD SHUTDOWN (MODE 5). ITS 3.8.1 ACTION A (one associated unit offsite source inoperable) and ACTION C (one opposite unit offsite source inoperable) require ~~requires~~ the declaration of required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable. The Completion Time allowed by Required Actions A.2 and C.2 ~~the Required Action A.2~~ is 24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s). ITS 3.8.1 ACTION B (one ~~associated unit DG~~ or both DGs in a train inoperable) requires the declaration of required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable. The Completion Time allowed by the Required Action B.2 is 4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s). ITS 3.8.1 ACTION ~~E~~ D (two offsite circuits inoperable) requires the declaration of required feature(s) inoperable when its redundant required feature(s) is inoperable. The Completion Time allowed by the Required Action ~~E~~D.1 is 12 hours from discovery of Condition ~~E~~ D concurrent with inoperability of redundant required features. This changes the CTS by allowing more time to restore inoperable equipment and

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ITS 3.8.1, AC SOURCES - OPERATING

replaces the explicit times to be in MODE 3, MODE 4, and MODE 5 with a requirement to declare the affected features inoperable (and thus to take the ACTIONS required by the individual system LCO, including possible shut down of the unit).

This change is acceptable because the Completion Time is consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the allowed Completion Time. This change allows more time to restore inoperable equipment when required AC Sources are inoperable concurrent with inoperabilities of redundant required features and deletes the explicit times to be in MODE 3, MODE 4, and MODE 5. By declaring the affected supported equipment inoperable, and as a result, taking the Technical Specifications ACTIONS of the affected supported equipment, unit operation is maintained within the bounds of the Technical Specifications and approved ACTIONS. Since the AC Sources support the OPERABILITY of the affected equipment, it is appropriate that the proper action, in this condition, would be to declare that affected supported equipment inoperable. CTS 3.0.5 is overly restrictive, in that if the associated supported equipment were inoperable for other reasons and the redundant equipment was also inoperable, a restoration time is sometimes provided, in other CTS sections. The 24 hour Completion Time when one associated unit offsite circuit is inoperable is acceptable because: a) the redundant counterpart to the inoperable required feature is still OPERABLE although single failure protection may have been lost; b) the capacity and capability of the remaining AC Sources is still available; c) a reasonable time for repairs is provided for restoration before the unit is subjected to transients associated with shut down; and d) the low probability of a DBA occurring during this period. The 12 hour Completion Time when two offsite circuits are inoperable is acceptable because Regulatory Guide 1.93 allows a Completion Time of 24 hours for two offsite circuits inoperable. When a concurrent redundant required function is inoperable, a shorter Completion Time of 12 hours is appropriate. The 4 hour Completion Time with one ~~associated unit~~ DG inoperable takes into account the component OPERABILITY of the redundant counterpart to the inoperable required feature and is considered to be less of a risk than subjecting the unit to transients associated with shut down. Additionally, the 4 hour Completion Time takes into account the capacity and capability of the remaining AC Sources, reasonable time for repairs, and low probability of a DBA occurring during this period. This change is designated as less restrictive because additional time is allowed to restore equipment to OPERABLE status and the change deletes the explicit times to reach MODE 3, MODE 4, and MODE 5. VKG026

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources - Operating

3.8.1.1 LCO 3.8.1 The following AC electrical sources shall be OPERABLE:

3.8.1.1.a a. Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System~~,~~ ; and (1) (2)

3.8.1.1.b b. ~~Two~~ Four diesel generators (DGs) capable of supplying the onsite Class 1E AC Electrical power distribution ~~sub~~system~~(s), and~~ . (1) (2) (1)

~~[c. Automatic load sequencers for Train A and Train B.]~~ (3)

VKG026

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

ACTIONS

S

-----NOTE-----

ACTION f
DOC A03
1. LCO 3.0.4.b is not applicable to DGs.

2. Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when any Condition(s) is entered with no AC power source to any shutdown board resulting in a de-energized shutdown board.

-----

7 10 SII

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION a ACTION c — A. One ~~[required]~~ offsite circuit inoperable for reasons other than Condition C.	A.1 Perform SR 3.8.1.1 for ~~[required]~~ OPERABLE offsite circuit.	1 hour (4) (5) AND Once per 8 hours thereafter
	AND	
DOC L20	A.2 Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable.	24 hours from discovery of no offsite power to ~~one train~~ 6.9 kV Shutdown Board 1A-A or 1B-B concurrent with inoperability of redundant required feature(s) (5)
	AND	

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
ACTION a		A.3	Restore ~~[required]~~ offsite circuit to OPERABLE status.	72 hours	4
ACTIONS b, c, and e	B. ~~One [required] DG inoperable.~~ INSERT 1 ~~1A-A~~	B.1	Perform SR 3.8.1.1 for the ~~[required]~~ offsite circuit~~(s)~~.	1 hour AND Once per 8 hours thereafter	4 VKG026 ~~5~~
		AND			
DOC L20		B.2	Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)	
		AND			
ACTION b		B.3.1	Determine OPERABLE DG~~(s)~~ ~~is~~ are not inoperable due to common cause failure.	~~[~~24~~]~~ hours	4 1
		OR			
ACTION b ACTION c		B.3.2	Perform SR 3.8.1.2 for OPERABLE DG~~(s)~~.	~~[~~24~~]~~ hours	4 1
		AND			
ACTION b		B.4	Restore ~~[required]~~ DG(s) to OPERABLE status.	~~72 hours~~ 7 days	4 1

INSERT 2 5

~~5~~ 4 **INSERT 1**

~~DOC L01~~

~~OR~~

~~DG 1B-B inoperable.~~

~~OR~~

~~DGs 1A-A and 2A-A inoperable.~~

One or more Train A DG(s) inoperable.

OR

One or more Train B DG(s) inoperable.

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~~OR~~

~~DGs 1B-B and 2B-B inoperable.~~

5 **INSERT 2**

DOC L01

C. One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B inoperable.	C.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit.	1 hour AND Once per 8 hours thereafter
	AND	
	C.2 Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable.	24 hours from discovery of no offsite power to 6.9 kV Shutdown Board 2A-A or 2B-B concurrent with inoperability of redundant required feature(s)
	AND	
	C.3 ~~Declare associated required feature(s) inoperable.~~ Restore offsite circuit to OPERABLE status.	7 days

DOC L20

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Insert Page 3.8.1-2a

5

INSERT 2 (Continued)

D. DG 2A-A or 2B-B inoperable.	D.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit(s).	1 hour <u>AND</u> Once per 8 hours thereafter
	<u>AND</u>	
	D.2 Declare required feature(s) supported by the inoperable DG inoperable when its redundant required feature(s) is inoperable.	4 hours from discovery of Condition D concurrent with inoperability of redundant required feature(s)
	<u>AND</u>	
	D.3.1 Determine OPERABLE DGs are not inoperable due to common cause failure.	24 hours
	<u>OR</u>	
	D.3.2 Perform SR 3.8.1.2 for OPERABLE DGs.	24 hours
	<u>AND</u>	
	D.4 Declare associated required feature(s) inoperable.	7 days

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Insert Page 3.8.1-2b

CTS

ACTIONS (continued)

VKG026

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION d DOC L20 ~~C~~ F D. Two ~~[required]~~ offsite circuits inoperable.	~~C~~ F D.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable. AND ACTION d ~~C~~ F D.2 Restore one ~~[required]~~ offsite circuit to OPERABLE status.	12 hours from discovery of Condition ~~C~~ F D concurrent with inoperability of redundant required features 24 hours
ACTION c ~~DOC A03~~ ~~D~~ F E. One ~~[required]~~ offsite circuit inoperable for reasons other than Condition C. AND ACTION c ~~One [required]~~ DG 1A-A or 1B-B inoperable.	~~-------------------NOTE------------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition D F is entered with no AC power source to any train. 6.9 kV Shutdown Board 1A-A or 1B-B ---~~ ACTION c ~~D~~ F E.1 Restore ~~[required]~~ offsite circuit to OPERABLE status. OR ~~D~~ F E.2 Restore ~~[required]~~ DG to OPERABLE status.	12 hours 12 hours
ACTION e ~~E~~ J F. ~~Two [required]~~ One or more Train A DG~~s~~(s) inoperable.	~~E~~ J F.1 Restore one ~~[required]~~ train of DGs to OPERABLE status.	2 hours

~~INSERT 3~~

INSERT 4

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5

~~INSERT 3~~

~~DOC L01~~	G. One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B inoperable. AND DG 1A-A or 1B-B inoperable.	G.1	Declare required feature(s) on associated Unit 2 6.9 kV Shutdown Board inoperable.	7 days	VKG026
~~DOC L01~~	H. One offsite circuit inoperable for reasons other than Condition C. AND DG 2A-A or 2B-B inoperable.	H.1	Declare required feature(s) on associated Unit 2 6.9 kV Shutdown Board inoperable.	7 days	

Insert Page 3.8.1-3a

5 ~~**INSERT 3 (continued)**~~

~~DOC L01~~

I. One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B inoperable. AND DG 2A-A or 2B-B inoperable.	--------------------NOTE------------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition I is entered with no AC power source to 6.9 kV Shutdown Board 2A-A or 2B-B. --- I.1 Restore offsite circuit to OPERABLE status. OR I.2 Restore DG to OPERABLE status.	 7 days 7 days

VKG026

5 **INSERT 4**

ACTION e

AND

One or more Train B DG(s) inoperable.

Insert Page 3.8.1-3b

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~-----REVIEWER'S NOTE----- This Condition may be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads following a loss of offsite power independent of, or coincident with, a Design Basis Event. ------------------------------------~~ ~~F. [One [required] [automatic load sequencer] inoperable.~~	~~F.1 Restore [required] [automatic load sequencer] to OPERABLE status.~~	~~[12] hours]~~ 3
ACTIONS a, b, c, d, e G ~~K~~ ~~G~~. Required Action and associated Completion Time of Condition ~~A, B, C, D~~, E, ~~or~~ ~~[F]~~ not met. A, B, C, D, E, or F ~~F, I,~~ ~~J~~ DOC M01	~~G~~.1 Be in MODE 3. ~~K~~ G AND ~~G~~.2 Be in MODE 5. ~~K~~ G	6 hours 36 hours 3 5
INSERT 5 ~~H. Three or more [required] AC sources inoperable.~~ VKG026	~~H.1 Enter LCO 3.0.3.~~	~~Immediately~~ 5

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.8.1.1 4.8.1.1.1.a SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each ~~[required]~~ offsite circuit.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 4 6 6

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5 **INSERT 5**

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DOC A04	~~L~~ H. Two offsite circuits inoperable. AND One or more Train A DG(s) inoperable. OR One or more Train B DG(s) inoperable.	~~L~~ H.1 Enter LCO 3.0.3.	Immediately
DOC A04	~~M~~ I. One offsite circuit inoperable. AND One or more Train A DG(s) inoperable. AND One or more Train B DG(s) inoperable.	~~M~~ I.1 Enter LCO 3.0.3.	Immediately

Insert Page 3.8.1-4

CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
4.8.1.1.2.a.4 DOC A05 4.8.1.1.2.a.4 Note *	SR 3.8.1.2 -----------------------------NOTES---------------------------- 1. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. [2. A modified DG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. When modified start procedures are not used, the time, voltage, and frequency tolerances of SR 3.8.1.7 must be met.] (4) ---	
4.8.1.1.2.a.4	Verify each DG starts from standby conditions and achieves steady state voltage ≥ ~~[3740]~~ 6800 V and ≤ ~~[4580]~~ 7260 V, and frequency ≥ [58.8] Hz and ≤ [61.2] Hz.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program] (4) (6)

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.8.1.1.2.a.5 4.8.1.1.2.a.5 Note * DOC L09 ACTION b, Note * DOC M02	SR 3.8.1.3	------------------------------NOTES---------------------------- 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow without shutdown a successful performance of SR 3.8.1.2 or SR 3.8.1.7. ---		
4.8.1.1.2.a.5		Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ ~~[4500]~~ 3960 kW and ≤ ~~[5000]~~ 4400 kW.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	6 4 6
3.8.1.1.b.2 4.8.1.1.2.a.1	SR 3.8.1.4	Verify each engine-mounted “day” ~~day~~ tank ~~[and engine mounted tank]~~ contains ≥ ~~[220]~~ 250 gal of fuel oil.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	1 4 6 6

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.8.1.1.2.b	SR 3.8.1.5	Check for and remove accumulated water from each ~~day~~ engine-mounted "day" tank ~~[and engine mounted tank]~~.	~~[[31] days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	1 4 6 6
3.8.1.1.b.4, 4.8.1.1.2.a.3	SR 3.8.1.6	Verify the fuel oil transfer system operates to ~~[automatically]~~ the transfer fuel oil from storage ~~tank[s]~~ system to the ~~day~~ engine-mounted "day" tank s ~~[and engine mounted tank]~~.	~~[[92] days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	6 4 1 6
4.8.1.1.2.a.4 DOC A05	SR 3.8.1.7	-----------------------------NOTE------------------------------ All DG starts may be preceded by an engine prelube period. -- Verify each DG starts from standby condition and achieves: a. In ≤ ~~[~~10~~]~~ seconds, voltage ≥ ~~[3740]~~ 6800 V and frequency ≥ 58.8~~]~~ Hz and b. Steady state voltage ≥ ~~[3740]~~ 6800 V and ≤ ~~[4580]~~ 7260 V, and frequency ≥ ~~[~~58.8~~]~~ Hz and ≤ ~~[~~61.2~~]~~ Hz.	~~[184 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	6 4 6

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
4.8.1.1.1.b DOC L06 SR 3.8.1.8	1. For the 1A, 1B, 1C, and 1D Unit Boards, this -----NOTE----- ~~[This~~ Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. INSERT 6 -----	5 4
4.8.1.1.1.b Note ##	Verify [automatic [and] manual] transfer of the ~~AC~~ power ~~sources from the normal offsite circuit to each alternate [required] offsite circuit~~ supply to each 6.9 kV Unit Board from the normal supply to the alternate supply.	~~[[18] months~~ 6 1 ~~OR~~ In accordance with the Surveillance Frequency Control Program]] 6 4

1 **INSERT 6**

2. Transfer capability is only required to be met for 6.9 kV Unit Boards that require normal and alternate power supplies.

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY	
4.8.1.1.2.g, 4.8.1.1.2.g.1 ~~DOC M04~~ SII	SR 3.8.1.9 For DGs 1A A and 1B B, this ------NOTE~~S~~------ ~~[1. This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.~~		5 4
DOC M04	~~2.~~ If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ ~~[0.9]~~ 0.89. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable.] ------		4
4.8.1.1.2.g.1	Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and:	~~[[18] months~~ ~~OR~~	6
DOC L15	a. Following load rejection, the frequency is ≤ ~~[63]~~ 66.5 Hz,	In accordance with the Surveillance Frequency Control Program]	4
4.8.1.1.2.g.1	b. Within [3] seconds following load rejection, the voltage is ≥ ~~[3740]~~ 6800 V and ≤ ~~[4580]~~ 7260 V, and		4 6
4.8.1.1.2.g.1	c. Within [3] seconds following load rejection, the frequency is ≥ [58.8] Hz and ≤ [61.2] Hz.		4

CTS

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
4.8.1.1.2.g, 4.8.1.1.2.g.2 ~~DOC M04~~ SII SR 3.8.1.10	~~For DGs 1A A and 1B B, this~~ -----NOTE~~S~~----- ~~[~~ 1. ~~This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.~~ DOC M04 ~~2.~~ If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.89 ~~[0.9]~~. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. ~~]~~ -----	5 4 4
4.8.1.1.2.g.2	Verify each DG does not trip and voltage is maintained ≤ 8880 ~~[5000]~~ V during and following a load rejection of ≥ 3960 ~~[4500]~~ kW and ≤ 4400 ~~[5000]~~ kW.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 6 4 6

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.8.1.1.2.d, 4.8.1.1.2.d.4 DOC A05	SR 3.8.1.11	-----------------------------NOTES---------------------------- 1. All DG starts may be preceded by an engine prelube period.		
DOC L11		For DGs 1A-A and 1B-B, this 2. ~~This~~ Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---		5
		Verify on an actual or simulated loss of offsite power signal:	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	6 1 6
4.8.1.1.2.d.4.a)		a. De-energization of ~~emergency buses~~ shutdown boards,		
4.8.1.1.2.d.4.a)		b. Load shedding from ~~emergency buses~~ shutdown boards,		
4.8.1.1.2.d.4.b)		c. DG auto-starts from standby condition and:		
		1. Energizes permanently connected loads in ≤ ~~[~~10~~]~~ seconds,		4
		2. Energizes auto-connected shutdown loads through ~~[automatic load sequencer]~~ load sequence timers,		3
		3. Maintains steady state voltage ≥ ~~[3740]~~ 6800 V and ≤ ~~[4580]~~ 7260 V,		
		4. Maintains steady state frequency ≥ ~~[~~58.8~~]~~ Hz and ≤ ~~[~~61.2~~]~~ Hz, and		4
		5. Supplies permanently connected ~~[~~and auto-connected~~]~~ shutdown loads for ≥ 5 minutes.		

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
4.8.1.1.2.d, 4.8.1.1.2.d.5 DOC A05	SR 3.8.1.12 -----NOTES----- ~~[~~ 1. All DG starts may be preceded by prelube period.		4
DOC L11	2. For DGs 1A-A and 1B-B, this ~~This~~ Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. -----		5
4.8.1.1.2.d.5	Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and:	~~[[18] months~~ ~~OR~~	6
	a. In ≤ ~~[~~10~~]~~ seconds after auto-start and during tests, achieves voltage ≥ 6800 ~~[3740]~~ V and frequency ≥ ~~[~~58.8~~]~~ Hz,	In accordance with the Surveillance Frequency Control Program ~~]~~	4 6
	b. Achieves steady state voltage ≥ 6800 ~~[3740]~~ V and ≤ 7260 ~~[4580]~~ V and frequency ≥ ~~[~~58.8~~]~~ Hz and ≤ ~~[~~61.2~~]~~ Hz,		
	c. Operates for ≥ 5 minutes,		
DOC M03	d. Permanently connected loads remain energized from the offsite power system, and		
DOC M03	e. Emergency loads are energized ~~[or auto-connected through the automatic load sequencer]~~ from the offsite power system.		3

CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
4.8.1.1.2.d, 4.8.1.1.2.d.6.c) DOC L11 SR 3.8.1.13	For DGs 1A-A and 1B-B, this ------------------------------NOTE------------------------------ [~~This~~ Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.] --- 4 5 4	
4.8.1.1.2.d.6.c)	Verify each DG's noncritical automatic trips are bypassed on [actual or simulated loss of voltage signal on the shutdown board, ~~emergency bus concurrent with~~ an actual or simulated ESF actuation signal, or both].	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program] 6 4 6

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SURVEILLANCE REQUIREMENTS (continued)

		SURVEILLANCE	FREQUENCY	
4.8.1.1.2.g 4.8.1.1.2.g.3 DOC L09 ~~DOC M04~~ SII DOC M04	SR 3.8.1.14	-----------------------------NOTES---------------------------- 1. Momentary transients outside the load and power factor ranges do not invalidate this test. ~~For DGs 1A-A and 1B-B, this~~ ~~2.~~ ~~This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.~~ 2. ~~3.~~ If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ ~~[0.9]~~ 0.89. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. ---		~~5~~ 9
4.8.1.1.2.g.3		Verify each DG operates for ≥ 24 hours: a. For ≥ ~~[~~2~~]~~ hours loaded ≥ ~~[5250]~~ 4620 kW and ≤ ~~[5500]~~ 4840 kW and ≥ 2380 kvar and ≤ 2600 kvar, and b. For the remaining hours of the test loaded ≥ ~~[4500]~~ 3960 kW and ≤ ~~[5000]~~ 4400 kW and ≥ 2140 kvar and ≤ 2370 kvar.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	6 4 1 6

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
4.8.1.1.2.g 4.8.1.1.2.g.4 DOC A05 DOC L09 DOC A05 DOC L19 4.8.1.1.2.g.4	SR 3.8.1.15 -----NOTES----- 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ ~~[~~2~~]~~ hours loaded ≥ ~~[4500]~~ 3960 kW and ≤ ~~[5000]~~ 4400 kW and ≥ 2140 kvar and ≤ 2370 kvar. Momentary transients outside of load range do not invalidate this test. 2. All DG starts may be preceded by an engine prelube period. ----- Verify each DG starts and achieves: a. In ≤ ~~[~~10~~]~~ seconds, voltage ≥ ~~[3740]~~ 6800 V and frequency ≥ ~~[~~58.8~~]~~ Hz and b. Steady state voltage ≥ ~~[3740]~~ 6800 V, and ≤ ~~[4580]~~ 7260 V and frequency ≥ ~~[~~58.8~~]~~ Hz and ≤ ~~[~~61.2~~]~~ Hz.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~
4.8.1.1.2.d 4.8.1.1.2.d.9 DOC L11 4.8.1.1.2.d.9.a 4.8.1.1.2.d.9.b 4.8.1.1.2.d.9.c	SR 3.8.1.16 -----NOTE----- ~~This~~ For DGs 1A-A and 1B-B, this Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ----- Verify each DG: a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power, b. Transfers loads to offsite power source, and c. Returns to ready-to-load operation.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~

4 6 4 6 5 6 6

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
~~SR 3.8.1.17~~	~~-----NOTE-----~~ ~~[This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.~~ ~~----------~~ ~~Verify, with a DG operating in test mode and connected to its bus, an actual or simulated ESF actuation signal overrides the test mode by:~~ ~~a. Returning DG to ready-to-load operation and~~ ~~b. [Automatically energizing the emergency load from offsite power].~~	~~[[18] months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~	7
4.8.1.1.2.d 4.8.1.1.2.d.10 4.8.1.1.2.d.10 Note # DOC M06 SR 3.8.1.~~18~~ 17	-----NOTE----- ~~[This~~ For DGs 1A-A and 1B-B, this Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ~~]~~ ---------- Verify ~~interval between~~ setpoint for each load sequence ~~d load block~~ timer is within ± ~~[10% of design interval] for each emergency [and shutdown] load sequencer~~ 5% of design.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	7 4 5 4 3 6 6

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
4.8.1.1.2.d 4.8.1.1.2.d.6 DOC A05 DOC L11	SR 3.8.1.~~19~~ 18 -----NOTES----- 1. All DG starts may be preceded by an engine prelube period. 2. For DGs 1A-A and 1B-B, this ~~This~~ Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. -----	7 5
4.8.1.1.2.d.6 4.8.1.1.2.d.6.a 4.8.1.1.2.d.6.a 4.8.1.1.2.d.6.b	Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal: a. De-energization of ~~emergency buses~~ shutdown boards, b. Load shedding from ~~emergency buses~~ shutdown boards, and c. DG auto-starts from standby condition and: 1. Energizes permanently connected loads in ≤ ~~[~~10~~]~~ seconds, 2. Energizes auto-connected emergency loads through ~~load sequencer~~ load sequence timers, 3. Achieves steady state voltage ≥ ~~[3740]~~ 6800 V and ≤ ~~[4580]~~ 7260 V, 4. Achieves steady state frequency ≥ ~~[~~58.8~~]~~ Hz and ≤ ~~[~~61.2~~]~~ Hz, and 5. Supplies permanently connected ~~[and auto-connected]~~ emergency loads for ≥ 5 minutes.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 6 1 6 4 3 4

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
4.8.1.1.2.e DOC A05	SR 3.8.1.~~20~~ 19	------------------------------NOTE------------------------------ All DG starts may be preceded by an engine prelube period. ---	7
4.8.1.1.2.e		Verify when started simultaneously from standby condition, each DG achieves~~:~~ , ~~a.~~ In ≤ ~~[~~10~~]~~ seconds, voltage ≥ ~~[3740]~~ 6800 V and frequency ≥ ~~[~~58.8~~]~~ Hz ~~and~~ . ~~b. Steady state voltage ≥ [3744] V and ≤ [4576] V, and frequency ≥ [58.8] Hz and ≤ [61.2] Hz.~~	~~[10 years~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	6 4 8 6

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources - Operating

3.8.1.1 LCO 3.8.1 The following AC electrical sources shall be OPERABLE:

3.8.1.1.a a. Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System~~,~~ ; and 1 2

3.8.1.1.b b. ~~Two~~ Four diesel generators (DGs) capable of supplying the onsite Class 1E AC Electrical power distribution ~~sub~~system~~(s), and~~ . 1 2 1

~~[c. Automatic load sequencers for Train A and Train B.]~~ 3

DOC L01 VKG026

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

ACTIONS

S

2. Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when any Condition(s) is entered with no AC power source to any shutdown board resulting in a de-energized shutdown board.

---NOTE---

ACTION f
DOC A03 1. LCO 3.0.4.b is not applicable to DGs. ~~7~~ 10

SII

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION a ACTION c A. One ~~[required]~~ offsite circuit inoperable for reasons other than Condition C.	A.1 Perform SR 3.8.1.1 for ~~[required]~~ OPERABLE offsite circuit.	1 hour AND Once per 8 hours thereafter 4 5
	AND	
DOC L20	A.2 Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable.	24 hours from discovery of no offsite power to ~~one train~~ 6.9 kV Shutdown Board 2A-A or 2B-B concurrent with inoperability of redundant required feature(s) 5
	AND	

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION a		A.3 Restore ~~[required]~~ offsite circuit to OPERABLE status.	72 hours	4
ACTIONS b, c, and e	B. ~~One [required] DG inoperable.~~ 2A-A INSERT 1	B.1 Perform SR 3.8.1.1 for the ~~[required]~~ offsite circuit~~(s)~~.	1 hour AND Once per 8 hours thereafter	4 VKG026 ~~5~~
		AND		
DOC L20		B.2 Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)	
		AND		
ACTION b		B.3.1 Determine OPERABLE DG~~(s)~~ ~~is~~ are not inoperable due to common cause failure.	~~[~~24~~]~~ hours	4 1
		OR		
ACTION b ACTION c		B.3.2 Perform SR 3.8.1.2 for OPERABLE DG~~(s)~~.	~~[~~24~~]~~ hours	4 1
		AND		
ACTION b		B.4 Restore ~~[required]~~ DG(s) to OPERABLE status.	~~72 hours~~ 7 days	4 1

INSERT 2 5

~~5~~ 4

INSERT 1

~~DOC L01~~

~~OR~~

~~DG 2B-B inoperable.~~

~~OR~~

~~DGs 1A-A and 2A-A inoperable.~~

One or more Train A DG(s) inoperable.

OR

One or more Train B DG(s) inoperable.

VKG026

~~OR~~

~~DGs 1B-B and 2B-B inoperable.~~

5

INSERT 2

DOC L01

C. One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 1A-A or 1B-B inoperable.	C.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit.	1 hour AND Once per 8 hours thereafter
	AND	
	C.2 Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable.	24 hours from discovery of no offsite power to 6.9 kV Shutdown Board 1A-A or 1B-B concurrent with inoperability of redundant required feature(s)
	AND	
	C.3 ~~Declare associated required feature(s) inoperable.~~ Restore offsite circuit to OPERABLE status.	7 days

DOC L20

VKG027

5

INSERT 2 (Continued)

D. DG 1A-A or 1B-B inoperable.	D.1	Perform SR 3.8.1.1 for OPERABLE offsite circuit(s).	1 hour AND Once per 8 hours thereafter
	AND		
	D.2	Declare required feature(s) supported by the inoperable DG inoperable when its redundant required feature(s) is inoperable.	4 hours from discovery of Condition D concurrent with inoperability of redundant required feature(s)
	AND		
	D.3.1	Determine OPERABLE DGs are not inoperable due to common cause failure.	24 hours
	OR		
	D.3.2	Perform SR 3.8.1.2 for OPERABLE DGs.	24 hours
	AND		
	D.4	Declare associated required feature(s) inoperable.	7 days

VKG026

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ACTIONS (continued)

VKG026

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION d DOC L20 ~~C~~ E D. Two ~~[required]~~ offsite circuits inoperable.	~~C~~ E D.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable.	12 hours from discovery of Condition ~~C~~ ~~E~~ D concurrent with inoperability of redundant required features
	AND	
ACTION d	~~C~~ E D.2 Restore one ~~[required]~~ offsite circuit to OPERABLE status.	24 hours
ACTION c ~~DOC A03~~ ~~D~~ ~~F~~ E. One ~~[required]~~ offsite circuit inoperable for reasons other than Condition C. AND ~~One [required]~~ DG 2A-A or 2B-B inoperable.	~~---NOTE--- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition D F is entered with no AC power source to any train 6.9 kV Shutdown Board 2A-A or 2B-B.---~~	
ACTION c	~~D~~ ~~F~~ E.1 Restore ~~[required]~~ offsite circuit to OPERABLE status.	12 hours
	OR	
ACTION c	~~D~~ ~~F~~ E.2 Restore ~~[required]~~ DG to OPERABLE status.	12 hours
~~INSERT 3~~		
ACTION e ~~E~~ ~~J~~ F. ~~Two [required]~~ One or more Train A DG~~s~~(s) inoperable. INSERT 4	~~E~~ ~~J~~ F.1 Restore one ~~[required]~~ train of DGs to OPERABLE status.	2 hours

SII 10 5 4 1

5 ~~**INSERT 3**~~

~~DOC L01~~	G. One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 1A-A or 1B-B inoperable. AND DG 2A-A or 2B-B inoperable.	G.1	Declare required feature(s) on associated Unit 1 6.9 kV Shutdown Board inoperable.	7 days
~~DOC L01~~	H. One offsite circuit inoperable for reasons other than Condition C. AND DG 1A-A or 1B-B inoperable.	H.1	Declare required feature(s) on associated Unit 1 6.9 kV Shutdown Board inoperable.	7 days

VKG026

Insert Page 3.8.1-3a

~~5~~ **~~INSERT 3 (continued)~~**

VKG026

~~DOC L01~~

I. One offsite circuit inoperable solely due to an offsite power source to 6.9 kV Shutdown Board 1A-A or 1B-B inoperable. AND DG 1A-A or 1B-B inoperable.	--------------------NOTE------------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition I is entered with no AC power source to 6.9 kV Shutdown Board 1A-A or 1B-B. --- I.1 Restore offsite circuit to OPERABLE status. OR I.2 Restore DG to OPERABLE status.	 7 days 7 days

5 **INSERT 4**

ACTION e

AND

One or more Train B DG(s) inoperable.

~~Insert Page 3.8.1-3b~~

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~-----REVIEWER'S NOTE----- This Condition may be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads following a loss of offsite power independent of, or coincident with, a Design Basis Event. -----------------------------------~~ VKG026 ~~F. [One [required] [automatic load sequencer] inoperable.~~	~~F.1 Restore [required] [automatic load sequencer] to OPERABLE status.~~	~~[12] hours]~~ 3
ACTIONS a, b, c, d, e G ~~K~~ ~~G~~. Required Action and associated Completion Time of Condition ~~A, B, C, D~~, ~~E, or~~ ~~[F]~~ F, I, ~~J~~ not met. A, B, C, D, E, or F DOC M01	~~G~~.1 Be in MODE 3. ~~K~~ G AND ~~G~~.2 Be in MODE 5. ~~K~~ G	6 hours 36 hours 3 5
INSERT 5 ~~H. Three or more [required] AC sources inoperable.~~	~~H.1 Enter LCO 3.0.3.~~	~~Immediately~~ 5

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.8.1.1 4.8.1.1.1.a SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each ~~[required]~~ offsite circuit.	~~[7 days~~ ~~OR~~ 4 6 In accordance with the Surveillance Frequency Control Program ~~]~~ 6

5 **INSERT 5**

DOC A04 ~~L~~ H. Two offsite circuits inoperable. AND One or more Train A DG(s) inoperable. OR One or more Train B DG(s) inoperable.	~~L~~ H.1 Enter LCO 3.0.3.	Immediately VKG026
DOC A04 ~~M~~ I. One offsite circuit inoperable. AND One or more Train A DG(s) inoperable. AND One or more Train B DG(s) inoperable.	~~M~~ I.1 Enter LCO 3.0.3.	Immediately

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.8.1.1.2.a.4 DOC A05	SR 3.8.1.2	-----------------------------NOTES----------------------------- 1. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading.		
4.8.1.1.2.a.4 Note *		[2. A modified DG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. When modified start procedures are not used, the time, voltage, and frequency tolerances of SR 3.8.1.7 must be met.] ---		4 4
4.8.1.1.2.a.4		Verify each DG starts from standby conditions and achieves steady state voltage ≥ ~~[3740]~~ 6800 V and ≤ ~~[4580]~~ 7260 V, and frequency ≥ [58.8] Hz and ≤ [61.2] Hz.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program]	6 4 6

SURVEILLANCE REQUIREMENTS (continued)

		SURVEILLANCE	FREQUENCY	
4.8.1.1.2.a.5 4.8.1.1.2.a.5 Note * DOC L09 ACTION b, Note * DOC M02	SR 3.8.1.3	-----NOTES----- 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow without shutdown a successful performance of SR 3.8.1.2 or SR 3.8.1.7. -----		
4.8.1.1.2.a.5		Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ ~~[4500]~~ 3960 kW and ≤ ~~[5000]~~ 4400 kW.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	6 4 6
3.8.1.1.b.2 4.8.1.1.2.a.1	SR 3.8.1.4	Verify each engine-mounted "day" ~~day~~ tank ~~[and engine mounted tank]~~ contains ≥ ~~[220]~~ 250 gal of fuel oil.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	1 4 6 6

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CTS

SURVEILLANCE REQUIREMENTS (continued)

		SURVEILLANCE	FREQUENCY	
4.8.1.1.2.b	SR 3.8.1.5	Check for and remove accumulated water from each ~~day~~ engine-mounted "day" tank ~~[and engine mounted tank]~~.	~~[[31] days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	1 4 6 6
3.8.1.1.b.4, 4.8.1.1.2.a.3	SR 3.8.1.6	Verify the fuel oil transfer system operates to ~~[automatically]~~ transfer fuel oil from the storage ~~tank[s]~~ system to the ~~day~~ engine-mounted "day" tanks ~~[and engine mounted tank]~~.	~~[[92] days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	6 4 1 6
4.8.1.1.2.a.4 DOC A05	SR 3.8.1.7	-----------------------------NOTE------------------------------ All DG starts may be preceded by an engine prelube period. --- Verify each DG starts from standby condition and achieves: a. In ≤ ~~[~~10~~]~~ seconds, voltage ≥ ~~[3740]~~ 6800 V and frequency ≥ 58.8~~]~~ Hz and b. Steady state voltage ≥ ~~[3740]~~ 6800 V and ≤ ~~[4580]~~ 7260 V, and frequency ≥ ~~[~~58.8~~]~~ Hz and ≤ ~~[~~61.2~~]~~ Hz.	~~[184 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	6 4 6

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
4.8.1.1.1.b DOC L06	SR 3.8.1.8 1. For the 2A, 2B, 2C, and 2D Unit Boards, this ------------------------------NOTE------------------------------ ~~[This~~ Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. INSERT 6 --		5 4
4.8.1.1.1.b Note ##	Verify ~~[~~automatic ~~[~~and~~]~~ manual~~]~~ transfer of the ~~AC~~ power ~~sources from the normal offsite circuit to each alternate [required] offsite circuit~~ supply to each 6.9 kV Unit Board from the normal supply to the alternate supply.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]]~~	6 1 6 4

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1 **INSERT 6**

2. Transfer capability is only required to be met for 6.9 kV Unit Boards that require normal and alternate power supplies.

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
4.8.1.1.2.g, 4.8.1.1.2.g.1 ~~DOC M04~~ SII	SR 3.8.1.9 For DGs 2A-A and 2B-B, this ---------NOTE~~S~~--------- ~~[1.~~ ~~This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.~~		4 ~~5~~ 9
DOC M04	~~2.~~ If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.89 ~~[0.9]~~. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. ~~]~~ ---		4
4.8.1.1.2.g.1	Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and:	~~[[18] months~~ ~~OR~~	6
DOC L15	a. Following load rejection, the frequency is ≤ 66.5 ~~[63]~~ Hz,	In accordance with the Surveillance Frequency Control Program ~~]~~	4
4.8.1.1.2.g.1	b. Within ~~[~~3~~]~~ seconds following load rejection, the voltage is ≥ 6800 ~~[3740]~~ V and ≤ 7260 ~~[4580]~~ V, and		4 6
4.8.1.1.2.g.1	c. Within ~~[~~3~~]~~ seconds following load rejection, the frequency is ≥ ~~[~~58.8~~]~~ Hz and ≤ ~~[~~61.2~~]~~ Hz.		4

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CTS

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
4.8.1.1.2.g, 4.8.1.1.2.g.2 ~~DOC M04~~ SII SR 3.8.1.10	For DGs 2A A and 2B B, this ----NOTE~~S~~---- [~~1.~~ ~~This~~ ~~Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.~~ DOC M04 ~~2.~~ If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.89 ~~[0.9]~~. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable.] ----------	4 5 9 4
4.8.1.1.2.g.2	Verify each DG does not trip and voltage is maintained ≤ 8880 ~~[5000]~~ V during and following a load rejection of ≥ 3960 ~~[4500]~~ kW and ≤ 4400 ~~[5000]~~ kW.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program] 4 6 6

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
4.8.1.1.2.d, 4.8.1.1.2.d.4 DOC A05	SR 3.8.1.11 ------------------------------NOTES---------------------------- 1. All DG starts may be preceded by an engine prelube period.	
DOC L11	2. For DGs 2A-A and 2B-B, this ~~This~~ Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---	5
	Verify on an actual or simulated loss of offsite power signal:	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 6 1 6
4.8.1.1.2.d.4.a)	a. De-energization of shutdown boards ~~emergency buses~~,	
4.8.1.1.2.d.4.a)	b. Load shedding from shutdown boards ~~emergency buses~~,	
4.8.1.1.2.d.4.b)	c. DG auto-starts from standby condition and:	
	1. Energizes permanently connected loads in ≤ ~~[~~10~~]~~ seconds,	4
	2. Energizes auto-connected shutdown loads through load sequence timers ~~[automatic load sequencer]~~,	3
	3. Maintains steady state voltage ≥ 6800 ~~[3740]~~ V and ≤ 7260 ~~[4580]~~ V,	4
	4. Maintains steady state frequency ≥ ~~[~~58.8~~]~~ Hz and ≤ ~~[~~61.2~~]~~ Hz, and	
	5. Supplies permanently connected ~~[~~and auto-connected~~]~~ shutdown loads for ≥ 5 minutes.	

CTS

SURVEILLANCE REQUIREMENTS (continued)

CTS	SURVEILLANCE		FREQUENCY	
4.8.1.1.2.d, 4.8.1.1.2.d.5 DOC A05	SR 3.8.1.12	-----------------------------NOTES--------------------------- [1. All DG starts may be preceded by prelube period.		4
DOC L11		2. ~~This~~ For DGs 2A-A and 2B-B, this Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---		5
4.8.1.1.2.d.5		Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and:	~~[[18] months~~ ~~OR~~	6
		a. In ≤ [10] seconds after auto-start and during tests, achieves voltage ≥ ~~[3740]~~ 6800 V and frequency ≥ [58.8] Hz,	In accordance with the Surveillance Frequency Control Program]	4 6
		b. Achieves steady state voltage ≥ ~~[3740]~~ 6800 V and ≤ ~~[4580]~~ 7260 V and frequency ≥ [58.8] Hz and ≤ [61.2] Hz,		
		c. Operates for ≥ 5 minutes,		
DOC M03		d. Permanently connected loads remain energized from the offsite power system, and		
DOC M03		e. Emergency loads are energized ~~[or auto-connected through the automatic load sequencer]~~ from the offsite power system.		3

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
4.8.1.1.2.d, 4.8.1.1.2.d.6.c) DOC L11	SR 3.8.1.13 For DGs 2A-A and 2B-B, this ------NOTE------ [~~This~~ Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.] ------	4 5 4
4.8.1.1.2.d.6.c)	Verify each DG's noncritical automatic trips are bypassed on [actual or simulated loss of voltage signal on the shutdown board, ~~emergency bus concurrent with~~ an actual or simulated ESF actuation signal], or both.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program] 6 4 6

CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
4.8.1.1.2.g 4.8.1.1.2.g.3 DOC L09 SR 3.8.1.14	------------------------------NOTES---------------------------- 1. Momentary transients outside the load and power factor ranges do not invalidate this test. DOC M04 SII 2. ~~This~~ ~~For DGs 2A-A and 2B-B, this~~ ~~Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.~~ 5 9 DOC M04 2. ~~3.~~ If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ ~~[0.9]~~ 0.89. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. ---	
4.8.1.1.2.g.3	Verify each DG operates for ≥ 24 hours: a. For ≥ [2] hours loaded ≥ ~~[5250]~~ 4620 kW and ≤ ~~[5500]~~ 4840 kW and ≥ 2380 kvar and ≤ 2600 kvar, and b. For the remaining hours of the test loaded ≥ ~~[4500]~~ 3960 kW and ≤ ~~[5000]~~ 4400 kW and ≥ 2140 kvar and ≤ 2370 kvar.	~~[[18] months~~ 6 ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 4 1 6

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
4.8.1.1.2.g 4.8.1.1.2.g.4 DOC A05 DOC L09 DOC A04 DOC L19 4.8.1.1.2.g.4 SR 3.8.1.15	-----NOTES----- 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ [2] hours loaded ≥ ~~[4500]~~ 3960 kW and ≤ ~~[5000]~~ 4400 kW and ≥ 2140 kvar and ≤ 2370 kvar. Momentary transients outside of load range do not invalidate this test. 2. All DG starts may be preceded by an engine prelube period. ----- Verify each DG starts and achieves: a. In ≤ [10] seconds, voltage ≥ ~~[3740]~~ 6800 V and frequency ≥ [58.8] Hz and b. Steady state voltage ≥ ~~[3740]~~ 6800 V, and ≤ ~~[4580]~~ 7260 V and frequency ≥ [58.8] Hz and ≤ [61.2] Hz. (4)	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program] (6) (4) (6)
4.8.1.1.2.d 4.8.1.1.2.d.9 DOC L11 4.8.1.1.2.d.9.a 4.8.1.1.2.d.9.b 4.8.1.1.2.d.9.c SR 3.8.1.16	-----NOTE----- For DGs 2A-A and 2B-B, this ~~This~~ Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ----- Verify each DG: a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power, b. Transfers loads to offsite power source, and c. Returns to ready-to-load operation. (5)	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program] (6) (6)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY	
~~SR 3.8.1.17~~	~~-----NOTE-----~~ ~~[This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.~~ ~~----------~~ ~~Verify, with a DG operating in test mode and connected to its bus, an actual or simulated ESF actuation signal overrides the test mode by:~~ ~~a. Returning DG to ready-to-load operation and~~ ~~b. [Automatically energizing the emergency load from offsite power].~~	~~[[18] months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~	7
4.8.1.1.2.d 4.8.1.1.2.d.10 4.8.1.1.2.d.10 Note # DOC M06 SR 3.8.1.~~18~~ 17	-----NOTE----- ~~[This~~ For DGs 2A-A and 2B-B, this Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ~~]~~ ---------- Verify ~~interval between~~ setpoint for each load sequence~~d load block~~ timer is within ± ~~[10% of design interval] for each emergency [and shutdown] load sequencer~~ 5% of design.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	7 4 5 4 3 6 6

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
4.8.1.1.2.d 4.8.1.1.2.d.6 DOC A05	SR 3.8.1.~~19~~ 18 ------------------------------NOTES------------------------------ 1. All DG starts may be preceded by an engine prelube period.		7
DOC L11	2. For DGs 2A-A and 2B-B, this ~~This~~ Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---		5
4.8.1.1.2.d.6	Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal:	~~[[18] months~~ ~~OR~~	6
4.8.1.1.2.d.6.a	a. De-energization of shutdown boards ~~emergency buses~~,	In accordance with the Surveillance Frequency Control Program ~~]~~	1
4.8.1.1.2.d.6.a	b. Load shedding from shutdown boards ~~emergency buses~~, and		
4.8.1.1.2.d.6.b	c. DG auto-starts from standby condition and:		6
	1. Energizes permanently connected loads in ≤ ~~[~~10~~]~~ seconds,		4
	2. Energizes auto-connected emergency loads through ~~load sequencer~~ load sequence timers,		3
	3. Achieves steady state voltage ≥ ~~[3740]~~ 6800 V and ≤ ~~[4580]~~ 7260 V,		4
	4. Achieves steady state frequency ≥ ~~[~~58.8~~]~~ Hz and ≤ ~~[~~61.2~~]~~ Hz, and		
	5. Supplies permanently connected ~~[and auto-connected]~~ emergency loads for ≥ 5 minutes.		

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.8.1.1.2.e DOC A05	SR 3.8.1.~~20~~ 19	------------------------------NOTE------------------------------ All DG starts may be preceded by an engine prelube period. ---		7
4.8.1.1.2.e		Verify when started simultaneously from standby condition, each DG achieves~~:~~ , ~~a.~~ in ≤ ~~[~~10~~]~~ seconds, voltage ≥ ~~[3740]~~ 6800 V and frequency ≥ ~~[~~58.8~~]~~ Hz ~~and~~ . ~~b. Steady state voltage ≥ [3744] V and ≤ [4576] V, and frequency ≥ [58.8] Hz and ≤ [61.2] Hz.~~	~~[10 years~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	6 4 8 6

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.1, AC SOURCES - OPERATING

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

2. The punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

3. ISTS LCO 3.8.1.c and ISTS 3.8.1 ACTION F have been deleted since SQN Units 1 and 2 do not use load sequencers. Each load or load block is sequenced with the use of its associated time delay relay. Each major ESF component has individual time delay relays that operate individual components, not all ESF components. Thus, if a single time delay relay fails, only the individual component and the DG could be affected. Subsequent Conditions and Required Actions have been renumbered, as applicable. ISTS SR 3.8.1.11 (ITS SR 3.8.1.11), ISTS SR 3.8.1.12 (ITS SR 3.8.1.12), ISTS SR 3.8.1.18 (ITS SR 3.8.1.17), and ISTS SR 3.8.1.19 (ITS SR 3.8.1.18) have been revised to reflect the use of time delay relays.

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

5. ~~Changes were made to ISTS LCO 3.8.1 to ensure the appropriate AC power sources are OPERABLE during unit operation in MODES 1, 2, 3 and 4 to satisfy the design requirements. This modification was necessary due to shared systems between Units 1 and 2. This is an exception that is intended to allow taking the ACTIONS associated with inoperable shared equipment in lieu of requiring the opposite unit AC sources to be restored to OPERABLE status within a specified Completion Time. This exception is acceptable since, with the opposite unit equipment inoperable and the associated ACTIONS entered, the opposite unit AC Sources provide no additional assurance of meeting the safety criteria of the given unit's AC power sources.~~ VKG027 INSERT JFD 5

   SR Notes associated with ISTS SR 3.8.1.8 (ITS SR 3.8.1.8), ~~ISTS SR 3.8.1.9 (ITS SR 3.8.1.9), ISTS SR 3.8.1.10 (ITS SR 3.8.1.10),~~ ISTS SR 3.8.1.11 (ITS SR 3.8.1.11), ISTS SR 3.8.1.12 (ITS SR 3.8.1.12), ISTS SR 3.8.1.13 (ITS SR 3.8.1.13), ~~ISTS SR 3.8.1.14 (ITS SR 3.8.1.14),~~ ISTS SR 3.8.1.16 (ITS SR 3.8.1.16), ISTS SR 3.8.1.18 (ITS SR 3.8.1.17), and ISTS SR 3.8.1.19 (ITS SR 3.8.1.18) have been revised to allow performance of the affected SR on opposite unit shutdown board or DGs when the given unit is in a restricted MODE. SII

6. ISTS SR 3.8.1.1 (ITS SR 3.8.1.1), ISTS SR 3.8.1.2 (ITS SR 3.8.1.2), ISTS SR 3.8.1.3 (ITS SR 3.8.1.3), ISTS SR 3.8.1.4 (ITS SR 3.8.1.4), ISTS SR 3.8.1.5 (ITS SR 3.8.1.5), ISTS SR 3.8.1.6 (ITS SR 3.8.1.6), ISTS SR 3.8.1.7 (ITS SR 3.8.1.7), ISTS SR 3.8.1.8 (ITS SR 3.8.1.8), ISTS SR 3.8.1.9 (ITS SR 3.8.1.9), ISTS SR 3.8.1.10 (ITS SR 3.8.1.10), ISTS SR 3.8.1.11 (ITS SR 3.8.1.11), ISTS SR 3.8.1.12 (ITS SR 3.8.1.12), ISTS SR 3.8.1.13 (ITS SR 3.8.1.13), ISTS SR 3.8.1.14 (ITS SR 3.8.1.14), ISTS SR 3.8.1.15 (ITS SR 3.8.1.15), ISTS SR 3.8.1.16 (ITS SR 3.8.1.16), ISTS SR 3.8.1.18 (ITS SR 3.8.1.17), ISTS SR 3.8.1.19 (ITS SR 3.8.1.18), and ISTS SR 3.8.1.20 (ITS SR 3.8.1.19) provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the

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INSERT JFD 5

Changes were made to the ISTS to reflect the interaction between an operating unit's AC power sources and those credited features needing AC power from the opposite unit's associated AC power sources. ITS 3.8.1 ACTION C has been added to address the condition when the offsite circuit is inoperable solely due to an inoperable power source to the opposite unit's 6.9 kV Shutdown Board (e.g., for Unit 1 an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B is inoperable), and requires, in part, restoration of the inoperable offsite circuit within 7 days. ISTS 3.8.1 ACTIONS A and D have been revised to address conditions when the offsite circuit is inoperable for reasons other than ITS 3.8.1 Condition C. ITS 3.8.1 ACTION A requires restoration of the inoperable offsite circuit in 72 hours. ITS 3.8.1 ACTION E requires restoration of an inoperable AC source in 12 hours. This change reflects a restoration Completion Time commensurate with the importance of maintaining the AC power source capable of supporting the affected shared systems. With the addition of ITS 3.8.1 ACTION C, subsequent ISTS ACTIONS have been renumbered.

VKG027

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.1, AC SOURCES - OPERATING

Surveillance Frequencies for these SRs under the Surveillance Frequency Control Program.

7. ISTS SR 3.8.1.17 is not included in the SQN ITS since this feature was not included in the SQN design. This SR demonstrates that with a DG operating in the test mode and connected to its bus, an ESF actuation signal overrides the test mode and returns the DG to ready-to-load operation. At SQN, with a DG connected to its shutdown board, if an ESF actuation signal were received, the DG would stay connected to its shutdown board. Therefore, this SR is not applicable. Subsequent Surveillances have been renumbered, as applicable.

8. The steady state limit does not apply to the simultaneous start of all DGs (ISTS SR 3.8.1.19), since it is a test of starting independence, not operating independence. This is consistent with the current licensing basis.

9. ISTS SR 3.8.1.14 Note 2 has been deleted. The corresponding CTS Surveillance Requirement(CTS4.8.1.1.2.g.3) does not specify any MODE restrictions concerning performance of the surveillance. Therefore, the SR Note is not applicable and the subsequent Note has been renumbered.

SII

VKG026

INSERT JFD 10

SII

ISTS 3.8.1, AC Sources - Operating, Required Action D contains a NOTE which states, “Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition D is entered with no AC power source to any train." In ITS 3.8.1, the complete de-energization of a shutdown board could be represented by entry into ITS 3.8.1 Condition E or, as an example, concurrent entries into ITS 3.8.1 Conditions B (one or more Train A or one or more Train B DG(s) inoperable) and C (one offsite circuit inoperable solely due to an offsite power source to the opposite unit's shutdown board). ITS 3.8.1 Conditions B and C do not have a NOTE to state that entry into the applicable Conditions and Required Actions of LCO 3.8.9 is required when Conditions are entered that result in no AC power sources to any shutdown board. Therefore, the Note referring to LCO 3.8.9 in ISTS 3.8.1, Required Action D has been removed from Required Action D, modified for clarification, and added as ITS 3.8.1 ACTIONS NOTE 2. ITS 3.8.1 ACTIONS NOTE 2 states, “Enter applicable Conditions and Required Actions of LCO 3.8.9, `Distribution Systems - Operating,' when any Condition(s) is entered with no AC power source to any shutdown board resulting in a de-energized shutdown board.” This will ensure that entry into a Condition or a combination of Conditions that result in the complete de-energization of a shutdown board requires entry into the applicable Conditions and Required Actions of LCO 3.8.9.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.1 AC Sources - Operating

BASES

BACKGROUND

The ~~unit~~ Class 1E AC Electrical Power Distribution System AC sources consist of the offsite power sources (preferred power sources~~, normal and alternate(s)~~), and the onsite standby power sources (Train A and Train B diesel generators (DGs)). As required by 10 CFR 50, Appendix A, GDC 17 (Ref. 1), the design of the AC electrical power system provides independence and redundancy to ensure an available source of power to the Engineered Safety Feature (ESF) systems. 1

INSERT 1 ~~The onsite Class 1E AC Distribution System is divided into redundant load groups (trains) so that the loss of any one group does not prevent the minimum safety functions from being performed. Each train has connections to two preferred offsite power sources and a single DG.~~ 1

INSERT 2 ~~Offsite power is supplied to the unit switchyard(s) from the transmission network by [two] transmission lines. From the switchyard(s), two electrically and physically separated circuits provide AC power, through [step down station auxiliary transformers], to the 4.16 kV ESF buses.~~ A detailed description of the offsite power network and the circuits to the Class 1E ~~ESF buses~~ 6.9 kV Shutdown Boards is found in ~~the~~ U FSAR, Chapter ~~[~~8~~]~~ (Ref. 2). 1 1 2

An offsite circuit consists of all breakers, transformers, switches, interrupting devices, cabling, and controls required to transmit power from the offsite transmission network ~~to the onsite Class 1E ESF bus(es)~~ INSERT 3. 1

~~Certain required unit loads are returned to service in a predetermined sequence in order to prevent overloading the transformer supplying offsite power to the onsite Class 1E Distribution System. Within [1] minute after the initiating signal is received, all automatic and permanently connected loads needed to recover the unit or maintain it in a safe condition are returned to service via the load sequencer.~~ 1

The onsite standby power source for each ~~4.16 kV ESF bus~~ 6.9 kV Shutdown Board is a dedicated DG. INSERT 4 ~~DGs [11] and [12] are dedicated to ESF buses [11] and [12], respectively.~~ A DG starts automatically on a safety injection (SI) signal (i.e., low pressurizer pressure , ~~or~~ high containment pressure , or low steam line pressure signals) or on ~~an [ESF bus degraded voltage or undervoltage signal]~~ INSERT 5 (refer to LCO 3.3.5, "Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation"). After the DG has started, it will automatically tie to its respective ~~bus~~ 6.9 kV Shutdown Board after offsite power is tripped as a consequence of ~~ESF bus undervoltage or degraded voltage~~ INSERT 5, independent of or coincident with an SI signal. The DGs will also start and operate in the standby mode without tying to the ~~ESF bus~~ 6.9 kV Shutdown Board on an SI signal alone. Following the trip of offsite power, ~~[a sequencer/an undervoltage signal]~~ a loss-of-voltage signal strips nonpermanent 1 2 1 2

1 **INSERT 1**

The onsite Class 1E AC Electrical Power Distribution System is divided into two redundant and independent load groups with two 6.9 kV Shutdown Boards in each load group. Each 6.9 kV Shutdown Board has a connection to a preferred offsite power source and a DG. The 6.9 kV Shutdown Boards in a load group (i.e., 1A-A and 2A-A, or 1B-B and 2B-B) are normally powered by the same offsite power circuit. Each 6.9 kV Shutdown Board can also be powered by a dedicated DG. Two DGs associated with one load group can provide all safety related functions to mitigate a loss of coolant accident (LOCA) in one unit and safely shut down the other unit. The Train A and Train B ESF systems each provide for the minimum safety functions necessary to shut down the plant and maintain it in a safe shutdown condition.

The Unit 1 core cooling systems and containment systems (e.g., Safety Injection (SI), Auxiliary Feedwater (AFW), Residual Heat Removal (RHR), Centrifugal Charging pump, Containment Spray, and Air Return System (ARS) fan) are unitized (not shared with Unit 2) and are powered from 6.9 kV Shutdown Boards 1A-A and 1B-B. However, some safety-related systems (e.g., Essential Raw Cooling Water (ERCW), Component Cooling Water (CCS), Emergency Gas Treatment (EGTS), Auxiliary Building Gas Treatment, (ABGTS), Control Room Emergency Ventilation (CREVS), and Control Room Air-Conditioning (CRACS)) are shared with Unit 2. The AC sources for these loads are distributed across all four 6.9 kV Shutdown Boards. Therefore, two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System and a separate and independent DG for each 6.9 kV Shutdown Board ensure the availability of power to each of these systems.

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1 **INSERT 2**

The offsite power distribution system consists of two 161 kV buses supplied by eight 161 kV feeders and two 500 kV buses supplied by five 500 kV feeders. The output of the Unit 1 main generator is fed to the 500 kV buses and the output of the Unit 2 main generator is fed to the 161 kV buses. The output of each unit's main generator is also capable of supplying power to an offsite circuit (via the Unit Station Service Transformers (USSTs)) with a Generator Circuit Breaker (GCB) providing isolation between the main generator and the main bank transformers. When the main generator is not operating, the main bank transformers function as step down transformers and supply electrical power from the grid to the USSTs.

Offsite power can also be supplied by the Common Station Service Transformers (CSSTs) via the 6.9 kV Start Buses and 6.9 kV Unit Boards. Offsite power will normally be supplied from the USSTs to the 6.9 kV Shutdown Boards via the 6.9 kV Unit Boards, and will automatically transfer at least one power supply to an alternate power supply (CSST A or CSST C) on a trip of the Power Circuit Breakers (PCBs). CSST C is the alternate power source for 6.9 kV Shutdown Boards 1A-A and 2A-A, and CSST A is the alternate power source for 6.9 kV Shutdown Boards 1B-B and 2B-B. (CSST B is a spare transformer with two sets of secondary windings that can be used to supply a total of two Start Buses for CSST A and/or CSST C, with each Start Bus on a separate CSST B secondary winding.) Therefore, two electrically and physically separated circuits provide AC power through a combination of the USSTs and/or CSSTs to the 6.9 kV Shutdown Boards. Each offsite circuit is capable of providing power to one train of ESF loads.

1 **INSERT 3**

(beginning at the switchyard) to one load group of Class 1E 6.9 kV Shutdown Boards (ending at the supply side of the normal or alternate supply circuit breaker)

1 **INSERT 4**

DGs 1A-A, 1B-B, 2A-A, and 2B-B are separate and independent and are dedicated to 6.9 kV Shutdown Boards 1A-A, 1B-B, 2A-A, and 2B-B, respectively. Each diesel generator set consists of two diesel engines in tandem driving a common generator with a normal synchronous speed of approximately 900 rpm.

1 **INSERT 5**

a 6.9 kV Shutdown Board degraded voltage or loss-of-voltage signal

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BASES

BACKGROUND (continued)

6.9 kV Shutdown Board 6.9 kV Shutdown Board

loads from the ~~ESF bus~~. When the DG is tied to the ~~ESF bus~~, loads are then sequentially connected to its respective ~~ESF bus~~ by ~~the automatic~~ load ~~sequencer~~. ~~The sequencing logic controls the permissive and starting signals to motor breakers to prevent overloading the DG by automatic load application.~~ 1 3

sequence timers

individual

6.9 kV Shutdown Boards

In the event of a loss of preferred power, the ~~ESF electrical loads~~ are automatically connected to the DGs in sufficient time to provide for safe reactor shutdown and to mitigate the consequences of a Design Basis Accident (DBA) such as a ~~loss of coolant accident (~~LOCA~~)~~. 1 1

INSERT 6

Certain required unit loads are returned to service in a predetermined sequence in order to prevent overloading the DG in the process. Within ~~[1] minute~~ after the initiating signal is received, ~~all~~ loads needed to recover the unit or maintain it in a safe condition are returned to service. 2 1 1

INSERT 7 automatic and permanently connected

4400

Ratings for ~~Train A and Train B~~ DGs satisfy the requirements of Regulatory Guide 1.9 (Ref. 3). The continuous service rating of each DG is ~~[7000]~~ kW with ~~[~~10~~]~~% overload permissible for up to 2 hours in any 24 hour period. The ESF loads that are powered from the ~~4.16 kV ESF buses~~ are listed in Reference 2. 1 2 1

6.9 kV Shutdown Boards

U

APPLICABLE SAFETY ANALYSES

The initial conditions of DBA and transient analyses in the FSAR, Chapter ~~[~~6~~]~~ (Ref. 4) and Chapter ~~[~~15~~]~~ (Ref. 5), assume ESF systems are OPERABLE. The AC electrical power sources are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System (RCS), and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems. 1 2

The OPERABILITY of the AC electrical power sources is consistent with the initial assumptions of the Accident analyses and is based upon meeting the design basis of the unit. This results in maintaining at least one train of the onsite or offsite AC sources OPERABLE during Accident conditions in the event of: 4

a. An assumed loss of all offsite power or all onsite AC power and

b. A worst case single failure.

The AC sources satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

2 **INSERT 6**

the required time interval (UFSAR Table 8.3.1-2)

1 **INSERT 7**

the 1A-A, 1B-B, 2A-A and 2B-B

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LCO

Two qualified circuits between the offsite transmission network and the onsite Class 1E Electrical Power System and separate and independent DGs for each 6.9kV Shutdown Board ~~train~~ ensure availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an anticipated operational occurrence (AOO) or a postulated DBA. 1

~~Qualified offsite circuits are those that are described in the FSAR and are part of the licensing basis for the unit.~~ 1

~~[In addition, one required automatic load sequencer per train must be OPERABLE.]~~ 2

Each qualified offsite circuit must be physically independent, capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the ~~ESF buses~~ 6.9kV Shutdown Boards. 1 1

INSERT 8 ~~[Offsite circuit #1 consists of Safeguards Transformer B, which is supplied from Switchyard Bus B, and is fed through breaker 52-3 powering the ESF transformer XNB01, which, in turn, powers the #1 ESF bus through its normal feeder breaker. Offsite circuit #2 consists of the Startup Transformer, which is normally fed from the Switchyard Bus A, and is fed through breaker PA 0201, powering the ESF transformer, which, in turn, powers the #2 ESF bus through its normal feeder breaker.]~~ 1

Each DG must be capable of starting, accelerating to rated speed and voltage, and connecting to its respective ~~ESF bus~~ 6.9kV Shutdown Board on detection of ~~bus~~ board undervoltage. This will be accomplished within ~~[~~10~~]~~ seconds. Each DG must also be capable of accepting required loads within the assumed loading sequence intervals, and continue to operate until offsite power can be restored to the ~~ESF buses~~ 6.9kV Shutdown Board. These capabilities are required to be met from a variety of initial conditions such as DG in standby with the engine hot and DG in standby with the engine at ambient conditions. ~~Additional DG capabilities must be demonstrated to meet required Surveillance, e.g., capability of the DG to revert to standby status on an ECCS signal while operating in parallel test mode.~~ VKG024 1 2 1 5

Proper sequencing of loads, ~~[~~including tripping of nonessential loads,~~]~~ is a required function for DG OPERABILITY. 2

The AC sources in one train must be separate and independent (to the extent possible) of the AC sources in the other train. For the DGs, separation and independence are complete.

~~For the offsite AC sources, separation and independence are to the extent practical. A circuit may be connected to more than one ESF bus, with fast transfer capability to the other circuit OPERABLE, and not violate separation criteria. A circuit that is not connected to an ESF bus is required to have OPERABLE fast transfer interlock mechanisms to at least two ESF buses to support OPERABILITY of that circuit.~~ 1

1 **INSERT 8**

The minimum required switchyard voltages are determined by evaluation of plant accident loading and the associated voltage drops between the transmission network and these loads. These minimum voltage values are provided to TVA's Transmission Operations for use in system studies to support operation of the transmission network in a manner that will maintain the necessary voltages. Transmission Operations is required to notify SQN Operations if it is determined that the transmission network may not be able to support accident loading or shutdown operations as required by 10 CFR 50, Appendix A, GDC-17. Any offsite power circuits supplied by the transmission network that are not able to support accident loading or shutdown operations are inoperable.

The USSTs utilize auto load tap changers to provide the required voltage response for accident loading. The load tap changer associated with a USST is required to be functional and in "automatic" for the USST to supply power to a 6.9 kV Unit Board.

Each required offsite circuit is that combination of power sources described below that are either connected to the Class 1E AC Electrical Power Distribution System, or is available to be connected to the Class 1E AC Electrical Power Distribution System through automatic transfer at the 6.9 kV Unit Boards.

The following offsite power configurations meet the requirements of the LCO:

1. Two offsite circuits consisting of a AND b (no board transfers required; a loss of either circuit will not prevent the minimum safety functions from being performed):

    a. From the 161 kV transmission network, through CSST A (winding X) to Start Bus 1A to 6.9 kV Shutdown Board 1B-B (through 6.9 kV Unit Board 1C), and CSST A (winding Y) to Start Bus 2A to 6.9 kV Shutdown Board 2B-B (through 6.9 kV Unit Board 2C); AND

    b. From the 161 kV transmission network, through CSST C (winding X) to Start Bus 2B to 6.9 kV Shutdown Board 2A-A (through 6.9 kV Unit Board 2B), and CSST C (winding Y) to Start Bus 1B to 6.9 kV Shutdown Board 1A-A (through 6.9 kV Unit Board 1B).

INSERT 8 (Continued)

2. Two offsite circuits consisting of a AND b (relies on automatic transfer from alignment a.1) to b.2)(b), or a.2) to b.1)(a) on a loss of USSTs 1A and 1B, OR relies on automatic transfer from alignment a.3) to b.2)(a), or a.4) to b.1)(b) on a loss of USSTs 2A and 2B):

   a. Normal power source alignments

      1) From the 500 kV switchyard through USST 1A to 6.9 kV Shutdown Board 1A-A (through 6.9 kV Unit Board 1B);

      2) From the 500 kV switchyard through USST 1B to 6.9 kV Shutdown Board 1B-B (through 6.9 kV Unit Board 1C);

      3) From the 161 kV switchyard through USST 2A to 6.9 kV Shutdown Board 2A-A (through 6.9 kV Unit Board 2B); AND

      4) From the 161 kV switchyard through USST 2B to 6.9 kV Shutdown Board 2B-B (through 6.9 kV Unit Board 2C).

   b. Alternate power source alignments

      1) From the 161 kV transmission network, through:

         (a) CSST A (winding X) to Start Bus 1A to 6.9 kV Shutdown Board 1B-B (through 6.9 kV Unit Board 1C); AND

         (b) CSST A (winding Y) to Start Bus 2A to 6.9 kV Shutdown Board 2B-B (through 6.9 kV Unit Board 2C); OR

      2) From the 161 kV transmission network, through:

         (a) CSST C (winding X) to Start Bus 2B to 6.9 kV Shutdown Board 2A-A (through 6.9 kV Unit Board 2B); AND

         (b) CSST C (winding Y) to Start Bus 1B to 6.9 kV Shutdown Board 1A-A (through 6.9 kV Unit Board 1B).

3. Two offsite circuits consisting of a AND b (relies on automatic transfer from alignment a.1) to b.1) and b.2) on a loss of the Unit 2 USSTs; a loss of alignment a.2) or a.3) will not prevent the minimum safety functions from being performed):

   a. Normal power source alignments

      1) From the 161 kV switchyard through USST 2A to 6.9 kV Shutdown Board 2A-A (through 6.9 kV Unit Board 2B), and USST 2B to 6.9 kV Shutdown Board 2B-B (through 6.9 kV Unit Board 2C);

      2) From the 161 kV transmission network, through CSST A (winding X) to Start Bus 1A to 6.9 kV Shutdown Board 1B-B (through 6.9 kV Unit Board 1C); AND

INSERT 8 (Continued)

3) From the 161 kV transmission network, through CSST C (winding Y) to Start Bus 1B to 6.9 kV Shutdown Board 1A-A (through 6.9 kV Unit Board 1B).

b. Alternate power source alignments

1) From the 161 kV transmission network, through CSST A (winding Y) to Start Bus 2A to 6.9 kV Shutdown Board 2B-B (through 6.9 kV Unit Board 2C); AND

2) From the 161 kV transmission network, through CSST C (winding X) to Start Bus 2B to 6.9 kV Shutdown Board 2A-A (through 6.9 kV Unit Board 2B).

4. Two offsite circuits consisting of a AND b (relies on automatic transfer from alignment a.1) to b.1) and b.2) on a loss of the Unit 1 USSTs; a loss of alignment a.2) or a.3) will not prevent the minimum safety functions from being performed):

a. Normal power source alignments

1) From the 500 kV switchyard through USST 1A to 6.9 kV Shutdown Board 1A-A (through 6.9 kV Unit Board 1B), and USST 1B to 6.9 kV Shutdown Board 1B-B (through 6.9 kV Unit Board 1C);

2) From the 161 kV transmission network, through CSST A (winding Y) to Start Bus 2A to 6.9 kV Shutdown Board 2B-B (through 6.9 kV Unit Board 2C); AND

3) From the 161 kV transmission network, through CSST C (winding X) to Start Bus 2B to 6.9 kV Shutdown Board 2A-A (through 6.9 kV Unit Board 2B).

b. Alternate power source alignments

1) From the 161 kV transmission network, through CSST A (winding X) to Start Bus 1A to 6.9 kV Shutdown Board 1B-B (through 6.9 kV Unit Board 1C); AND

2) From the 161 kV transmission network, through CSST C (winding Y) to Start Bus 1B to 6.9 kV Shutdown Board 1A-A (through 6.9 kV Unit Board 1B).

Other offsite power configurations are possible using different combinations of available USSTs and CSSTs, as long as the alignments are consistent with the analyzed configurations, and the alignments comply with the requirements of GDC 17.

BASES

APPLICABILITY

The AC sources ~~[and sequencers]~~ are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that: 2

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients and

b. Adequate core cooling is provided and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

The AC power requirements for MODES 5 and 6 are covered in LCO 3.8.2, "AC Sources - Shutdown."

ACTIONS

The ACTIONS are modified by a Note that

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~~A Note~~ prohibits the application of LCO 3.0.4.b to an inoperable DG. There is an increased risk associated with entering a MODE or other specified condition in the Applicability with an inoperable DG and the provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance. 5

A second Note provides the appropriate restrictions for a de-energized shutdown board. Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the ACTIONS are modified by a Note to indicate that when any Condition(s) is entered with no AC power source to any shutdown board resulting in a de-energized shutdown board, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows LCO 3.8.1 Conditions to provide requirements for the loss of any combination of AC Sources, without regard to whether a shutdown board is de-energized and LCO 3.8.9 to provide the appropriate restrictions for a de-energized shutdown board. 5

A.1

To ensure a highly reliable power source remains with one offsite circuit inoperable for reasons other than Condition C, it is necessary to verify the OPERABILITY of the remaining required offsite circuit on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action not met. However, if a second required circuit fails SR 3.8.1.1, the second offsite circuit is inoperable, and Condition ~~C~~ ~~E~~ D, for two offsite circuits inoperable, is entered. 5 5

~~REVIEWER'S NOTE~~ 6

~~The turbine driven auxiliary feedwater pump is only required to be considered a redundant required feature, and, therefore, required to be determined OPERABLE by this Required Action, if the design is such that the remaining OPERABLE motor or turbine driven auxiliary feedwater pump(s) is not by itself capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.~~

ACTIONS (continued)

A.2

a Unit 1 6.9 kV Shutdown Board

Required Action A.2, which only applies if ~~the train~~ cannot be powered from an offsite source, is intended to provide assurance that an event coincident with a single failure of the associated DG will not result in a complete loss of safety function of critical redundant required features. These features are powered from the redundant AC electrical power train. This includes motor driven auxiliary feedwater pumps. Single train systems, such as turbine driven auxiliary feedwater pumps, may not be included. 5

The Completion Time for Required Action A.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

6.9 kV Shutdown Board 1A-A or 1B-B

a. ~~The train~~ has no offsite power supplying it loads and 5

b. A required feature on the other train is inoperable.

If at any time during the existence of Condition A ~~(one offsite circuit inoperable)~~ a redundant required feature subsequently becomes inoperable, this Completion Time begins to be tracked. 5

a Unit 1 6.9 kV Shutdown Board

Discovering no offsite power to ~~one train of the onsite Class 1E Electrical Power Distribution System~~ coincident with one or more inoperable required support or supported features, or both, that are associated with the other train that has offsite power, results in starting the Completion Times for the Required Action. Twenty-four hours is acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown. 5

The remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to ~~Train A and Train B of~~ the onsite Class 1E Distribution System. The 24 hour Completion Time takes into account the component OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 24 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 1

BASES

ACTIONS (continued)

A.3

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition A for a period that should not exceed 72 hours. With one offsite circuit inoperable, the reliability of the offsite system is degraded, and the potential for a loss of offsite power is increased, with attendant potential for a challenge to the unit safety systems. In this Condition, however, the remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the onsite Class 1E AC Electrical Power Distribution System. 1

The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

B.1

To ensure a highly reliable power source remains with ~~an~~ INSERT 9 inoperable ~~DG~~, 5
it is necessary to verify the availability of the offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must then be entered.

~~-----REVIEWER'S NOTE-----~~ 6
~~The turbine driven auxiliary feedwater pump is only required to be considered a redundant required feature, and, therefore, required to be determined OPERABLE by this Required Action, if the design is such that the remaining OPERABLE motor or turbine driven auxiliary feedwater pump(s) is not by itself capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.~~
~~-----~~

B.2

Required Action B.2 is intended to provide assurance that a loss of offsite power, during the period that a DG(s) is inoperable, does not result in a complete loss of safety function of critical systems. These features are designed with redundant safety related trains. This includes motor driven auxiliary feedwater pumps. Single train systems, such as turbine driven auxiliary feedwater pumps, are not included. Redundant required feature failures consist of inoperable features associated with a train, redundant to the train that has an inoperable DG(s). 5 5

5

INSERT 9

~~DG 1A-A, DG 1B-B, DGs 1A-A and 2A-A, or DGs 1B-B and 2B-B~~

one or more Train A DGs, or one or more Train B DGs

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BASES

ACTIONS (continued)

The Completion Time for Required Action B.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. An inoperable DG exists and

b. A required feature on the other train ~~(Train A or Train B)~~ is inoperable. 5

If at any time during the existence of this Condition (one or more DGs in a train ~~DG~~ inoperable) a required feature subsequently becomes inoperable, this Completion Time would begin to be tracked. 5

Discovering one or more DGs in a train ~~required DG~~ inoperable coincident with one or more inoperable required support or supported features, or both, that are associated with the OPERABLE DG, results in starting the Completion Time for the Required Action. Four hours from the discovery of these events existing concurrently is ~~A~~acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown. 5 4

In this Condition, the remaining OPERABLE DGs and offsite circuits are adequate to supply electrical power to the onsite Class 1E AC Electrical Power Distribution System. Thus, on a component basis, single failure protection for the required feature's function may have been lost; however, function has not been lost. The 4 hour Completion Time takes into account the OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 4 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 1 5

B.3.1 and B.3.2

Required Action B.3.1 provides an allowance to avoid unnecessary testing of OPERABLE DG(s). If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG, SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on other DG~~(s)~~, the other DG~~(s)~~ would be declared inoperable upon discovery and Condition J ~~E~~ of LCO 3.8.1 would be entered. INSERT 10 Once the failure is repaired, the common cause failure no longer exists, and Required Action B.3.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DG~~(s)~~, performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of that DG. 5

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F → ~~J~~

5 **INSERT 10**

if one or more DG(s) in Train A and Train B are inoperable

BASES

ACTIONS (continued)

In the event the inoperable DG(s) is restored to OPERABLE status prior to completing either B.3.1 or B.3.2, the ~~[plant~~ corrective action program~~]~~ will continue to evaluate the common cause possibility. This continued evaluation, however, is no longer under the 24 hour constraint imposed while in Condition B. 5 2

According to Generic Letter 84-15 (Ref. 7), ~~[~~24~~]~~ hours is reasonable to confirm that the OPERABLE DG(s) is not affected by the same problem as the inoperable DG. 2

B.4

~~According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition B for a period that should not exceed 72 hours.~~

In Condition B, the remaining OPERABLE DG(s) and offsite circuits are adequate to supply electrical power to the onsite Class 1E AC Electrical Power Distribution System. The ~~72 hour~~ 7 day Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 5

INSERT 11 5

VKG026 D

~~C~~ ~~E~~.1 and ~~C~~ ~~E~~.2 5

D D

Required Action ~~C~~ ~~E~~.1, which applies when two offsite circuits are inoperable, is intended to provide assurance that an event with a coincident single failure will not result in a complete loss of redundant required safety functions. The Completion Time for this failure of redundant required features is reduced to 12 hours from that allowed for one train without offsite power (Required Action A.2). The rationale for the reduction to 12 hours is that Regulatory Guide 1.93 (Ref. 6) allows a Completion Time of 24 hours for two required offsite circuits inoperable, based upon the assumption that two complete safety trains are OPERABLE. When a concurrent redundant required feature failure exists, this assumption is not the case, and a shorter Completion Time of 12 hours is appropriate. These features are powered from redundant AC safety trains. This includes motor driven auxiliary feedwater pumps. Single train features, such as turbine driven auxiliary pumps, are not included in the list.

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5 **INSERT 11**

C.1, C.2, and C.3

Condition C is entered for an offsite circuit inoperable solely due to an inoperable power source to 6.9 kV Shutdown Board 2A-A or 2B-B. Required Action C.1 verifies the OPERABILITY of the remaining offsite circuit within an hour of the inoperability and every 8 hours thereafter. Since the Required Action only specifies "perform," a failure of the SR 3.8.1.1 acceptance criteria does not result in a Required Action not met.

The Completion Time for Required Action C.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. 6.9 kV Shutdown Board 2A-A or 2B-B has no offsite power; and
b. A required feature on the other train is inoperable.

If at any time during the existence of Condition C a redundant required feature subsequently becomes inoperable, this Completion Time begins to be tracked.

A Completion Time of 24 hours is acceptable, because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown. The remaining OPERABLE offsite circuit and DGs are adequate to support these functions. The Completion Time takes into account the component OPERABILITY of the remaining redundant feature(s), a reasonable time for repairs, and the low probability of a DBA occurring during this period.

Operation may continue in Condition C for a period of 7 days. With one offsite circuit inoperable, the reliability of the functions is degraded. The potential for the loss of offsite power to the redundant feature(s) is increased, with the attendant potential for a challenge to their safety functions.

The required offsite circuit must be returned to OPERABLE status within 7 days~~, or the support function for the associated required feature is considered inoperable. At that time, the required feature must be declared inoperable and the appropriate Conditions must be entered~~. The 7 days Completion Time takes into account the capacity and capability of the remaining AC sources providing electrical power to the required feature(s), a reasonable time for repairs and the low probability of a DBA occurring during this period of time.

VKG027

5

INSERT 11 (Continued)

D.1, D.2, D.3 and D.4

To ensure a highly reliable power source remains with an inoperable DG to a Unit 2 6.9 kV Shutdown Board, it is necessary to verify the availability of the required offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. Required Action D.1 verifies the OPERABILITY of the required offsite sources within an hour of the inoperability and every 8 hours thereafter. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must be entered.

Required Action D.2 is intended to provide assurance that a loss of offsite power, during the period that an LCO 3.8.1.d DG is inoperable, does not result in a complete loss of the safety functions.

The Completion Time for Required Action D.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

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a. An inoperable DG to 6.9 kV Shutdown Board 2A-A or 2B-B exists; and
b. A redundant feature in the same system is inoperable.

If at any time during the existence of Condition D (one DG to 6.9 kV Shutdown Board 2A-A or 2B-B) a redundant feature in the same system subsequently becomes inoperable, this Completion Time begins to be tracked. The four hour Completion Time is acceptable, because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown.

The remaining OPERABLE offsite circuits and DGs are adequate to support the functions. The 4 hour Completion Time takes into account the component OPERABILITY of the remaining redundant feature(s), a reasonable time for repairs, and the low probability of a DBA occurring during this period.

D.3.1 and D.3.2

Required Action D.3.1 provides an allowance to avoid unnecessary testing of OPERABLE DG(s). If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG(s), SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on another DG, the other DG would be declared inoperable, and upon discovery, Condition J of LCO 3.8.1 would be entered, if one or more DG(s) in Train A and Train B are inoperable. Otherwise, if the inoperability exists on the other DG in the same train, the other DG would be declared inoperable upon discovery, Condition B would be entered. Once the failure is repaired, the common cause failure no longer exists, and Required Action D.3.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DGs, performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of that DG.

5

INSERT 11 (Continued)

~~Operation may continue in Condition D for a period of 7 days. With one Unit 2 DG inoperable, the reliability of the respective function is degraded. The potential for the loss of a DG to the redundant feature(s) is increased, with the attendant potential for a challenge to respective safety function.~~

VKG026

~~The required DG must be returned to OPERABLE status within 7 days, or the support function for the associated required feature is considered inoperable. At that time, the required feature must be declared inoperable and the appropriate Conditions must be entered. The 7 day Completion Time takes into account the capacity and capability of the remaining AC sources providing electrical power to the required feature(s), a reasonable time for repairs and the low probability of a DBA occurring during this period of time.~~

BASES

ACTIONS (continued)

VKG026

D

E

The Completion Time for Required Action ~~C~~.1 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action the Completion Time only begins on discovery that both: 5

a. All required offsite circuits are inoperable and

b. A required feature is inoperable.

D

E

If at any time during the existence of Condition ~~C~~ (two offsite circuits inoperable) a required feature becomes inoperable, this Completion Time begins to be tracked. 5

D

E

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition ~~C~~ for a period that should not exceed 24 hours. This level of degradation means that the offsite electrical power system does not have the capability to effect a safe shutdown and to mitigate the effects of an accident; however, the onsite AC sources have not been degraded. This level of degradation generally corresponds to a total loss of the immediately accessible offsite power sources. 5

Because of the normally high availability of the offsite sources, this level of degradation may appear to be more severe than other combinations of two AC sources inoperable that involve one or more DGs inoperable. However, two factors tend to decrease the severity of this level of degradation:

a. The configuration of the redundant AC electrical power system that remains available is not susceptible to a single bus or switching failure and

b. The time required to detect and restore an unavailable offsite power source is generally much less than that required to detect and restore an unavailable onsite AC source.

With both ~~of the required~~ offsite circuits inoperable, sufficient onsite AC sources are available to maintain the unit in a safe shutdown condition in the event of a DBA or transient. In fact, a simultaneous loss of offsite AC sources, a LOCA, and a worst case single failure were postulated as a part of the design basis in the safety analysis. Thus, the 24 hour Completion Time provides a period of time to effect restoration of one of the offsite circuits commensurate with the importance of maintaining an AC electrical power system capable of meeting its design criteria. 5

BASES

ACTIONS (continued)

VKG026

According to Reference 6, with the available offsite AC sources, two less than required by the LCO, operation may continue for 24 hours. If two offsite sources are restored within 24 hours, unrestricted operation may continue. If only one offsite source is restored within 24 hours, power operation continues in accordance with Condition A or Condition C, as applicable. 5

E F E F

~~D~~.1 and ~~D~~.2 5

~~Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Actions of Condition D F are modified by a Note to indicate that when Condition D F is entered with no AC source to any train 6.9 kV Shutdown Board 1A-A or 1B-B, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows Condition D F to provide requirements for the loss of one offsite circuit and one DG to 6.9 kV Shutdown Board 1A-A or 1B-B, without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized train.~~ 5

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition ~~D~~ F E for a period that should not exceed 12 hours. 5

In Condition ~~D~~ F E, individual redundancy is lost in both the offsite electrical power system and the onsite AC electrical power system. Since power system redundancy is provided by two diverse sources of power, however, the reliability of the power systems in this Condition may appear higher than that in Condition ~~C~~ E D (loss of both ~~required~~ offsite circuits). This difference in reliability is offset by the susceptibility of this power system configuration to a single bus or switching failure. The 12 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 5

~~INSERT 12~~

~~E~~ J F.1 5

With ~~Train A and Train B DGs~~ one or more Train A DG(s) and one or more Train B DG(s) inoperable, there are ~~no remaining~~ insufficient standby AC sources available to power an entire load group. Thus, with an assumed loss of offsite electrical power, insufficient standby AC sources are available to power the minimum required ESF functions. Since the offsite electrical power system is the only source of AC power for this level of degradation, the risk associated with continued operation for a very short time could be less than that associated with an immediate controlled shutdown (the immediate shutdown could cause grid instability, which could result in a total loss of AC power). Since any inadvertent generator trip could also result in a

5

~~**INSERT 12**~~

G.1 and H.1

In Conditions G and H, individual redundancy is lost in the offsite electrical power system for one unit and the onsite AC electrical power system for the other unit. Since Conditions B and C are entered concurrent with entry into Condition G, and Conditions A and D are entered concurrent with entry into Condition H, the Required Actions of Conditions B and C (or Conditions A and D) provide the appropriate compensatory measures to ensure the onsite and offsite power sources are either restored to an OPERABLE status, or the associated required features are declared inoperable, thereby requiring entry into the appropriate Conditions associated with the associated feature's LCO. The Completion Times of Required Actions G.1 and H.1 are consistent with the Completion Times of Required Actions C.3 and D.4. If, while in Condition G or H, a redundant required feature is determined to be inoperable, the required feature(s) would be declared inoperable at the Completion Times specified in Conditions A, B, C, or D, as applicable.

VKG026

I.1 and I.2

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Actions of Condition I are modified by a Note to indicate that when Condition I is entered with no AC source to 6.9 kV Shutdown Board 2A-A or 2B-B, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows Condition I to provide requirements for the loss of one offsite power source and one DG, without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized 6.9 kV Shutdown Board.

In Condition I, individual redundancy is lost in the offsite electrical power system and the onsite AC electrical power system. Concurrent with entry into Condition I, entry into Condition C (inoperable offsite power source) and Condition D (inoperable DG) are required. The Required Actions of Conditions C and D ensure the remaining offsite circuit and DGs are OPERABLE and that required features with no offsite or onsite power sources are declared inoperable when its redundant required feature is inoperable within the Completion Times of Required Actions C.2 and D.2.

BASES

ACTIONS (continued)

total loss of offsite AC power, however, the time allowed for continued operation is severely restricted. The intent here is to avoid the risk associated with an immediate controlled shutdown and to minimize the risk associated with this level of degradation.

In this Condition,

~~According to Reference 6, with both DGs inoperable,~~ operation may continue for a period that should not exceed 2 hours. 5

, consistent with the guidance provided in Reference 6 5

~~[F.1~~ 5

~~The sequencer(s) is an essential support system to [both the offsite circuit and the DG associated with a given ESF bus]. [Furthermore, the sequencer is on the primary success path for most major AC electrically powered safety systems powered from the associated ESF bus.] Therefore, loss of an [ESF bus sequencer] affects every major ESF system in the [division]. The [12] hour Completion Time provides a period of time to correct the problem commensurate with the importance of maintaining sequencer OPERABILITY. This time period also ensures that the probability of an accident (requiring sequencer OPERABILITY) occurring during periods when the sequencer is inoperable is minimal.~~

~~This Condition is preceded by a Note that allows the Condition to be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads under any conditions. Implicit in this Note is the concept that the Condition must be retained if any sequencer failure mode results in the inability to start all or part of the safety loads when required, regardless of power availability, or results in overloading the offsite power circuit to a safety bus during an event and thereby causes its failure. Also implicit in the Note, is that the Condition is not applicable to any train that does not have a sequencer.]~~

G ~~K~~ ~~K~~ G

VKG026 ~~G~~.1 and ~~G~~.2 5

If the inoperable AC electric power sources cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

BASES

ACTIONS (continued)

H VKG026

I

L.1 and M.1 5

~~H.1~~

H and I

s L and M

Condition ~~H~~ corresponds~~s~~ to a level of degradation in which ~~all~~ redundancy in the AC electrical power supplies ~~has been lost~~. At this severely degraded level, any further losses in the AC electrical power system will cause a loss of function. Therefore, no additional time is justified for continued operation. The unit is required by LCO 3.0.3 to commence a controlled shutdown.

cannot be assured

SURVEILLANCE REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function, in accordance with 10 CFR 50, Appendix A, GDC 18 (Ref. 8). Periodic component tests are supplemented by extensive functional tests during refueling outages (under simulated accident conditions). The SRs for demonstrating the OPERABILITY of the DGs are in accordance with the recommendations of Regulatory Guide 1.9 (Ref. 3)~~,~~ Regulatory Guide 1.108 (Ref. 9)~~, and Regulatory Guide 1.137 (Ref. 10), as addressed in the FSAR~~. and 1

Where the SRs discussed herein specify voltage and frequency tolerances, the following is applicable. The minimum steady state output voltage of ~~[3740]~~ V is 90% of the nominal ~~4160~~ V output voltage. This value, which is specified in ANSI C84.1 (Ref. ~~11~~), allows for voltage drop to the terminals of ~~4000~~ V motors whose minimum operating voltage is specified as 90% or ~~3600~~ V. It also allows for voltage drops to motors and other equipment down through the 120 V level where minimum operating voltage is also usually specified as 90% of name plate rating. The specified maximum steady state output voltage of [~~4756~~] V is equal to the maximum operating voltage specified for ~~4000~~ V motors. It ensures that for a lightly loaded distribution system, the voltage at the terminals of ~~4000~~ V motors is no more than the maximum rated operating voltages. The specified minimum and maximum frequencies of the DG are 58.8 Hz and 61.2 Hz, respectively. These values are equal to ± 2% of the 60 Hz nominal frequency and are derived from the recommendations given in Regulatory Guide 1.9 (Ref. 3).

6900 6210 10 6600 5940 7260 6600 6600 2 1 1 1 2 1 1

SR 3.8.1.1

This SR ensures proper circuit continuity for the offsite AC electrical power supply to the onsite distribution network and availability of offsite AC electrical power. The breaker alignment verifies that each breaker is in its correct position to ensure that distribution buses and loads are connected to their preferred power source, and that appropriate independence of offsite circuits is maintained. ~~[The 7 day Frequency is~~ 7

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SURVEILLANCE REQUIREMENTS (continued)

~~adequate since breaker position is not likely to change without the operator being aware of it and because its status is displayed in the control room.~~

~~OR~~

7

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

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

6

SR 3.8.1.2 and SR 3.8.1.7

These SRs help to ensure the availability of the standby electrical power supply to mitigate DBAs and transients and to maintain the unit in a safe shutdown condition.

To minimize the wear on moving parts that do not get lubricated when the engine is not running, these SRs are modified by a Note (Note 1 for SR 3.8.1.2 and Note for SR 3.8.1.7) to indicate that all DG starts for these Surveillances may be preceded by an engine prelube period and followed by a warmup period prior to loading.

For the purposes of SR 3.8.1.2 and SR 3.8.1.7 testing, the DGs are started from standby conditions. Standby conditions for a DG mean that the diesel engine coolant and oil are being continuously circulated and temperature is being maintained consistent with manufacturer recommendations.

~~[~~ In order to reduce stress and wear on diesel engines, the ~~some~~ manufacturer~~s~~ recommends a modified start in which the starting speed of DGs is limited, warmup is limited to this lower speed, and the DGs are gradually accelerated to synchronous speed prior to loading. These start procedures are the intent of Note 2~~, which is only applicable when such modified start procedures are recommended by the manufacturer~~. ~~]~~

2

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.7 requires that the DG starts from standby conditions and achieves required voltage and frequency within 10 seconds. The 10 second start requirement supports the assumptions of the design basis LOCA analysis in the FSAR, Chapter ~~[~~15~~]~~ (Ref. 5). 2

The 10 second start requirement is not applicable to SR 3.8.1.2 (see Note 2) when a modified start procedure as described above is used. If a modified start is not used, the 10 second start requirement of SR 3.8.1.7 applies.

Since SR 3.8.1.7 requires a 10 second start, it is more restrictive than SR 3.8.1.2, and it may be performed in lieu of SR 3.8.1.2.

In addition to the SR requirements, the time for the DG to reach steady state operation, unless the modified DG start method is employed, is periodically monitored and the trend evaluated to identify degradation of governor and voltage regulator performance.

~~[The 31 day Frequency for SR 3.8.1.2 is consistent with Regulatory Guide 1.9 (Ref. 3). The 184 day Frequency for SR 3.8.1.7 is a reduction in cold testing consistent with Generic Letter 84-15 (Ref. 7). These Frequencies provide adequate assurance of DG OPERABILITY, while minimizing degradation resulting from testing.~~ 7

~~OR~~

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 6

SR 3.8.1.3

This Surveillance verifies that the DGs are capable of synchronizing with the offsite electrical system and accepting loads greater than or equal to the equivalent of the maximum expected accident loads. A minimum run time of 60 minutes is required to stabilize engine temperatures, while minimizing the time that the DG is connected to the offsite source.

BASES

SURVEILLANCE REQUIREMENTS (continued)

has an allowable rating

Although no power factor requirements are established by this SR, the DG ~~is normally operated at a~~ power factor between [0.8 lagging] and [1.0]. The [0.8] value is the design rating of the machine, while the [1.0] is an operational limitation [to ensure circulating currents are minimized]. The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY. 1 2

[~~The 31 day Frequency for this Surveillance is consistent with Regulatory Guide 1.9 (Ref. 3).~~ 7

~~OR~~

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 6
~~----------~~]

This SR is modified by four Notes. Note 1 indicates that diesel engine runs for this Surveillance may include gradual loading, as recommended by the manufacturer, so that mechanical stress and wear on the diesel engine are minimized. Note 2 states that momentary transients, because of changing board ~~bus~~ loads, do not invalidate this test. Similarly, momentary power factor transients above the limit do not invalidate the test. Note 3 indicates that this Surveillance should be conducted on only one DG at a time in order to avoid common cause failures that might result from offsite circuit or grid perturbations. Note 4 stipulates a prerequisite requirement for performance of this SR. A successful DG start must precede this test to credit satisfactory performance. VKG024 1

SR 3.8.1.4

This SR provides verification that the level of fuel oil in the engine-mounted "day" ~~day~~ tank ~~[and engine mounted tank]~~ is at or above the level at which fuel oil is automatically added. The level is expressed as an equivalent volume in gallons, and is selected to ensure adequate fuel oil for a minimum of 1 hour of DG operation at full load plus 10%. 5 2

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SURVEILLANCE REQUIREMENTS (continued)

~~[The 31 day Frequency is adequate to assure that a sufficient supply of fuel oil is available, since low level alarms are provided and facility operators would be aware of any large uses of fuel oil during this period.~~ 7

~~OR~~

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 6

SR 3.8.1.5

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the engine-mounted "day" ~~fuel oil day [and engine mounted]~~ tank~~s~~ eliminates the necessary environment for bacterial survival. 5 2 This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, contaminated fuel oil, and breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. ~~[The Surveillance Frequency of 31 days is established by Regulatory Guide 1.137 (Ref. 10). This SR is for preventative maintenance.~~ 7

~~OR~~

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 6

SURVEILLANCE REQUIREMENTS (continued)

The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during the performance of this Surveillance.

SR 3.8.1.6

the storage system to the engine-mounted "day"

This Surveillance demonstrates that each required fuel oil transfer pump operates and transfers fuel oil from ~~its associated storage tank to its associated day~~ tank. This is required to support continuous operation of standby power sources. This Surveillance provides assurance that the fuel oil transfer pump is OPERABLE, the fuel oil piping system is intact, the fuel delivery piping is not obstructed, and the controls and control systems for automatic fuel transfer systems are OPERABLE. 1

[~~The Frequency for this SR is variable, depending on individual system design, with up to a [92] day interval. The [92] day Frequency corresponds to the testing requirements for pumps as contained in the ASME Code (Ref. 11); however, the design of fuel transfer systems is such that pumps operate automatically or must be started manually in order to maintain an adequate volume of fuel oil in the day [and engine mounted] tanks during or following DG testing. In such a case, a 31 day Frequency is appropriate. Since proper operation of fuel transfer systems is an inherent part of DG OPERABILITY, the Frequency of this SR should be modified to reflect individual designs.~~

~~OR~~ 7

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---~~] 6

SR 3.8.1.7

See SR 3.8.1.2.

SURVEILLANCE REQUIREMENTS (continued)

~~[~~ SR 3.8.1.8 2

INSERT 13 ~~Transfer of each [4.16 kV ESF bus] power supply from the normal offsite circuit to the alternate offsite circuit demonstrates the OPERABILITY of the alternate circuit distribution network to power the shutdown loads.~~ 1
~~[The [18 month] Frequency of the Surveillance is based on engineering judgment, taking into consideration the unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the [18 month] Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~

~~OR~~ 7

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ 6

This SR is modified by ~~a~~ two Notes. The reason for ~~the~~ Note 1 is that, during operation with the reactor critical, performance of this SR for the 1A, 1B, 1C, and 1D Unit Boards could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment.~~]~~ 2 Credit may be taken for unplanned events that satisfy this SR. 5

INSERT 14 5

1 **INSERT 13**

Transfer of the power supply to each 6.9 kV Unit Board from the normal supply to the alternate supply demonstrates the OPERABILITY of the alternate supply to power the shutdown loads. This SR is modified by two Notes.

1 **INSERT 14**

Note 2 specifies that transfer capability is only required to be met for 6.9 kV Unit Boards that require normal and alternate power supplies. When both load groups are being supplied power by the USSTs, only the 6.9 kV Unit Boards associated with one load group are required to have normal and alternate power supplies. Therefore, only one CSST is required to be OPERABLE and available as an alternate power supply. Manual transfers between the normal supply and the alternate supply are also required to meet the SR. However, delayed access to an offsite circuit is not credited in the accident analysis.

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SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.9

Each DG is provided with an engine overspeed trip to prevent damage to the engine. Recovery from the transient caused by the loss of a large load could cause diesel engine overspeed, which, if excessive, might result in a trip of the engine. This Surveillance demonstrates the DG load response characteristics and capability to reject the largest single load (600kw) without exceeding predetermined voltage and frequency and while maintaining a specified margin to the overspeed trip. ~~[For this unit, the single load for each DG and its horsepower rating is as follows:]~~ This Surveillance may be accomplished by: 1 2

a. Tripping the DG output breaker with the DG carrying greater than or equal to its associated single largest post-accident load while paralleled to offsite power, or while solely supplying the ~~bus~~ board, or 1 VKG024

b. Tripping its associated single largest post-accident load with the DG solely supplying the ~~bus~~ board. 1

Consistent with Regulatory Guide 1.9 ~~As required by IEEE-308~~ (Ref. ~~12~~ 3), the load rejection test is acceptable if the increase in diesel speed does not exceed 75% of the difference between synchronous speed and the overspeed trip setpoint, or 15% above synchronous speed, whichever is lower. 1

The time, voltage, and frequency tolerances specified in this SR are derived from Regulatory Guide 1.9 (Ref. 3) recommendations for response during load sequence intervals. The 3 seconds specified is equal to 60% of a typical 5 second load sequence interval associated with sequencing of the largest load. The voltage and frequency specified are consistent with the design range of the equipment powered by the DG. SR 3.8.1.9.a corresponds to the maximum frequency excursion, while SR 3.8.1.9.b and SR 3.8.1.9.c are steady state voltage and frequency values to which the system must recover following load rejection. ~~[The [18 month] Frequency is consistent with the recommendation of Regulatory Guide 1.108 (Ref. 9).~~ 7

~~OR~~

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

SURVEILLANCE REQUIREMENTS (continued)

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--~~] 6

SII

This SR is modified by a ~~two~~ Notes. The ~~reason for Note 1 is that during~~ for DGs 1A-A and 1B-B ~~operation with the reactor critical, performance of this SR could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR.~~ 5

SII the VKG024

Note ~~2~~ ensures that the DG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed at a power factor of ≤ 0.89 ~~[0.9]~~. This power factor is representative of the actual inductive loading a DG would see under design basis accident conditions. Under certain conditions, however, the Note ~~2~~ allows the Surveillance to be conducted at a power factor other than ≤ 0.89 ~~[0.9]~~. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ 0.89 ~~[0.9]~~ results in voltages on the emergency boards ~~busses~~ that are too high. Under these conditions, the power factor should be maintained as close as practicable to 0.89 ~~[0.9]~~ while still maintaining acceptable voltage limits on the emergency boards ~~busses~~. In other circumstances, the grid voltage may be such that the DG excitation levels needed to obtain a power factor of 0.89 ~~[0.9]~~ may not cause unacceptable voltages on the emergency boards ~~busses~~, but the excitation levels are in excess of those recommended for the DG. In such cases, the power factor shall be maintained as close as practicable to 0.89 ~~[0.9]~~ without exceeding the DG excitation limits. 2 1 2 1 1

SURVEILLANCE REQUIREMENTS (continued)

~~-----REVIEWER'S NOTE-----~~
~~The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:~~

~~a. Performance of the SR will not render any safety system or component inoperable,~~

~~b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems, and~~

~~c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.~~

~~----------~~

6

SR 3.8.1.10

This Surveillance demonstrates the DG capability to reject a full load without overspeed tripping or exceeding the predetermined voltage limits. The DG full load rejection may occur because of a system fault or inadvertent breaker tripping. This Surveillance ensures proper engine generator load response under the simulated test conditions. This test simulates the loss of the total connected load that the DG experiences following a full load rejection and verifies that the DG does not trip upon loss of the load. These acceptance criteria provide for DG damage protection. While the DG is not expected to experience this transient during an event and continues to be available, this response ensures that the DG is not degraded for future application, including reconnection to the ~~bus~~ board if the trip initiator can be corrected or isolated. 1

VKG024

~~[The [18 month] Frequency is consistent with the recommendation of Regulatory Guide 1.108 (Ref. 9) and is intended to be consistent with expected fuel cycle lengths.~~ 7

~~OR~~

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

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ 6

SII

a

This SR has been modified by ~~two~~ Notes. The ~~reason for Note 1 is that during operation with the reactor critical, performance of this SR could cause perturbation to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR.~~ Note ~~2~~ ensures that the DG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed at a power factor of ≤ ~~[0.9]~~ 0.89. This power factor is representative of the actual inductive loading a DG would see under design basis accident conditions. Under certain conditions, however, the Note ~~2~~ allows the Surveillance to be conducted at a power factor other than ≤ ~~[0.9]~~ 0.89. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ ~~[0.9]~~ 0.89 results in voltages on the emergency ~~busses~~ boards that are too high. Under these conditions, the power factor should be maintained as close as practicable to ~~[0.9]~~ 0.89 while still maintaining acceptable voltage limits on the emergency ~~busses~~ boards. In other circumstances, the grid voltage may be such that the DG excitation levels needed to obtain a power factor of ~~[0.9]~~ 0.89 may not cause unacceptable voltages on the emergency ~~busses~~ boards, but the excitation levels are in excess of those recommended for the DG. In such cases, the power factor shall be maintained as close as practicable to ~~[0.9]~~ 0.89 without exceeding the DG excitation limits.

for DGs 1A-A and 1B-B 5

SII 2

VKG024 1 2 1 1

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE---------------------------~~
~~The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:~~

~~a. Performance of the SR will not render any safety system or component inoperable,~~

~~b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems, and~~

~~c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.~~
~~--~~ 6

SR 3.8.1.11

As required by Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(1), this Surveillance demonstrates the as designed operation of the standby power sources during loss of the offsite source. This test verifies all actions encountered from the loss of offsite power, including shedding of the nonessential loads and energization of the emergency ~~buses~~ boards and respective loads from the DG. It further demonstrates the capability of the DG to automatically achieve the required voltage and frequency within the specified time. VKG024 1

The DG autostart time of ~~[~~10~~]~~ seconds is derived from requirements of the accident analysis to respond to a design basis large break LOCA. The Surveillance should be continued for a minimum of 5 minutes in order to demonstrate that all starting transients have decayed and stability is achieved. 2

The requirement to verify the connection and power supply of permanent and autoconnected loads is intended to satisfactorily show the relationship of these loads to the DG loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. For instance, Emergency Core Cooling Systems (ECCS) injection valves are not desired to be stroked open, or high pressure injection systems are not capable of being operated at full flow, or residual heat removal (RHR) systems performing a decay heat removal function are not desired to be realigned to the ECCS mode of operation. In lieu of actual demonstration

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SURVEILLANCE REQUIREMENTS (continued)

of connection and loading of loads, testing that adequately shows the capability of the DG systems to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

~~[The Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(1), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.~~ 7

~~OR~~

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 6
~~----------]~~

This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations. The reason for Note 2 is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the Surveillance for DGs 1A-A and 1B-B in MODE 1 or 2 is further amplified to allow portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for the assessment. Credit may be taken for unplanned events that satisfy this SR. 5

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[~~ SR 3.8.1.12 2

This Surveillance demonstrates that the DG automatically starts and achieves the required voltage and frequency within the specified time (~~[~~10~~]~~ seconds) from the design basis actuation signal (LOCA signal) and operates for ≥ 5 minutes. The 5 minute period provides sufficient time to demonstrate stability. SR 3.8.1.12.d and SR 3.8.1.12.e ensure that permanently connected loads and emergency loads are energized from the offsite electrical power system on an ESF signal without loss of offsite power. 2

The requirement to verify the connection of permanent and autoconnected loads is intended to satisfactorily show the relationship of these loads to the DG loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. For instance, ECCS injection valves are not desired to be stroked open, or high pressure injection systems are not capable of being operated at full flow, or RHR systems performing a decay heat removal function are not desired to be realigned to the ECCS mode of operation. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

~~[The Frequency of [18 months] takes into consideration unit conditions required to perform the Surveillance and is intended to be consistent with the expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the [18 month] Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ 7

~~OR~~

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 6
~~-----]~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations. The reason for Note 2 is that during operation with the reactor critical, performance of this Surveillance could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This restriction from normally performing the Surveillance for DGs 1A-A and 1B-B in MODE 1 or 2 is further amplified to allow portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for the assessment. ~~]~~ Credit may be taken for unplanned events that satisfy this SR. 5 2

<u>SR 3.8.1.13</u>

This Surveillance demonstrates that DG noncritical protective functions (e.g., high jacket water temperature) are bypassed on a loss of voltage signal, ~~concurrent with~~ an ESF actuation test signal, or both. Noncritical automatic trips are all automatic trips except: 5

a. Engine overspeed~~;~~ and

b. Generator differential current~~;~~.

~~[c. Low lube oil pressure;~~

~~d. High crankcase pressure; and~~

~~e. Start failure relay.]~~ 2

BASES

SURVEILLANCE REQUIREMENTS (continued)

The noncritical trips are bypassed during DBAs and provide an alarm on an abnormal engine condition. This alarm provides the operator with sufficient time to react appropriately. The DG availability to mitigate the DBA is more critical than protecting the engine against minor problems that are not immediately detrimental to emergency operation of the DG.

[~~The [18 month] Frequency is based on engineering judgment, taking into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the [18 month] Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ 7

~~OR~~

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 6
~~----------~~]

The SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required DG from service. This restriction from normally performing the Surveillance for DGs 1A-A and 1B-B in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR. 5

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:~~

~~a. Performance of the SR will not render any safety system or component inoperable,~~

~~b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems, and~~

~~c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.~~
~~---~~

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SR 3.8.1.14

Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(3), requires demonstration that the DGs can start and run continuously at full load capability for an interval of not less than 24 hours, ≥ ~~[~~2~~]~~ hours of which is at a load equivalent to 110% of the continuous duty rating and the remainder of the time at a load equivalent to the continuous duty rating of the DG. The DG starts for this Surveillance can be performed either from standby or hot conditions. The provisions for prelubricating and warmup, discussed in SR 3.8.1.2, and for gradual loading, discussed in SR 3.8.1.3, are applicable to this SR. 2

The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY.

[~~The [18 month] Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(3), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.~~

~~OR~~

7

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

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SURVEILLANCE REQUIREMENTS (continued)

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 6

SII VKG024

This Surveillance is modified by ~~three~~ two Notes. Note 1 states that momentary transients due to changing ~~bus~~ board loads do not invalidate this test. Similarly, momentary power factor transients above the power factor limit will not invalidate the test. ~~The reason for~~ Note 2 ~~is that during operation with the reactor critical, performance of this Surveillance could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR. Note 3~~ ensures that the DG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed at a power factor of ≤ ~~[0.9]~~ 0.89. This power factor is representative of the actual inductive loading a DG would see under design basis accident conditions. Under certain conditions, however, Note ~~3~~ 2 allows the Surveillance to be conducted as a power factor other than ≤ ~~[0.9]~~ 0.89. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ ~~[0.9]~~ 0.89 results in voltages on the emergency ~~busses~~ boards that are too high. Under these conditions, the power factor should be maintained as close as practicable to ~~[0.9]~~ 0.89 while still maintaining acceptable voltage limits on the emergency ~~busses~~ boards. In other circumstances, the grid voltage may be such that the DG excitation levels needed to obtain a power factor of ~~[0.9]~~ 0.89 may not cause unacceptable voltages on the emergency ~~busses~~ boards, but the excitation levels are in excess of those recommended for the DG. In such cases, the power factor shall be maintained close as practicable to ~~[0.9]~~ 0.89 without exceeding the DG excitation limits.

~~for DGs 1A-A and 1B-B~~

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SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.15

This Surveillance demonstrates that the diesel engine can restart from a hot condition, such as subsequent to shutdown from normal Surveillances, and achieve the required voltage and frequency within ~~[~~10~~]~~ seconds. The ~~[~~10~~]~~ second time is derived from the requirements of the accident analysis to respond to a design basis large break LOCA. 2

~~[The [18 month] Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(5).~~ 7

~~OR~~

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 6

This SR is modified by two Notes. Note 1 ensures that the test is performed with the diesel sufficiently hot. The load band is provided to avoid routine overloading of the DG. Routine overloads may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY. The requirement that the diesel has operated for at least ~~[~~2~~]~~ hours at full load conditions prior to performance of this Surveillance is based on manufacturer recommendations for achieving hot conditions. Momentary transients due to changing board ~~bus~~ loads do not invalidate this test. Note 2 allows all DG starts to be preceded by an engine prelube period to minimize wear and tear on the diesel during testing. 2 VKG024 1

SR 3.8.1.16

As required by Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(6), this Surveillance ensures that the manual synchronization and automatic load transfer from the DG to the offsite source can be made and the DG can be returned to ready to load status when offsite power is restored. It also ensures that the autostart logic is reset to allow the DG to reload if a

BASES

SURVEILLANCE REQUIREMENTS (continued)

subsequent loss of offsite power occurs. The DG is considered to be in ready to load status when the DG is at rated speed and voltage, the output breaker is open and can receive an autoclose signal on ~~bus~~ board undervoltage, and the load sequence timers are reset. 1 VKG024

~~[The Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(6), and takes into consideration unit conditions required to perform the Surveillance.~~ 7

~~OR~~

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 6

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the Surveillance for DGs 1A-A and 1B-B in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR. 5

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[SR 3.8.1.17~~

~~Demonstration of the test mode override ensures that the DG availability under accident conditions will not be compromised as the result of testing and the DG will automatically reset to ready to load operation if a LOCA actuation signal is received during operation in the test mode. Ready to load operation is defined as the DG running at rated speed and voltage with the DG output breaker open. These provisions for automatic switchover are required by IEEE-308 (Ref. 13), paragraph 6.2.6(2).~~

~~The requirement to automatically energize the emergency loads with offsite power is essentially identical to that of SR 3.8.1.12. The intent in the requirement associated with SR 3.8.1.17.b is to show that the emergency loading was not affected by the DG operation in test mode. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the emergency loads to perform these functions is acceptable.~~

~~This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.~~

~~[The [18 month] Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(8), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.~~

~~OR~~

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

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

~~This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing~~

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SURVEILLANCE REQUIREMENTS (continued)

~~following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for the assessment.] Credit may be taken for unplanned events that satisfy this SR.~~ 5

SR 3.8.1.~~18~~ 17 5

VKG024

Under accident ~~[and loss of offsite power]~~ conditions loads are sequentially connected to the ~~bus~~ board by the ~~[automatic load sequencer]~~ load sequence timers. The sequencing logic controls the permissive and starting signals to motor breakers to prevent overloading of the DGs due to high motor starting currents. The ~~[10]~~ 5% load sequence time interval tolerance ensures that sufficient time exists for the DG to restore frequency and voltage prior to applying the next load and that safety analysis assumptions regarding ESF equipment time delays are not violated. Reference 2 provides a summary of the automatic loading of ~~ESF buses~~ ~~6.9 kV~~ Shutdown Boards. 1 2 2 1

~~[The Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(2), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.~~

~~OR~~ 7

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 6

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SURVEILLANCE REQUIREMENTS (continued)

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the Surveillance for DGs 1A-A and 1B-B in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR. 5

~~------------------------------REVIEWER'S NOTE------------------------------~~
~~The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:~~

~~a. Performance of the SR will not render any safety system or component inoperable,~~

~~b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems, and~~

~~c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.~~
~~--~~ 6

SR 3.8.1.~~19~~18 5

In the event of a DBA coincident with a loss of offsite power, the DGs are required to supply the necessary power to ESF systems so that the fuel, RCS, and containment design limits are not exceeded.

SURVEILLANCE REQUIREMENTS (continued)

This Surveillance demonstrates the DG operation, as discussed in the Bases for SR 3.8.1.11, during a loss of offsite power actuation test signal in conjunction with an ESF actuation signal. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

~~[The Frequency of [18 months] takes into consideration unit conditions required to perform the Surveillance and is intended to be consistent with an expected fuel cycle length of [18 months].~~ 7

~~OR~~

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 6
~~---]~~

This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations for DGs. The reason for Note 2 is that the performance of the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the Surveillance for DGs 1A-A and 1B-B in MODE 1 or 2 is further amplified to allow 5 portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with

SURVEILLANCE REQUIREMENTS (continued)

these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for the assessment. Credit may be taken for unplanned events that satisfy this SR.

SR 3.8.1.~~20~~ 19 5

This Surveillance demonstrates that the DG starting independence has not been compromised. Also, this Surveillance demonstrates that each engine can achieve proper speed within the specified time when the DGs are started simultaneously.

~~[The 10 year Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9).~~ 7

~~OR~~

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 6
~~--]~~

This SR is modified by a Note. The reason for the Note is to minimize wear on the DG during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 17.
2. FSAR, Chapter ~~[~~8~~]~~ U. 1 2
3. Regulatory Guide 1.9, Rev. ~~3~~ 0. 1
4. FSAR, Chapter ~~[~~6~~]~~ U. 1 2
5. FSAR, Chapter ~~[~~15~~]~~ U. 1 2

REFERENCES (continued)

6. Regulatory Guide 1.93, Rev. 0, December 1974.

7. Generic Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability," July 2, 1984.

8. 10 CFR 50, Appendix A, GDC 18.

9. Regulatory Guide 1.108, Rev. 1, August 1977.

~~10. Regulatory Guide 1.137, Rev. [ ], [date].~~ 1

10 ~~11~~. ~~ASME Code for Operation and Maintenance of Nuclear Power Plants~~ ANSI C84.1, Voltage Ratings for Electric Power Systems and Equipment (60 Hz). 1

~~12. IEEE Standard 308-1978.~~ 1

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.1 AC Sources - Operating

BASES

BACKGROUND

The ~~unit~~ Class 1E AC Electrical Power Distribution System AC sources consist of the offsite power sources (preferred power sources~~, normal and alternate(s)~~), and the onsite standby power sources (Train A and Train B diesel generators (DGs)). As required by 10 CFR 50, Appendix A, GDC 17 (Ref. 1), the design of the AC electrical power system provides independence and redundancy to ensure an available source of power to the Engineered Safety Feature (ESF) systems. 1

INSERT 1 ~~The onsite Class 1E AC Distribution System is divided into redundant load groups (trains) so that the loss of any one group does not prevent the minimum safety functions from being performed. Each train has connections to two preferred offsite power sources and a single DG.~~ 1

INSERT 2 ~~Offsite power is supplied to the unit switchyard(s) from the transmission network by [two] transmission lines. From the switchyard(s), two electrically and physically separated circuits provide AC power, through [step down station auxiliary transformers], to the 4.16 kV ESF buses.~~ A detailed description of the offsite power network and the circuits to the Class 1E 6.9 kV Shutdown Boards ~~ESF buses~~ is found in ~~the~~ U FSAR, Chapter ~~[~~8~~]~~ (Ref. 2). 1 2

An offsite circuit consists of all breakers, transformers, switches, interrupting devices, cabling, and controls required to transmit power from the offsite transmission network INSERT 3 ~~to the onsite Class 1E ESF bus(es)~~. 1

~~Certain required unit loads are returned to service in a predetermined sequence in order to prevent overloading the transformer supplying offsite power to the onsite Class 1E Distribution System. Within [1] minute after the initiating signal is received, all automatic and permanently connected loads needed to recover the unit or maintain it in a safe condition are returned to service via the load sequencer.~~ 1

The onsite standby power source for each 6.9 kV Shutdown Board ~~4.16 kV ESF bus~~ is a dedicated DG. ~~DGs [11] and [12] are dedicated to ESF buses [11] and [12], respectively.~~ INSERT 4 A DG starts automatically on a safety injection (SI) signal (i.e., low pressurizer pressure, ~~or~~ high containment pressure, or low steam line pressure signals) or on INSERT 5 ~~an [ESF bus degraded voltage or undervoltage signal]~~ (refer to LCO 3.3.5, "Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation"). After the DG has started, it will automatically tie to its respective 6.9 kV Shutdown Board ~~bus~~ after offsite power is tripped as a consequence of INSERT 5 ~~ESF bus undervoltage or degraded voltage~~, independent of or coincident with an SI signal. The DGs will also start and operate in the standby mode without tying to the 6.9 kV Shutdown Board ~~ESF bus~~ on an SI signal alone. Following the trip of offsite power, a loss-of-voltage signal ~~[a sequencer/an undervoltage signal]~~ strips nonpermanent 1 2 1 2

1 **INSERT 1**

The onsite Class 1E AC Electrical Power Distribution System is divided into two redundant and independent load groups with two 6.9 kV Shutdown Boards in each load group. Each 6.9 kV Shutdown Board has a connection to a preferred offsite power source and a DG. The 6.9 kV Shutdown Boards in a load group (i.e., 1A-A and 2A-A, or 1B-B and 2B-B) are normally powered by the same offsite power circuit. Each 6.9 kV Shutdown Board can also be powered by a dedicated DG. Two DGs associated with one load group can provide all safety related functions to mitigate a loss of coolant accident (LOCA) in one unit and safely shut down the other unit. The Train A and Train B ESF systems each provide for the minimum safety functions necessary to shut down the plant and maintain it in a safe shutdown condition.

The Unit 2 core cooling systems and containment systems (e.g., Safety Injection (SI), Auxiliary Feedwater (AFW), Residual Heat Removal (RHR), Centrifugal Charging pump, Containment Spray, and Air Return System (ARS) fan) are unitized (not shared with Unit 1) and are powered from 6.9 kV Shutdown Boards 2A-A and 2B-B. However, some safety-related systems (e.g., Essential Raw Cooling Water (ERCW), Component Cooling Water (CCS), Emergency Gas Treatment (EGTS), Auxiliary Building Gas Treatment, (ABGTS), Control Room Emergency Ventilation (CREVS), and Control Room Air-Conditioning (CRACS)) are shared with Unit 1. The AC sources for these loads are distributed across all four 6.9 kV Shutdown Boards. Therefore, two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System and a separate and independent DG for each 6.9 kV Shutdown Board ensure the availability of power to each of these systems.

1 **INSERT 2**

The offsite power distribution system consists of two 161 kV buses supplied by eight 161 kV feeders and two 500 kV buses supplied by five 500 kV feeders. The output of the Unit 1 main generator is fed to the 500 kV buses and the output of the Unit 2 main generator is fed to the 161 kV buses. The output of each unit's main generator is also capable of supplying power to an offsite circuit (via the Unit Station Service Transformers (USSTs)) with a Generator Circuit Breaker (GCB) providing isolation between the main generator and the main bank transformers. When the main generator is not operating, the main bank transformers function as step down transformers and supply electrical power from the grid to the USSTs.

Offsite power can also be supplied by the Common Station Service Transformers (CSSTs) via the 6.9 kV Start Buses and 6.9 kV Unit Boards. Offsite power will normally be supplied from the USSTs to the 6.9 kV Shutdown Boards via the 6.9 kV Unit Boards, and will automatically transfer at least one power supply to an alternate power supply (CSST A or CSST C) on a trip of the Power Circuit Breakers (PCBs). CSST C is the alternate power source for 6.9 kV Shutdown Boards 1A-A and 2A-A, and CSST A is the alternate power source for 6.9 kV Shutdown Boards 1B-B and 2B-B. (CSST B is a spare transformer with two sets of secondary windings that can be used to supply a total of two Start Buses for CSST A and/or CSST C, with each Start Bus on a separate CSST B secondary winding.) Therefore, two electrically and physically separated circuits provide AC power through a combination of the USSTs and/or CSSTs to the 6.9 kV Shutdown Boards. Each offsite circuit is capable of providing power to one train of ESF loads.

1 **INSERT 3**

(beginning at the switchyard) to one load group of Class 1E 6.9 kV Shutdown Boards (ending at the supply side of the normal or alternate supply circuit breaker)

1 **INSERT 4**

DGs 1A-A, 1B-B, 2A-A, and 2B-B are separate and independent and are dedicated to 6.9 kV Shutdown Boards 1A-A, 1B-B, 2A-A, and 2B-B, respectively. Each diesel generator set consists of two diesel engines in tandem driving a common generator with a normal synchronous speed of approximately 900 rpm.

1 **INSERT 5**

a 6.9 kV Shutdown Board degraded voltage or loss-of-voltage signal

BASES

BACKGROUND (continued)

6.9 kV Shutdown Board 6.9 kV Shutdown Board

loads from the ~~ESF bus~~. When the DG is tied to the ~~ESF bus~~, loads are 1
then sequentially connected to its respective ~~ESF bus~~ by ~~the automatic~~ 3
sequence timers individual load ~~sequencer~~. ~~The sequencing logic controls the permissive and starting signals to motor breakers to prevent overloading the DG by automatic load application.~~

6.9 kV Shutdown Boards

In the event of a loss of preferred power, the ~~ESF electrical loads~~ are 1
automatically connected to the DGs in sufficient time to provide for safe reactor shutdown and to mitigate the consequences of a Design Basis Accident (DBA) such as a ~~loss of coolant accident (~~LOCA~~)~~. 1

Certain required unit loads are returned to service in a predetermined sequence in order to prevent overloading the DG in the process. Within
INSERT 6 ~~[1] minute~~ after the initiating signal is received, ~~all~~ loads needed to 2 1
recover the unit or maintain it in a safe condition are returned to service. 1

INSERT 7 automatic and permanently connected

Ratings for ~~Train A and Train B~~ DGs satisfy the requirements of 1
Regulatory Guide 1.9 (Ref. 3). The continuous service rating of each DG
is 4400 ~~[7000]~~ kW with ~~[~~10~~]~~% overload permissible for up to 2 hours in any 2
24 hour period. The ESF loads that are powered from the ~~4.16 kV ESF buses~~ 6.9 kV Shutdown Boards are listed in Reference 2. 1

APPLICABLE SAFETY ANALYSES

The initial conditions of DBA and transient analyses in the U FSAR, 1
Chapter ~~[~~6~~]~~ (Ref. 4) and Chapter ~~[~~15~~]~~ (Ref. 5), assume ESF systems are 2
OPERABLE. The AC electrical power sources are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System (RCS), and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

The OPERABILITY of the AC electrical power sources is consistent with the initial assumptions of the ~~A~~accident analyses and is based upon meeting the design basis of the unit. This results in maintaining at least one train of the onsite or offsite AC sources OPERABLE during Accident conditions in the event of: 4

a. An assumed loss of all offsite power or all onsite AC power and

b. A worst case single failure.

The AC sources satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

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2 **INSERT 6**

the required time interval (UFSAR Table 8.3.1-2)

1 **INSERT 7**

the 1A-A, 1B-B, 2A-A and 2B-B

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LCO

Two qualified circuits between the offsite transmission network and the onsite Class 1E Electrical Power System and separate and independent DGs for each ~~train~~ 6.9kV Shutdown Board ensure availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an anticipated operational occurrence (AOO) or a postulated DBA. 1

~~Qualified offsite circuits are those that are described in the FSAR and are part of the licensing basis for the unit.~~ 1

~~[In addition, one required automatic load sequencer per train must be OPERABLE.]~~ 2

Each qualified offsite circuit must be physically independent, capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the ~~ESF buses~~ 6.9kV Shutdown Boards. 1 1

INSERT 8 ~~[Offsite circuit #1 consists of Safeguards Transformer B, which is supplied from Switchyard Bus B, and is fed through breaker 52-3 powering the ESF transformer XNB01, which, in turn, powers the #1 ESF bus through its normal feeder breaker. Offsite circuit #2 consists of the Startup Transformer, which is normally fed from the Switchyard Bus A, and is fed through breaker PA 0201, powering the ESF transformer, which, in turn, powers the #2 ESF bus through its normal feeder breaker.]~~ 1

Each DG must be capable of starting, accelerating to rated speed and voltage, and connecting to its respective ~~ESF bus~~ 6.9kV Shutdown Board on detection of ~~bus~~ board undervoltage. This will be accomplished within ~~[~~10~~]~~ seconds. Each DG must also be capable of accepting required loads within the assumed loading sequence intervals, and continue to operate until offsite power can be restored to the ~~ESF buses~~ 6.9kV Shutdown Board. These capabilities are required to be met from a variety of initial conditions such as DG in standby with the engine hot and DG in standby with the engine at ambient conditions. ~~Additional DG capabilities must be demonstrated to meet required Surveillance, e.g., capability of the DG to revert to standby status on an ECCS signal while operating in parallel test mode.~~ VKG024 1 2 1 5

Proper sequencing of loads, ~~[~~including tripping of nonessential loads,~~]~~ is a required function for DG OPERABILITY. 2

The AC sources in one train must be separate and independent (to the extent possible) of the AC sources in the other train. For the DGs, separation and independence are complete.

~~For the offsite AC sources, separation and independence are to the extent practical. A circuit may be connected to more than one ESF bus, with fast transfer capability to the other circuit OPERABLE, and not violate separation criteria. A circuit that is not connected to an ESF bus is required to have OPERABLE fast transfer interlock mechanisms to at least two ESF buses to support OPERABILITY of that circuit.~~ 1

1 **INSERT 8**

The minimum required switchyard voltages are determined by evaluation of plant accident loading and the associated voltage drops between the transmission network and these loads. These minimum voltage values are provided to TVA's Transmission Operations for use in system studies to support operation of the transmission network in a manner that will maintain the necessary voltages. Transmission Operations is required to notify SQN Operations if it is determined that the transmission network may not be able to support accident loading or shutdown operations as required by 10 CFR 50, Appendix A, GDC-17. Any offsite power circuits supplied by the transmission network that are not able to support accident loading or shutdown operations are inoperable.

The USSTs utilize auto load tap changers to provide the required voltage response for accident loading. The load tap changer associated with a USST is required to be functional and in "automatic" for the USST to supply power to a 6.9 kV Unit Board.

Each required offsite circuit is that combination of power sources described below that are either connected to the Class 1E AC Electrical Power Distribution System, or is available to be connected to the Class 1E AC Electrical Power Distribution System through automatic transfer at the 6.9 kV Unit Boards.

The following offsite power configurations meet the requirements of the LCO:

1. Two offsite circuits consisting of a AND b (no board transfers required; a loss of either circuit will not prevent the minimum safety functions from being performed):

    a. From the 161 kV transmission network, through CSST A (winding X) to Start Bus 1A to 6.9 kV Shutdown Board 1B-B (through 6.9 kV Unit Board 1C), and CSST A (winding Y) to Start Bus 2A to 6.9 kV Shutdown Board 2B-B (through 6.9 kV Unit Board 2C); AND

    b. From the 161 kV transmission network, through CSST C (winding X) to Start Bus 2B to 6.9 kV Shutdown Board 2A-A (through 6.9 kV Unit Board 2B), and CSST C (winding Y) to Start Bus 1B to 6.9 kV Shutdown Board 1A-A (through 6.9 kV Unit Board 1B).

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INSERT 8 (Continued)

2. Two offsite circuits consisting of a AND b (relies on automatic transfer from alignment a.1) to b.2)(b), or a.2) to b.1)(a) on a loss of USSTs 1A and 1B, OR relies on automatic transfer from alignment a.3) to b.2)(a), or a.4) to b.1)(b) on a loss of USSTs 2A and 2B):

    a. Normal power source alignments

        1) From the 500 kV switchyard through USST 1A to 6.9 kV Shutdown Board 1A-A (through 6.9 kV Unit Board 1B);

        2) From the 500 kV switchyard through USST 1B to 6.9 kV Shutdown Board 1B-B (through 6.9 kV Unit Board 1C);

        3) From the 161 kV switchyard through USST 2A to 6.9 kV Shutdown Board 2A-A (through 6.9 kV Unit Board 2B); AND

        4) From the 161 kV switchyard through USST 2B to 6.9 kV Shutdown Board 2B-B (through 6.9 kV Unit Board 2C).

    b. Alternate power source alignments

        1) From the 161 kV transmission network, through:

            (a) CSST A (winding X) to Start Bus 1A to 6.9 kV Shutdown Board 1B-B (through 6.9 kV Unit Board 1C); AND

            (b) CSST A (winding Y) to Start Bus 2A to 6.9 kV Shutdown Board 2B-B (through 6.9 kV Unit Board 2C); OR

        2) From the 161 kV transmission network, through:

            (a) CSST C (winding X) to Start Bus 2B to 6.9 kV Shutdown Board 2A-A (through 6.9 kV Unit Board 2B); AND

            (b) CSST C (winding Y) to Start Bus 1B to 6.9 kV Shutdown Board 1A-A (through 6.9 kV Unit Board 1B).

3. Two offsite circuits consisting of a AND b (relies on automatic transfer from alignment a.1) to b.1) and b.2) on a loss of the Unit 2 USSTs; a loss of alignment a.2) or a.3) will not prevent the minimum safety functions from being performed):

    a. Normal power source alignments

        1) From the 161 kV switchyard through USST 2A to 6.9 kV Shutdown Board 2A-A (through 6.9 kV Unit Board 2B), and USST 2B to 6.9 kV Shutdown Board 2B-B (through 6.9 kV Unit Board 2C);

        2) From the 161 kV transmission network, through CSST A (winding X) to Start Bus 1A to 6.9 kV Shutdown Board 1B-B (through 6.9 kV Unit Board 1C); AND

INSERT 8 (Continued)

3) From the 161 kV transmission network, through CSST C (winding Y) to Start Bus 1B to 6.9 kV Shutdown Board 1A-A (through 6.9 kV Unit Board 1B).

b. Alternate power source alignments

1) From the 161 kV transmission network, through CSST A (winding Y) to Start Bus 2A to 6.9 kV Shutdown Board 2B-B (through 6.9 kV Unit Board 2C); AND

2) From the 161 kV transmission network, through CSST C (winding X) to Start Bus 2B to 6.9 kV Shutdown Board 2A-A (through 6.9 kV Unit Board 2B).

4. Two offsite circuits consisting of a AND b (relies on automatic transfer from alignment a.1) to b.1) and b.2) on a loss of the Unit 1 USSTs; a loss of alignment a.2) or a.3) will not prevent the minimum safety functions from being performed):

a. Normal power source alignments

1) From the 500 kV switchyard through USST 1A to 6.9 kV Shutdown Board 1A-A (through 6.9 kV Unit Board 1B), and USST 1B to 6.9 kV Shutdown Board 1B-B (through 6.9 kV Unit Board 1C);

2) From the 161 kV transmission network, through CSST A (winding Y) to Start Bus 2A to 6.9 kV Shutdown Board 2B-B (through 6.9 kV Unit Board 2C); AND

3) From the 161 kV transmission network, through CSST C (winding X) to Start Bus 2B to 6.9 kV Shutdown Board 2A-A (through 6.9 kV Unit Board 2B).

b. Alternate power source alignments

1) From the 161 kV transmission network, through CSST A (winding X) to Start Bus 1A to 6.9 kV Shutdown Board 1B-B (through 6.9 kV Unit Board 1C); AND

2) From the 161 kV transmission network, through CSST C (winding Y) to Start Bus 1B to 6.9 kV Shutdown Board 1A-A (through 6.9 kV Unit Board 1B).

Other offsite power configurations are possible using different combinations of available USSTs and CSSTs, as long as the alignments are consistent with the analyzed configurations, and the alignments comply with the requirements of GDC 17.

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BASES

APPLICABILITY

The AC sources ~~[and sequencers]~~ are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that: 2

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients and

b. Adequate core cooling is provided and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

The AC power requirements for MODES 5 and 6 are covered in LCO 3.8.2, "AC Sources - Shutdown."

ACTIONS

The ACTIONS are modified by a Note that

~~A Note~~ prohibits the application of LCO 3.0.4.b to an inoperable DG. There is an increased risk associated with entering a MODE or other specified condition in the Applicability with an inoperable DG and the provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance. 5

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A second Note provides the appropriate restrictions for a de-energized shutdown board. Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the ACTIONS are modified by a Note to indicate that when any Condition(s) is entered with no AC power source to any shutdown board resulting in a de-energized shutdown board, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows LCO 3.8.1 Conditions to provide requirements for the loss of any combination of AC Sources, without regard to whether a shutdown board is de-energized and LCO 3.8.9 to provide the appropriate restrictions for a de-energized shutdown board.

5

A.1

To ensure a highly reliable power source remains with one offsite circuit inoperable for reasons other than Condition C, it is necessary to verify the OPERABILITY of the remaining required offsite circuit on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action not met. However, if a second required circuit fails SR 3.8.1.1, the second offsite circuit is inoperable, and Condition ~~C~~ D E, for two offsite circuits inoperable, is entered. 5

~~REVIEWER'S NOTE~~ 6

~~The turbine driven auxiliary feedwater pump is only required to be considered a redundant required feature, and, therefore, required to be determined OPERABLE by this Required Action, if the design is such that the remaining OPERABLE motor or turbine driven auxiliary feedwater pump(s) is not by itself capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.~~

ACTIONS (continued)

A.2

a Unit 2 6.9 kV Shutdown Board

Required Action A.2, which only applies if ~~the train~~ cannot be powered from an offsite source, is intended to provide assurance that an event coincident with a single failure of the associated DG will not result in a complete loss of safety function of critical redundant required features. These features are powered from the redundant AC electrical power train. This includes motor driven auxiliary feedwater pumps. Single train systems, such as turbine driven auxiliary feedwater pumps, may not be included. 5

The Completion Time for Required Action A.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

6.9 kV Shutdown Board 2A-A or 2B-B

a. ~~The train~~ has no offsite power supplying it loads and 5

b. A required feature on the other train is inoperable.

If at any time during the existence of Condition A ~~(one offsite circuit inoperable)~~ a redundant required feature subsequently becomes inoperable, this Completion Time begins to be tracked. 5

a Unit 2 6.9 kV Shutdown Board

Discovering no offsite power to ~~one train of the onsite Class 1E Electrical Power Distribution System~~ coincident with one or more inoperable required support or supported features, or both, that are associated with the other train that has offsite power, results in starting the Completion Times for the Required Action. Twenty-four hours is acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown. 5

The remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to ~~Train A and Train B of~~ the onsite Class 1E Distribution System. The 24 hour Completion Time takes into account the component OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 24 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 1

BASES

ACTIONS (continued)

A.3

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition A for a period that should not exceed 72 hours. With one offsite circuit inoperable, the reliability of the offsite system is degraded, and the potential for a loss of offsite power is increased, with attendant potential for a challenge to the unit safety systems. In this Condition, however, the remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the onsite Class 1E AC Electrical Power Distribution System. 1

The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

B.1

To ensure a highly reliable power source remains with INSERT 9 ~~an~~ inoperable ~~DG~~, 5
it is necessary to verify the availability of the offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must then be entered.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~ 6
~~The turbine driven auxiliary feedwater pump is only required to be considered a redundant required feature, and, therefore, required to be determined OPERABLE by this Required Action, if the design is such that the remaining OPERABLE motor or turbine driven auxiliary feedwater pump(s) is not by itself capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.~~
~~---~~

B.2

Required Action B.2 is intended to provide assurance that a loss of offsite power, during the period that a DG(s) is inoperable, does not result in a complete loss of safety function of critical systems. These features are designed with redundant safety related trains. This includes motor driven auxiliary feedwater pumps. Single train systems, such as turbine driven auxiliary feedwater pumps, are not included. Redundant required feature failures consist of inoperable features associated with a train, redundant to the train that has an inoperable DG(s). 5 5

5 **INSERT 9**

~~DG 1A-A, DG 1B-B, DGs 1A-A and 2A-A, or DGs 1B-B and 2B-B~~

one or more Train A DGs, or one or more Train B DGs

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ACTIONS (continued)

The Completion Time for Required Action B.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. An inoperable DG exists and

b. A required feature on the other train ~~(Train A or Train B)~~ is inoperable. 5

or more DGs in a train

If at any time during the existence of this Condition (one ~~DG~~ inoperable) a required feature subsequently becomes inoperable, this Completion Time would begin to be tracked. 5

or more DGs in a train

Discovering one ~~required DG~~ inoperable coincident with one or more inoperable required support or supported features, or both, that are associated with the OPERABLE DG, results in starting the Completion Time for the Required Action. Four hours from the discovery of these events existing concurrently is Acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown. 5 4

s AC Electrical Power

In this Condition, the remaining OPERABLE DG and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. Thus, on a component basis, single failure protection for the required feature's function may have been lost; however, function has not been lost. The 4 hour Completion Time takes into account the OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 4 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 1 5

<u>B.3.1 and B.3.2</u>

Required Action B.3.1 provides an allowance to avoid unnecessary testing of OPERABLE DG(s). If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG, SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on other DG~~(s)~~, the other DG~~(s)~~ would be declared inoperable upon discovery and Condition ~~E~~ of LCO 3.8.1 would be entered. INSERT 10 Once the failure is repaired, the common cause failure no longer exists, and Required Action B.3.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DG~~(s)~~, performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of that DG. 5

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F

5 **INSERT 10**

if one or more DG(s) in Train A and Train B are inoperable

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BASES

ACTIONS (continued)

(s)

In the event the inoperable DG is restored to OPERABLE status prior to completing either B.3.1 or B.3.2, the ~~[plant~~ corrective action program~~]~~ will continue to evaluate the common cause possibility. This continued evaluation, however, is no longer under the 24 hour constraint imposed while in Condition B. 5 2

According to Generic Letter 84-15 (Ref. 7), ~~[~~24~~]~~ hours is reasonable to confirm that the OPERABLE DG(s) is not affected by the same problem as the inoperable DG. 2

B.4

~~According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition B for a period that should not exceed 72 hours.~~

(s) AC Electrical Power

In Condition B, the remaining OPERABLE DG and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. The ~~72 hour~~ 7 day Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 5

INSERT 11 5

D D

~~C~~.1 and ~~C~~.2 5

VKG026 D ~~E~~ ~~E~~ ~~E~~

Required Action ~~C~~.1, which applies when two offsite circuits are inoperable, is intended to provide assurance that an event with a coincident single failure will not result in a complete loss of redundant required safety functions. The Completion Time for this failure of redundant required features is reduced to 12 hours from that allowed for one train without offsite power (Required Action A.2). The rationale for the reduction to 12 hours is that Regulatory Guide 1.93 (Ref. 6) allows a Completion Time of 24 hours for two required offsite circuits inoperable, based upon the assumption that two complete safety trains are OPERABLE. When a concurrent redundant required feature failure exists, this assumption is not the case, and a shorter Completion Time of 12 hours is appropriate. These features are powered from redundant AC safety trains. This includes motor driven auxiliary feedwater pumps. Single train features, such as turbine driven auxiliary pumps, are not included in the list.

5 **INSERT 11**

C.1, C.2, and C.3

Condition C is entered for an offsite circuit inoperable solely due to an inoperable power source to 6.9 kV Shutdown Board 1A-A or 1B-B. Required Action C.1 verifies the OPERABILITY of the remaining offsite circuit within an hour of the inoperability and every 8 hours thereafter. Since the Required Action only specifies "perform," a failure of the SR 3.8.1.1 acceptance criteria does not result in a Required Action not met.

The Completion Time for Required Action C.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. 6.9 kV Shutdown Board 1A-A or 1B-B has no offsite power; and
b. A required feature on the other train is inoperable.

If at any time during the existence of Condition C a redundant required feature subsequently becomes inoperable, this Completion Time begins to be tracked.

A Completion Time of 24 hours is acceptable, because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown. The remaining OPERABLE offsite circuit and DGs are adequate to support these functions. The Completion Time takes into account the component OPERABILITY of the remaining redundant feature(s), a reasonable time for repairs, and the low probability of a DBA occurring during this period.

Operation may continue in Condition C for a period of 7 days. With one offsite circuit inoperable, the reliability of the functions is degraded. The potential for the loss of offsite power to the redundant feature(s) is increased, with the attendant potential for a challenge to their safety functions.

The required offsite circuit must be returned to OPERABLE status within 7 days~~, or the support function for the associated required feature is considered inoperable. At that time, the required feature must be declared inoperable and the appropriate Conditions must be entered~~. The 7 days Completion Time takes into account the capacity and capability of the remaining AC sources providing electrical power to the required feature(s), a reasonable time, for repairs and the low probability of a DBA occurring during this period of time.

VKG027

5

INSERT 11 (Continued)

D.1, D.2, D.3, and D.4

To ensure a highly reliable power source remains with an inoperable DG to a Unit 1 6.9 kV Shutdown Board, it is necessary to verify the availability of the required offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. Required Action D.1 verifies the OPERABILITY of the required offsite sources within an hour of the inoperability and every 8 hours thereafter. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must be entered.

Required Action D.2 is intended to provide assurance that a loss of offsite power, during the period that an LCO 3.8.1.d DG is inoperable, does not result in a complete loss of the safety functions.

The Completion Time for Required Action D.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. An inoperable DG to 6.9 kV Shutdown Board 1A-A or 1B-B exists; and VKG026
b. A redundant feature in the same system is inoperable.

If at any time during the existence of Condition D (one DG to 6.9 kV Shutdown Board 1A-A or 1B-B) a redundant feature in the same system subsequently becomes inoperable, this Completion Time begins to be tracked. The four hour Completion Time is acceptable, because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown.

The remaining OPERABLE offsite circuits and DGs are adequate to support the functions. The 4 hour Completion Time takes into account the component OPERABILITY of the remaining redundant feature(s), a reasonable time for repairs, and the low probability of a DBA occurring during this period.

D.3.1 and D.3.2

Required Action D.3.1 provides an allowance to avoid unnecessary testing of OPERABLE DG(s). If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG(s), SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on another DG, the other DG would be declared inoperable, and upon discovery, Condition J of LCO 3.8.1 would be entered, if one or more DG(s) in Train A and Train B are inoperable. Otherwise, if the inoperability exists on the other DG in the same train, the other DG would be declared inoperable upon discovery, Condition B would be entered. Once the failure is repaired, the common cause failure no longer exists, and Required Action D.3.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DGs, performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of that DG.

5

INSERT 11 (Continued)

~~Operation may continue in Condition D for a period of 7 days. With one Unit 2 DG inoperable, the reliability of the respective function is degraded. The potential for the loss of a DG to the redundant feature(s) is increased, with the attendant potential for a challenge to respective safety function.~~

VKG026

~~The required DG must be returned to OPERABLE status within 7 days, or the support function for the associated required feature is considered inoperable. At that time, the required feature must be declared inoperable and the appropriate Conditions must be entered. The 7 day Completion Time takes into account the capacity and capability of the remaining AC sources providing electrical power to the required feature(s), a reasonable time for repairs and the low probability of a DBA occurring during this period of time.~~

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ACTIONS (continued)

VKG026

The Completion Time for Required Action D ~~E~~ ~~C~~.1 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action the Completion Time only begins on discovery that both: 5

a. All required offsite circuits are inoperable and

b. A required feature is inoperable.

If at any time during the existence of Condition D ~~E~~ ~~C~~ (two offsite circuits inoperable) a required feature becomes inoperable, this Completion Time begins to be tracked. 5

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition D ~~E~~ ~~C~~ for a period that should not exceed 24 hours. This level of degradation means that the offsite electrical power system does not have the capability to effect a safe shutdown and to mitigate the effects of an accident; however, the onsite AC sources have not been degraded. This level of degradation generally corresponds to a total loss of the immediately accessible offsite power sources. 5

Because of the normally high availability of the offsite sources, this level of degradation may appear to be more severe than other combinations of two AC sources inoperable that involve one or more DGs inoperable. However, two factors tend to decrease the severity of this level of degradation:

a. The configuration of the redundant AC electrical power system that remains available is not susceptible to a single bus or switching failure and

b. The time required to detect and restore an unavailable offsite power source is generally much less than that required to detect and restore an unavailable onsite AC source.

With both ~~of the required~~ offsite circuits inoperable, sufficient onsite AC sources are available to maintain the unit in a safe shutdown condition in the event of a DBA or transient. In fact, a simultaneous loss of offsite AC sources, a LOCA, and a worst case single failure were postulated as a part of the design basis in the safety analysis. Thus, the 24 hour Completion Time provides a period of time to effect restoration of one of the offsite circuits commensurate with the importance of maintaining an AC electrical power system capable of meeting its design criteria. 5

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BASES

ACTIONS (continued)

VKG026

According to Reference 6, with the available offsite AC sources, two less than required by the LCO, operation may continue for 24 hours. If two offsite sources are restored within 24 hours, unrestricted operation may continue. If only one offsite source is restored within 24 hours, power operation continues in accordance with Condition A or Condition C, as applicable. 5

E ~~F~~ E ~~F~~

~~D~~.1 and ~~D~~.2 5

~~Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Actions of Condition D F are modified by a Note to indicate that when Condition D F is entered with no AC source to any train 6.9 kV Shutdown Board 2A-A or 2B-B, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows Condition D F to provide requirements for the loss of one offsite circuit and one DG to 6.9 kV Shutdown Board 2A-A or 2B-B, without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized train.~~ 5

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition ~~D~~ E ~~F~~ for a period that should not exceed 12 hours. 5

E ~~F~~

In Condition ~~D~~, individual redundancy is lost in both the offsite electrical power system and the onsite AC electrical power system. Since power system redundancy is provided by two diverse sources of power, however, the reliability of the power systems in this Condition may appear higher than that in Condition ~~C~~ D ~~E~~ (loss of both ~~required~~ offsite circuits). This difference in reliability is offset by the susceptibility of this power system configuration to a single bus or switching failure. The 12 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. 5

~~INSERT 12~~

F ~~J~~

~~E~~.1 5

With ~~Train A and Train B DGs~~ one or more Train A DG(s) and one or more Train B DG(s) inoperable, there are ~~no remaining~~ insufficient standby AC sources available to power an entire load group. Thus, with an assumed loss of offsite electrical power, insufficient standby AC sources are available to power the minimum required ESF functions. Since the offsite electrical power system is the only source of AC power for this level of degradation, the risk associated with continued operation for a very short time could be less than that associated with an immediate controlled shutdown (the immediate shutdown could cause grid instability, which could result in a total loss of AC power). Since any inadvertent generator trip could also result in a

5 ~~**INSERT 12**~~

G.1 and H.1

In Conditions G and H, individual redundancy is lost in the offsite electrical power system for one unit and the onsite AC electrical power system for the other unit. Since Conditions B and C are entered concurrent with entry into Condition G, and Conditions A and D are entered concurrent with entry into Condition H, the Required Actions of Conditions B and C (or Conditions A and D) provide the appropriate compensatory measures to ensure the onsite and offsite power sources are either restored to an OPERABLE status, or the associated required features are declared inoperable, thereby requiring entry into the appropriate Conditions associated with the associated feature's LCO. The Completion Times of Required Actions G.1 and H.1 are consistent with the Completion Times of Required Actions C.3 and D.4. If, while in Condition G or H, a redundant required feature is determined to be inoperable, the required feature(s) would be declared inoperable at the Completion Times specified in Conditions A, B, C, or D, as applicable.

I.1 and I.2 VKG026

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Actions of Condition ~~I~~ are modified by a Note to indicate that when Condition ~~I~~ is entered with no AC source to 6.9 kV Shutdown Board 1A-A or 1B-B, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows Condition I to provide requirements for the loss of one offsite power source and one DG, without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized 6.9 kV Shutdown Board.

In Condition I, individual redundancy is lost in the offsite electrical power system and the onsite AC electrical power system. Concurrent with entry into Condition I, entry into Condition C (inoperable offsite power source) and Condition D (inoperable DG) are required. The Required Actions of Conditions C and D ensure the remaining offsite circuit and DGs are OPERABLE and that required features with no offsite or onsite power sources are declared inoperable when its redundant required feature is inoperable within the Completion Times of Required Actions C.2 and D.2.

ACTIONS (continued)

total loss of offsite AC power, however, the time allowed for continued operation is severely restricted. The intent here is to avoid the risk associated with an immediate controlled shutdown and to minimize the risk associated with this level of degradation.

In this Condition,

~~According to Reference 6, with both DGs inoperable~~, operation may continue for a period that should not exceed 2 hours. 5

, consistent with the guidance provided in Reference 6 5

~~[F.1~~ 5

~~The sequencer(s) is an essential support system to [both the offsite circuit and the DG associated with a given ESF bus]. [Furthermore, the sequencer is on the primary success path for most major AC electrically powered safety systems powered from the associated ESF bus.] Therefore, loss of an [ESF bus sequencer] affects every major ESF system in the [division]. The [12] hour Completion Time provides a period of time to correct the problem commensurate with the importance of maintaining sequencer OPERABILITY. This time period also ensures that the probability of an accident (requiring sequencer OPERABILITY) occurring during periods when the sequencer is inoperable is minimal.~~

~~This Condition is preceded by a Note that allows the Condition to be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads under any conditions. Implicit in this Note is the concept that the Condition must be retained if any sequencer failure mode results in the inability to start all or part of the safety loads when required, regardless of power availability, or results in overloading the offsite power circuit to a safety bus during an event and thereby causes its failure. Also implicit in the Note, is that the Condition is not applicable to any train that does not have a sequencer.]~~

VKG026 G ~~K~~ ~~K~~ G

~~G~~.1 and ~~G~~.2 5

If the inoperable AC electric power sources cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

BASES

H I VKG026

ACTIONS (continued)

L.1 and M.1 ~~H~~.1 H and I

Condition ~~H~~ L and M s corresponds~~s~~ to a level of degradation in which ~~all~~ redundancy in the AC electrical power supplies ~~has been lost~~ cannot be assured. At this severely degraded level, any further losses in the AC electrical power system will cause a loss of function. Therefore, no additional time is justified for continued operation. The unit is required by LCO 3.0.3 to commence a controlled shutdown. 5

SURVEILLANCE REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function, in accordance with 10 CFR 50, Appendix A, GDC 18 (Ref. 8). Periodic component tests are supplemented by extensive functional tests during refueling outages (under simulated accident conditions). The SRs for demonstrating the OPERABILITY of the DGs are in accordance with the recommendations of Regulatory Guide 1.9 (Ref. 3)~~,~~ and Regulatory Guide 1.108 (Ref. 9)~~, and Regulatory Guide 1.137 (Ref. 10), as addressed in the FSAR~~. 1

Where the SRs discussed herein specify voltage and frequency tolerances, the following is applicable. The minimum steady state output voltage of ~~[3740]~~ 6210 V is 90% of the nominal ~~4160~~ 6900 V output voltage. This value, which is specified in ANSI C84.1 (Ref. ~~11~~ 10), allows for voltage drop to the terminals of ~~4000~~ 6600 V motors whose minimum operating voltage is specified as 90% or ~~3600~~ 5940 V. It also allows for voltage drops to motors and other equipment down through the 120 V level where minimum operating voltage is also usually specified as 90% of name plate rating. The specified maximum steady state output voltage of [~~4756~~ 7260] V is equal to the maximum operating voltage specified for ~~4000~~ 6600 V motors. It ensures that for a lightly loaded distribution system, the voltage at the terminals of ~~4000~~ 6600 V motors is no more than the maximum rated operating voltages. The specified minimum and maximum frequencies of the DG are 58.8 Hz and 61.2 Hz, respectively. These values are equal to ± 2% of the 60 Hz nominal frequency and are derived from the recommendations given in Regulatory Guide 1.9 (Ref. 3). 2 1 1 1 2 1 1

SR 3.8.1.1

This SR ensures proper circuit continuity for the offsite AC electrical power supply to the onsite distribution network and availability of offsite AC electrical power. The breaker alignment verifies that each breaker is in its correct position to ensure that distribution buses and loads are connected to their preferred power source, and that appropriate independence of offsite circuits is maintained. ~~[The 7 day Frequency is~~ 7

SURVEILLANCE REQUIREMENTS (continued)

~~adequate since breaker position is not likely to change without the operator being aware of it and because its status is displayed in the control room.~~

~~OR~~

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

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

7

6

SR 3.8.1.2 and SR 3.8.1.7

These SRs help to ensure the availability of the standby electrical power supply to mitigate DBAs and transients and to maintain the unit in a safe shutdown condition.

To minimize the wear on moving parts that do not get lubricated when the engine is not running, these SRs are modified by a Note (Note 1 for SR 3.8.1.2 and Note for SR 3.8.1.7) to indicate that all DG starts for these Surveillances may be preceded by an engine prelube period and followed by a warmup period prior to loading.

For the purposes of SR 3.8.1.2 and SR 3.8.1.7 testing, the DGs are started from standby conditions. Standby conditions for a DG mean that the diesel engine coolant and oil are being continuously circulated and temperature is being maintained consistent with manufacturer recommendations.

~~[~~ In order to reduce stress and wear on diesel engines, the ~~some~~ manufacturer~~s~~ recommends a modified start in which the starting speed of DGs is limited, warmup is limited to this lower speed, and the DGs are gradually accelerated to synchronous speed prior to loading. These start procedures are the intent of Note 2~~, which is only applicable when such modified start procedures are recommended by the manufacturer~~. ~~]~~

2

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.7 requires that the DG starts from standby conditions and achieves required voltage and frequency within 10 seconds. The 10 second start requirement supports the assumptions of the design basis LOCA analysis in the FSAR, Chapter ~~[~~15~~]~~ (Ref. 5). 2

The 10 second start requirement is not applicable to SR 3.8.1.2 (see Note 2) when a modified start procedure as described above is used. If a modified start is not used, the 10 second start requirement of SR 3.8.1.7 applies.

Since SR 3.8.1.7 requires a 10 second start, it is more restrictive than SR 3.8.1.2, and it may be performed in lieu of SR 3.8.1.2.

In addition to the SR requirements, the time for the DG to reach steady state operation, unless the modified DG start method is employed, is periodically monitored and the trend evaluated to identify degradation of governor and voltage regulator performance.

[~~The 31 day Frequency for SR 3.8.1.2 is consistent with Regulatory Guide 1.9 (Ref. 3). The 184 day Frequency for SR 3.8.1.7 is a reduction in cold testing consistent with Generic Letter 84-15 (Ref. 7). These Frequencies provide adequate assurance of DG OPERABILITY, while minimizing degradation resulting from testing.~~ 7

~~OR~~

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 6
~~----------~~]

SR 3.8.1.3

This Surveillance verifies that the DGs are capable of synchronizing with the offsite electrical system and accepting loads greater than or equal to the equivalent of the maximum expected accident loads. A minimum run time of 60 minutes is required to stabilize engine temperatures, while minimizing the time that the DG is connected to the offsite source.

BASES

SURVEILLANCE REQUIREMENTS (continued)

Although no power factor requirements are established by this SR, the DG has an allowable ~~is normally operated at a~~ power factor rating between [0.8 lagging] and [1.0]. The [0.8] value is the design rating of the machine, while the [1.0] is an operational limitation [to ensure circulating currents are minimized]. The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY. 1 2

~~[The 31 day Frequency for this Surveillance is consistent with Regulatory Guide 1.9 (Ref. 3).~~

~~OR~~ 7

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--~~] 6

This SR is modified by four Notes. Note 1 indicates that diesel engine runs for this Surveillance may include gradual loading, as recommended by the manufacturer, so that mechanical stress and wear on the diesel engine are minimized. Note 2 states that momentary transients, because of changing board ~~bus~~ loads, do not invalidate this test. Similarly, momentary power factor transients above the limit do not invalidate the test. Note 3 indicates that this Surveillance should be conducted on only one DG at a time in order to avoid common cause failures that might result from offsite circuit or grid perturbations. Note 4 stipulates a prerequisite requirement for performance of this SR. A successful DG start must precede this test to credit satisfactory performance.

VKG024 1

<u>SR 3.8.1.4</u>

This SR provides verification that the level of fuel oil in the engine-mounted "day" ~~day~~ tank ~~[and engine mounted tank]~~ is at or above the level at which fuel oil is automatically added. The level is expressed as an equivalent volume in gallons, and is selected to ensure adequate fuel oil for a minimum of 1 hour of DG operation at full load plus 10%. 5 2

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[The 31 day Frequency is adequate to assure that a sufficient supply of fuel oil is available, since low level alarms are provided and facility operators would be aware of any large uses of fuel oil during this period.~~ 7

~~OR~~

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

~~-------------------------------REVIEWER'S NOTE------------------------------- Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ 6

SR 3.8.1.5

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the engine-mounted "day" ~~fuel oil day [and engine mounted]~~ tank~~s~~ eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, contaminated fuel oil, and breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. ~~[The Surveillance Frequency of 31 days is established by Regulatory Guide 1.137 (Ref. 10). This SR is for preventative maintenance.~~ 5 2 7

~~OR~~

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

~~-------------------------------REVIEWER'S NOTE------------------------------- Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ 6

SURVEILLANCE REQUIREMENTS (continued)

The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during the performance of this Surveillance.

SR 3.8.1.6

the storage system to the engine-mounted “day”

This Surveillance demonstrates that each required fuel oil transfer pump operates and transfers fuel oil from ~~its associated storage tank to its associated day~~ tank. This is required to support continuous operation of standby power sources. This Surveillance provides assurance that the fuel oil transfer pump is OPERABLE, the fuel oil piping system is intact, the fuel delivery piping is not obstructed, and the controls and control systems for automatic fuel transfer systems are OPERABLE. 1

[~~The Frequency for this SR is variable, depending on individual system design, with up to a [92] day interval. The [92] day Frequency corresponds to the testing requirements for pumps as contained in the ASME Code (Ref. 11); however, the design of fuel transfer systems is such that pumps operate automatically or must be started manually in order to maintain an adequate volume of fuel oil in the day [and engine mounted] tanks during or following DG testing. In such a case, a 31 day Frequency is appropriate. Since proper operation of fuel transfer systems is an inherent part of DG OPERABILITY, the Frequency of this SR should be modified to reflect individual designs.~~ 7

~~OR~~

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---~~] 6

SR 3.8.1.7

See SR 3.8.1.2.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[~~ SR 3.8.1.8 2

INSERT 13

~~Transfer of each [4.16 kV ESF bus] power supply from the normal offsite circuit to the alternate offsite circuit demonstrates the OPERABILITY of the alternate circuit distribution network to power the shutdown loads.~~ 1

~~[The [18 month] Frequency of the Surveillance is based on engineering judgment, taking into consideration the unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the [18 month] Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ 7

~~OR~~

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 6

This SR is modified by ~~a~~ two Notes. The reason for ~~the~~ Note 1 is that, during operation with the reactor critical, performance of this SR for the 2A, 2B, 2C, and 2D Unit Boards could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment.~~]~~ 2 Credit may be taken for unplanned events that satisfy this SR. 5

INSERT 14 5

1 **INSERT 13**

Transfer of the power supply to each 6.9 kV Unit Board from the normal supply to the alternate supply demonstrates the OPERABILITY of the alternate supply to power the shutdown loads. This SR is modified by two Notes.

1 **INSERT 14**

Note 2 specifies that transfer capability is only required to be met for 6.9 kV Unit Boards that require normal and alternate power supplies. When both load groups are being supplied power by the USSTs, only the 6.9 kV Unit Boards associated with one load group are required to have normal and alternate power supplies. Therefore, only one CSST is required to be OPERABLE and available as an alternate power supply. Manual transfers between the normal supply and the alternate supply are also required to meet the SR. However, delayed access to an offsite circuit is not credited in the accident analysis.

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.9

Each DG is provided with an engine overspeed trip to prevent damage to the engine. Recovery from the transient caused by the loss of a large load could cause diesel engine overspeed, which, if excessive, might result in a trip of the engine. This Surveillance demonstrates the DG load response characteristics and capability to reject the largest single load (600kw) without exceeding predetermined voltage and frequency and while maintaining a specified margin to the overspeed trip. ~~[For this unit, the single load for each DG and its horsepower rating is as follows:]~~ This Surveillance may be accomplished by:

a. Tripping the DG output breaker with the DG carrying greater than or equal to its associated single largest post-accident load while paralleled to offsite power, or while solely supplying the ~~bus~~ board, or

b. Tripping its associated single largest post-accident load with the DG solely supplying the ~~bus~~ board.

Consistent with Regulatory Guide 1.9 ~~As required by IEEE-308~~ (Ref. ~~12~~ 3), the load rejection test is acceptable if the increase in diesel speed does not exceed 75% of the difference between synchronous speed and the overspeed trip setpoint, or 15% above synchronous speed, whichever is lower.

The time, voltage, and frequency tolerances specified in this SR are derived from Regulatory Guide 1.9 (Ref. 3) recommendations for response during load sequence intervals. The 3 seconds specified is equal to 60% of a typical 5 second load sequence interval associated with sequencing of the largest load. The voltage and frequency specified are consistent with the design range of the equipment powered by the DG. SR 3.8.1.9.a corresponds to the maximum frequency excursion, while SR 3.8.1.9.b and SR 3.8.1.9.c are steady state voltage and frequency values to which the system must recover following load rejection. ~~[The [18 month] Frequency is consistent with the recommendation of Regulatory Guide 1.108 (Ref. 9).~~

~~OR~~

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

1 2 1 VKG024 1 1 7

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SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ 6

SII

a

for DGs 2A-A and 2B-B

This SR is modified by ~~two~~ Notes. The ~~reason for Note 1 is that during operation with the reactor critical, performance of this SR could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR.~~ 5

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Note ~~2~~ ensures that the DG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed at a power factor of ≤ 0.89 ~~[0.9]~~. This power factor is representative of the actual inductive loading a DG would see under design basis accident conditions. Under certain conditions, however, the Note ~~2~~ allows the Surveillance to be conducted at a power factor other than ≤ 0.89 ~~[0.9]~~. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ 0.89 ~~[0.9]~~ results in voltages on the emergency boards ~~busses~~ that are too high. Under these conditions, the power factor should be maintained as close as practicable to 0.89 ~~[0.9]~~ while still maintaining acceptable voltage limits on the emergency boards ~~busses~~. In other circumstances, the grid voltage may be such that the DG excitation levels needed to obtain a power factor of 0.89 ~~[0.9]~~ may not cause unacceptable voltages on the emergency boards ~~busses~~, but the excitation levels are in excess of those recommended for the DG. In such cases, the power factor shall be maintained as close as practicable to 0.89 ~~[0.9]~~ without exceeding the DG excitation limits. 2 1 2 1 1

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----REVIEWER'S NOTE-----~~
~~The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:~~

~~a. Performance of the SR will not render any safety system or component inoperable,~~

~~b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems, and~~

~~c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.~~

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SR 3.8.1.10

This Surveillance demonstrates the DG capability to reject a full load without overspeed tripping or exceeding the predetermined voltage limits. The DG full load rejection may occur because of a system fault or inadvertent breaker tripping. This Surveillance ensures proper engine generator load response under the simulated test conditions. This test simulates the loss of the total connected load that the DG experiences following a full load rejection and verifies that the DG does not trip upon loss of the load. These acceptance criteria provide for DG damage protection. While the DG is not expected to experience this transient during an event and continues to be available, this response ensures that the DG is not degraded for future application, including reconnection to the ~~bus~~ board if the trip initiator can be corrected or isolated. 1

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[~~The [18 month] Frequency is consistent with the recommendation of Regulatory Guide 1.108 (Ref. 9) and is intended to be consistent with expected fuel cycle lengths.~~

~~OR~~

7

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

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

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This SR has been modified by ~~two~~ Notes. The ~~reason for Note 1 is that during operation with the reactor critical, performance of this SR could cause perturbation to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR.~~ Note ~~2~~ ensures that the DG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed at a power factor of ≤ 0.89 ~~[0.9]~~. This power factor is representative of the actual inductive loading a DG would see under design basis accident conditions. Under certain conditions, however, the Note ~~2~~ allows the Surveillance to be conducted at a power factor other than ≤ 0.89 ~~[0.9]~~. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ 0.89 ~~[0.9]~~ results in voltages on the emergency boards ~~busses~~ that are too high. Under these conditions, the power factor should be maintained as close as practicable to 0.89 ~~[0.9]~~ while still maintaining acceptable voltage limits on the emergency boards ~~busses~~. In other circumstances, the grid voltage may be such that the DG excitation levels needed to obtain a power factor of 0.89 ~~[0.9]~~ may not cause unacceptable voltages on the emergency boards ~~busses~~, but the excitation levels are in excess of those recommended for the DG. In such cases, the power factor shall be maintained as close as practicable to 0.89 ~~[0.9]~~ without exceeding the DG excitation limits.

~~for DGs 2A-A and 2B-B~~

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SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------~~
~~The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:~~

~~a. Performance of the SR will not render any safety system or component inoperable,~~

~~b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems, and~~

~~c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.~~
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SR 3.8.1.11

As required by Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(1), this Surveillance demonstrates the as designed operation of the standby power sources during loss of the offsite source. This test verifies all actions encountered from the loss of offsite power, including shedding of the nonessential loads and energization of the emergency ~~buses~~ boards and respective loads from the DG. It further demonstrates the capability of the DG to automatically achieve the required voltage and frequency within the specified time. 1 VKG024

The DG autostart time of ~~[~~10~~]~~ seconds is derived from requirements of the accident analysis to respond to a design basis large break LOCA. The Surveillance should be continued for a minimum of 5 minutes in order to demonstrate that all starting transients have decayed and stability is achieved. 2

The requirement to verify the connection and power supply of permanent and autoconnected loads is intended to satisfactorily show the relationship of these loads to the DG loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. For instance, Emergency Core Cooling Systems (ECCS) injection valves are not desired to be stroked open, or high pressure injection systems are not capable of being operated at full flow, or residual heat removal (RHR) systems performing a decay heat removal function are not desired to be realigned to the ECCS mode of operation. In lieu of actual demonstration

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SURVEILLANCE REQUIREMENTS (continued)

of connection and loading of loads, testing that adequately shows the capability of the DG systems to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

[~~The Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(1), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.~~ 7

~~OR~~

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 6
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This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations. The reason for Note 2 is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the Surveillance for DGs 2A-A and 2B-B in MODE 1 or 2 is further amplified to allow portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for the assessment. Credit may be taken for unplanned events that satisfy this SR. 5

SURVEILLANCE REQUIREMENTS (continued)

~~[~~ SR 3.8.1.12 2

This Surveillance demonstrates that the DG automatically starts and achieves the required voltage and frequency within the specified time (~~[~~10~~]~~ seconds) from the design basis actuation signal (LOCA signal) and operates for ≥ 5 minutes. The 5 minute period provides sufficient time to demonstrate stability. SR 3.8.1.12.d and SR 3.8.1.12.e ensure that permanently connected loads and emergency loads are energized from the offsite electrical power system on an ESF signal without loss of offsite power. 2

The requirement to verify the connection of permanent and autoconnected loads is intended to satisfactorily show the relationship of these loads to the DG loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. For instance, ECCS injection valves are not desired to be stroked open, or high pressure injection systems are not capable of being operated at full flow, or RHR systems performing a decay heat removal function are not desired to be realigned to the ECCS mode of operation. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

~~[The Frequency of [18 months] takes into consideration unit conditions required to perform the Surveillance and is intended to be consistent with the expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the [18 month] Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ 7

~~OR~~

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 6
~~--]~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations. The reason for Note 2 is that during operation with the reactor critical, performance of this Surveillance could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This restriction from normally performing the Surveillance for DGs 2A-A and 2B-B in MODE 1 or 2 is further amplified to allow portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for the assessment. ~~]~~ Credit may be taken for unplanned events that satisfy this SR. 5 2

SR 3.8.1.13

This Surveillance demonstrates that DG noncritical protective functions (e.g., high jacket water temperature) are bypassed on a loss of voltage signal, ~~concurrent with~~ an ESF actuation test signal, or both. Noncritical automatic trips are all automatic trips except: 5

a. Engine overspeed; and

b. Generator differential current~~;~~.

~~[c. Low lube oil pressure;~~

~~d. High crankcase pressure; and~~

~~e. Start failure relay.]~~ 2

SURVEILLANCE REQUIREMENTS (continued)

The noncritical trips are bypassed during DBAs and provide an alarm on an abnormal engine condition. This alarm provides the operator with sufficient time to react appropriately. The DG availability to mitigate the DBA is more critical than protecting the engine against minor problems that are not immediately detrimental to emergency operation of the DG.

[~~The [18 month] Frequency is based on engineering judgment, taking into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the [18 month] Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ 7

~~OR~~

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
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The SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required DG from service. This restriction from normally performing the Surveillance for DGs 2A-A and 2B-B in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR. 5

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:~~

~~a. Performance of the SR will not render any safety system or component inoperable,~~

~~b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems, and~~

~~c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.~~
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SR 3.8.1.14

Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(3), requires demonstration that the DGs can start and run continuously at full load capability for an interval of not less than 24 hours, ≥ ~~[~~2~~]~~ hours of which is at a load equivalent to 110% of the continuous duty rating and the remainder of the time at a load equivalent to the continuous duty rating of the DG. The DG starts for this Surveillance can be performed either from standby or hot conditions. The provisions for prelubricating and warmup, discussed in SR 3.8.1.2, and for gradual loading, discussed in SR 3.8.1.3, are applicable to this SR. 2

The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY.

[~~The [18 month] Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(3), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.~~

~~OR~~

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

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BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 6

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This Surveillance is modified by ~~three~~ two Notes. Note 1 states that momentary transients due to changing ~~bus~~ board loads do not invalidate this test. Similarly, momentary power factor transients above the power factor limit will not invalidate the test. ~~The reason for~~ Note 2 ~~is that during operation with the reactor critical, performance of this Surveillance could~~ ~~for DGs 2A-A and 2B-B~~ ~~cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR. Note 3~~ ensures that the DG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed at a power factor of ≤ ~~[0.9]~~ 0.89. This power factor is representative of the actual inductive loading a DG would see under design basis accident conditions. Under certain conditions, however, Note ~~3~~ 2 allows the Surveillance to be conducted as a power factor other than ≤ ~~[0.9]~~ 0.89. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ ~~[0.9]~~ 0.89 results in voltages on the emergency ~~busses~~ boards that are too high. Under these conditions, the power factor should be maintained as close as practicable to ~~[0.9]~~ 0.89 while still maintaining acceptable voltage limits on the emergency ~~busses~~ boards. In other circumstances, the grid voltage may be such that the DG excitation levels needed to obtain a power factor of ~~[0.9]~~ 0.89 may not cause unacceptable voltages on the emergency ~~busses~~ boards, but the excitation levels are in excess of those recommended for the DG. In such cases, the power factor shall be maintained close as practicable to ~~[0.9]~~ 0.89 without exceeding the DG excitation limits.

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SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.15

This Surveillance demonstrates that the diesel engine can restart from a hot condition, such as subsequent to shutdown from normal Surveillances, and achieve the required voltage and frequency within ~~[~~10~~]~~ seconds. The ~~[~~10~~]~~ second time is derived from the requirements of the accident analysis to respond to a design basis large break LOCA. 2

~~[The [18 month] Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(5).~~ 7

~~OR~~

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 6

This SR is modified by two Notes. Note 1 ensures that the test is performed with the diesel sufficiently hot. The load band is provided to avoid routine overloading of the DG. Routine overloads may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY. The requirement that the diesel has operated for at least ~~[~~2~~]~~ hours at full load conditions prior to performance of this Surveillance is based on manufacturer recommendations for achieving hot conditions. Momentary transients due to changing board ~~bus~~ loads do not invalidate this test. Note 2 allows all DG starts to be preceded by an engine prelube period to minimize wear and tear on the diesel during testing. 2 VKG024 1

SR 3.8.1.16

As required by Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(6), this Surveillance ensures that the manual synchronization and automatic load transfer from the DG to the offsite source can be made and the DG can be returned to ready to load status when offsite power is restored. It also ensures that the autostart logic is reset to allow the DG to reload if a

BASES

SURVEILLANCE REQUIREMENTS (continued)

subsequent loss of offsite power occurs. The DG is considered to be in ready to load status when the DG is at rated speed and voltage, the output breaker is open and can receive an autoclose signal on ~~bus~~ board undervoltage, and the load sequence timers are reset. 1 VKG024

~~[The Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(6), and takes into consideration unit conditions required to perform the Surveillance.~~ 7

~~OR~~

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 6

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the Surveillance for DGs 2A-A and 2B-B in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR. 5

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[SR 3.8.1.17~~

~~Demonstration of the test mode override ensures that the DG availability under accident conditions will not be compromised as the result of testing and the DG will automatically reset to ready to load operation if a LOCA actuation signal is received during operation in the test mode. Ready to load operation is defined as the DG running at rated speed and voltage with the DG output breaker open. These provisions for automatic switchover are required by IEEE-308 (Ref. 13), paragraph 6.2.6(2).~~

~~The requirement to automatically energize the emergency loads with offsite power is essentially identical to that of SR 3.8.1.12. The intent in the requirement associated with SR 3.8.1.17.b is to show that the emergency loading was not affected by the DG operation in test mode. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the emergency loads to perform these functions is acceptable.~~

~~This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.~~

~~[The [18 month] Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(8), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.~~

~~OR~~

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

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

~~This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing~~

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SURVEILLANCE REQUIREMENTS (continued)

~~following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for the assessment.] Credit may be taken for unplanned events that satisfy this SR.~~ 5

SR 3.8.1.~~18~~ 17 5

VKG024 board load sequence timers 5

Under accident ~~[~~and loss of offsite power~~]~~ conditions loads are sequentially connected to the ~~bus~~ board by the ~~[automatic load sequencer]~~ load sequence timers. The 1 2 sequencing logic controls the permissive and starting signals to motor breakers to prevent overloading of the DGs due to high motor starting currents. The ~~[~~10~~]~~% load sequence time interval tolerance ensures that 2 sufficient time exists for the DG to restore frequency and voltage prior to applying the next load and that safety analysis assumptions regarding ESF equipment time delays are not violated. Reference 2 provides a summary of the automatic loading of ~~ESF buses~~ ~~6.9 kV~~ Shutdown Boards. 1

~~[The Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(2), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.~~ 7

~~OR~~

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

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

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the Surveillance for DGs 2A-A and 2B-B in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR. 5

~~-----REVIEWER'S NOTE-----~~
~~The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:~~

~~a. Performance of the SR will not render any safety system or component inoperable,~~

~~b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems, and~~

~~c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.~~
~~----------~~ 6

SR 3.8.1.~~19~~18 5

In the event of a DBA coincident with a loss of offsite power, the DGs are required to supply the necessary power to ESF systems so that the fuel, RCS, and containment design limits are not exceeded.

SURVEILLANCE REQUIREMENTS (continued)

This Surveillance demonstrates the DG operation, as discussed in the Bases for SR 3.8.1.11, during a loss of offsite power actuation test signal in conjunction with an ESF actuation signal. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

~~[The Frequency of [18 months] takes into consideration unit conditions required to perform the Surveillance and is intended to be consistent with an expected fuel cycle length of [18 months].~~ 7

~~OR~~

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

~~-----------------------------REVIEWER'S NOTE-----------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 6
~~---]~~

This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations for DGs. The reason for Note 2 is that the performance of the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the Surveillance for DGs 2A-A and 2B-B in MODE 1 or 2 is further amplified to allow 5 portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with

SURVEILLANCE REQUIREMENTS (continued)

these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for the assessment. Credit may be taken for unplanned events that satisfy this SR.

SR 3.8.1.~~20~~ 19 5

This Surveillance demonstrates that the DG starting independence has not been compromised. Also, this Surveillance demonstrates that each engine can achieve proper speed within the specified time when the DGs are started simultaneously.

~~[The 10 year Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9).~~

~~OR~~ 7

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~----------]~~ 6

This SR is modified by a Note. The reason for the Note is to minimize wear on the DG during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 17.
2. U FSAR, Chapter ~~[~~8~~]~~. 1 2
3. Regulatory Guide 1.9, Rev. ~~3~~ 0. 1
4. U FSAR, Chapter ~~[~~6~~]~~. 1 2
5. U FSAR, Chapter ~~[~~15~~]~~. 1 2

REFERENCES (continued)

6. Regulatory Guide 1.93, Rev. 0, December 1974.

7. Generic Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability," July 2, 1984.

8. 10 CFR 50, Appendix A, GDC 18.

9. Regulatory Guide 1.108, Rev. 1, August 1977.

~~10. Regulatory Guide 1.137, Rev. [ ], [date].~~ 1

10 ~~11~~. ~~ASME Code for Operation and Maintenance of Nuclear Power Plants.~~ ANSI C84.1, Voltage Ratings for Electric Power Systems and Equipment (60 Hz) 1

~~12. IEEE Standard 308-1978.~~ 1

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.1 BASES, AC SOURCES - OPERATING

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

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

3. Discussions regarding load sequencers have been deleted, because SQN does not use load sequencers. Each load is sequenced with the use of its associated time delay relay.

4. Editorial/grammatical error corrected.

5. Changes have been made to be consistent with changes made to the Specifications.

6. The Reviewer's Note has been deleted, because it is not meant to be retained in the plant specific ITS submittal.

7. ISTS SR 3.8.1.1 through SR 3.8.1.19 Bases provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies for ITS SR 3.8.1.1 through SR 3.8.1.19 under the Surveillance Frequency Control Program.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.1, AC SOURCES - OPERATING

10 CFR 50.92 EVALUATION
FOR
LESS RESTRICTIVE CHANGE L01

SQN is converting to the Improved Technical Specifications (ITS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." The proposed change involves making the Current Technical Specifications (CTS) less restrictive. Below are the descriptions of this less restrictive change and the determination of No Significant Hazards Considerations for conversion to NUREG-1431.

CTS 3.8.1.1 ACTION a provides actions for one inoperable offsite circuit and allows 72 hours to restore the inoperable offsite circuit to OPERABLE status before requiring the unit to be shut down and cooled down. ~~CTS 3.8.1.1 ACTION b provides actions for one or both DGs in a train inoperable and allows 7 days to restore the inoperable DG(s) to OPERABLE status before requiring the unit to be shut down and cooled down.~~ VKG026 CTS 3.8.1.1 ACTION c provides actions for one inoperable offsite circuit and one inoperable DG and allows 12 hours to restore at least one of the inoperable AC sources to OPERABLE status before requiring the unit to be shut down and cooled down. ~~CTS 3.8.1.1 ACTION d provides actions for two inoperable offsite circuits and allows 24 hours to restore at least one of the inoperable offsite circuits to OPERABLE status before requiring the unit to be shut down. CTS 3.8.1.1 ACTION e provides actions for one or two inoperable DGs in both trains and allows 2 hours to restore the inoperable DG(s) in one train to OPERABLE status before requiring the unit to be shut down and cooled down. CTS 3.8.1.1 ACTION f states LCO 3.0.4.b is not applicable to DGs. The ITS ACTIONS are modified by a Note stating LCO 3.0.4.b is not applicable to DGs.~~ ITS 3.8.1 ACTION A provides actions for one inoperable offsite circuit for reasons other than Condition C, and allows 72 hours to restore the inoperable offsite power source to OPERABLE status. ~~ITS 3.8.1 ACTION B provides actions for one inoperable associated unit's DG or both DGs in one train inoperable, and allows 7 days to restore the inoperable DG(s) to OPERABLE status.~~ ITS 3.8.1 ACTION C provides actions for one offsite circuit inoperable solely due to an inoperable offsite power source to an opposite unit's 6.9 kV Shutdown Board, and requires: 1) performance of ITS SR 3.8.1.1 for the OPERABLE offsite circuit in 1 hour and once per 8 hours thereafter, 2) declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours, and 3) restoration of the offsite circuit to OPERABLE status in 7 days. ~~requires declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours. Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the offsite circuit cannot be restored to an OPERABLE status. ITS 3.8.1 ACTION D requires declaration that the affected required feature(s) with no OPERABLE DG are inoperable when its redundant required feature is inoperable in 4 hours. Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the DG cannot be restored to an OPERABLE status. ITS 3.8.1 ACTION E requires declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 12 hours. Otherwise, one offsite circuit is required to be restored to an OPERABLE status in 24 hours.~~ VKG027 ITS 3.8.1 ACTION ~~F~~ E provides actions for one associated unit's offsite circuit inoperable concurrent with one associated unit's DG inoperable, and allows 12 hours to restore one of the inoperable AC sources to OPERABLE status. ~~ITS ACTION G requires declaring the required feature(s) on the opposite unit's 6.9 kV Shutdown Board with no offsite power available inoperable in 7 days. ITS ACTION H requires declaring the required feature(s) on the opposite unit's 6.9 kV Shutdown Board with no DG available inoperable in 7 days. ITS ACTION I provides actions for one offsite circuit inoperable solely due to an inoperable offsite power source to an opposite unit's 6.9 kV Shutdown Board concurrent with one opposite unit's DG inoperable, and allows 7 days~~

VKG027

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.1, AC SOURCES - OPERATING

~~to restore one of the inoperable AC sources to OPERABLE status. In addition, a Note~~

For the condition of one offsite circuit inoperable solely due to an inoperable power source to an opposite unit's 6.9 kV Shutdown Board concurrent with an inoperable DG (similar to CTS 3.8.1.1 Action c), ITS 3.8.1 Conditions B and C would be entered concurrently. ITS 3.8.1 ACTIONS B and C require, in part, restoration of the inoperable AC sources (circuit and DG) to an OPERABLE status in 7 days. This changes the CTS by providing a new ITS 3.8.1 ACTION C to allow 7 days to restore an inoperable offsite circuit to an OPERABLE status, if the offsite circuit is inoperable solely due to an inoperable power source to an opposite unit's Shutdown Board (e.g., for Unit 1 an offsite power source to 6.9 kV Shutdown Board 2A-A or 2B-B is inoperable).

The purpose of the CTS 3.8.1.1 ACTIONS is to limit the time the unit can remain operating with different combinations of inoperable offsite circuits and DGs. The onsite Class 1E AC Electrical Distribution System supplies electrical power to two power trains shared between the two units. The core cooling and containment cooling system loads (e.g., Safety Injection (SI) pumps, Auxiliary Feedwater (AFW) pumps, Residual Heat Removal (RHR) pumps, Centrifugal Charging pumps, Containment Spray pumps, and Air Return System (ARS) fans) are unitized to the respective unit's 6.9 kV Shutdown Boards. However, some safety-related systems (e.g., Essential Raw Cooling Water (ERCW), Component Cooling (CCS), Emergency Gas Treatment (EGTS), Auxiliary Building Gas Treatment, (ABGTS), Control Room Emergency Ventilation (CREVs), and Control Room HVAC (CRACS)) are shared between the units. The AC sources for the shared loads are distributed across both unit's shutdown boards. Therefore, two qualified offsite circuits and four DGs capable of supplying the onsite Class 1E AC Electrical Distribution System are required to be OPERABLE. However, the impacts of an inoperable offsite power source or DG on an opposite unit's 6.9 kV Shutdown Board differ from the impacts of an inoperable offsite power source or DG on an associated unit's 6.9 kV Shutdown Board, due to the loads powered from the respective board.

For example, with SQN Unit 1 in MODES 1, 2, 3, and 4, 6.9 kV Shutdown Boards 1A-A and 1B-B, and the associated offsite power sources and DGs are required to be OPERABLE to provide electrical power to the ESF systems powered from those boards. Additionally, 6.9 kV Shutdown Boards 2A-A and 2B-B and associated offsite power sources and DGs are required to be OPERABLE to provide electrical power to any required shared components required for Unit 1. If it is necessary to de-energize 6.9 kV Shutdown Board 2A-A or 2B-B, the redundant shared systems can be aligned prior to de-energizing the shutdown board to ensure no loss of safety function will occur. Upon removing the shutdown board from service, the applicable Conditions and Required Actions for the affected shared system LCOs will be entered and tracked and either the offsite power source or the DG is required to be restored to an OPERABLE status in 7 days.

VKG027

In the event of an unplanned loss of an offsite power source to an opposite unit's 6.9 kV Shutdown Board, the proposed actions require declaration that the affected required feature(s) with no offsite power available are inoperable when its redundant required feature is inoperable in 24 hours, and restoration of the offsite circuit to OPERABLE status in 7 days. ~~Otherwise, the affected required feature(s) are declared inoperable in 7 days, if the offsite power source cannot be restored to an OPERABLE status. Similarly, in~~ In the event of an unplanned loss of a DG to an opposite unit 6.9 kV Shutdown Board, the proposed actions require declaration that the affected required feature(s) with no OPERABLE DG are inoperable when its redundant required feature is inoperable in 4 hours, and restoration of the DG to OPERABLE status in 7 days. ~~Otherwise, the affected required feature(s) are declared~~

VKG026

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.1, AC SOURCES - OPERATING

~~inoperable in 7 days, if the DG cannot be restored to an OPERABLE status~~. In both cases, the ACTIONS require performance of SR 3.8.1.1 for the required OPERABLE offsite circuit(s) within 1 hour and once per 8 hours thereafter.

VKG026

ITS 3.8.1 ACTION G is entered and the unit is required to be shut down to MODE 3 in 6 hours and MODE 5 in 36 hours.

The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. These changes are acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation, while providing time to repair inoperable features. If the necessary repairs cannot be made within the established Completion Time, ~~the associated required features are declared inoperable and the applicable Conditions and Required Actions for the affected shared system LCOs are entered and tracked~~. This change is acceptable because the provided ACTIONS effect restoration of the opposite unit's ~~AC sources~~ offsite circuit commensurate with the importance of maintaining ~~these AC sources~~ offsite circuit capable of supporting the associated unit's required feature(s). This change is designated as less restrictive, because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

VKG027

Tennessee Valley Authority (TVA) has evaluated whether or not a significant hazards consideration is involved with these proposed Technical Specification changes by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of any accident previously evaluated?

Response: No.

VKG026

The proposed change relaxes the Required Actions for the opposite unit's offsite AC power sources ~~and DGs~~. The opposite unit's offsite AC power sources ~~and DGs~~ are required to be OPERABLE to support the associated unit's required features. This change will not affect the probability of an accident, since the offsite AC circuits ~~and DGs~~ are not initiators of any accident sequence analyzed in the Updated Final Safety Analysis Report (UFSAR). Rather, offsite AC power sources ~~and DGs~~ support equipment used to mitigate accidents. The consequences of an analyzed accident will not be significantly increased since the minimum requirements for AC power sources will be maintained to ensure the availability of the required power to mitigate accidents assumed in the UFSAR. Operation in accordance with the proposed TS will ensure that sufficient onsite and offsite AC power sources are OPERABLE as required to support the unit's required features. Therefore, the mitigating functions supported by the onsite and offsite AC power sources will continue to provide the protection assumed by the accident analysis. The integrity of fission product barriers, plant configuration, and operating procedures as described in the UFSAR will not be affected by the proposed changes. Thus, the consequences of previously analyzed accidents will not increase by implementing these changes. Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.1, AC SOURCES - OPERATING

2. Does the proposed change create the possibility of a new or different kind of accident from any previously evaluated?

Response: No

The proposed change relaxes the Required Actions for the opposite unit's offsite AC power sources ~~and DGs~~. The opposite unit's offsite AC power sources ~~and DGs~~ are required to be OPERABLE to support the associated unit's required features. This change will not physically alter the plant (no new or different type of equipment will be installed). The proposed changes will maintain the minimum requirements for AC power sources to ensure the availability of the equipment required to mitigate accidents assumed in the UFSAR. Therefore, operation of the facility in accordance with this proposed change will not create the possibility of a new or different kind of accident from any accident previously evaluated. VKG026

3. Does the proposed change involve a significant reduction in the margin of safety?

Response: No.

The proposed change relaxes the Required Actions for the opposite unit's offsite AC power sources ~~and DGs~~. The opposite unit's offsite AC power sources ~~and DGs~~ are required to be OPERABLE to support the associated unit's required features. The margin of safety is not affected by this change because the minimum requirements for AC power sources will be maintained to ensure the availability of the required power to shutdown the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. Therefore, the proposed changes do not involve a significant reduction in a margin of safety

ATTACHMENT 2

ITS 3.8.2, AC SOURCES - SHUTDOWN

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS A01 ITS 3.8.2

ELECTRICAL POWER SYSTEMS

AC SOURCES - SHUTDOWN A01

LIMITING CONDITION FOR OPERATION

LCO 3.8.2 3.8.1.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

LCO 3.8.2.a a. One qualified circuit between the offsite transmission network and the onsite Class 1E distribution system, and M01

LCO 3.8.2.b b. Two Diesel generator sets ~~1A-A and 2A-A or 1B-B and 2B-B~~ each with: LA01 M02

1. ~~Two diesels driving a common generator~~, LA01

SR 3.8.2.1 2. Two engine-mounted fuel tanks containing a minimum volume of 250 gallons of fuel per tank,

3. A fuel storage system containing a minimum volume of 62,000 gallons of fuel, See ITS 3.8.3

SR 3.8.2.1 4. A fuel transfer pump, and

5. A separate 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger. See ITS 3.8.5 and 3.8.10

Applicability APPLICABILITY: MODES 5 and 6. During movement of irradiated fuel M03

ACTION: Add proposed ACTIONS Note M03

Add proposed ACTION A Note A02

Add proposed Required Action A.1 and Completion Time L01

ACTIONS A and B With less than the above minimum required A.C. electrical power sources OPERABLE, suspend all operations involving ~~CORE ALTERATIONS~~ Stet and suspend operations involving positive reactivity additions that could result in loss of required shutdown margin or boron concentration. ~~L02~~

MHC003

Add proposed Required Actions A.2.3 and B.3 and associated Completion Times M04

SURVEILLANCE REQUIREMENTS

SR 3.8.2.1 4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the Surveillance Requirements of 4.8.1.1.1 and 4.8.1.1.2 (except for requirement

SR 3.8.2.1 Note 4.8.1.1.2.a.5), and 4.8.1.1.3. L03 See ITS 3.8.5

Add proposed SR 3.8.2.1 exceptions L04

ITS A01 ITS 3.8.2

ELECTRICAL POWER SYSTEMS

AC SOURCES - SHUTDOWN A01

LIMITING CONDITION FOR OPERATION

LCO 3.8.2 3.8.1.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

qualified

LCO 3.8.2.a a. One circuit between the offsite transmission network and the onsite Class 1E distribution system, and M01

Two LA01

LCO 3.8.2.b b. Diesel generator sets ~~1A-A and 2A-A or 1B-B and 2B-B~~ each with: M02

1. ~~Two diesels driving a common generator~~, LA01

SR 3.8.2.1 2. Two engine-mounted fuel tanks containing a minimum volume of 250 gallons of fuel per tank,

3. A fuel storage system containing a minimum volume of 62,000 gallons of fuel, See ITS 3.8.3

SR 3.8.2.1 4. A fuel transfer pump, and

5. A separate 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger. See ITS 3.8.5 and 3.8.10

Applicability APPLICABILITY: MODES 5 and 6. During movement of irradiated fuel M03

Add proposed ACTIONS Note A02

ACTION: Add proposed ACTION A Note

Add proposed Required Action A.1 and Completion Time L01

ACTIONS A and B With less than the above minimum required A.C. electrical power sources OPERABLE, suspend all operations involving ~~CORE ALTERATIONS~~ and suspend operations involving positive reactivity additions that could result in loss of required shutdown margin or boron concentration. ~~L02~~ Stet

MHC003

Add proposed Required Actions A.2.3 and B.3 and associated Completion Times M04

SURVEILLANCE REQUIREMENTS

SR 3.8.2.1 4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the Surveillance Requirements of 4.8.1.1.1 and 4.8.1.1.2 (except for requirement L03

SR 3.8.2.1 Note 4.8.1.1.2.a.5), and 4.8.1.1.3. See ITS 3.8.5

Add proposed SR 3.8.2.1 exceptions L04

DISCUSSION OF CHANGES
ITS 3.8.2, AC SOURCES - SHUTDOWN

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.8.1.2 does not address the situation when an ESF train is de-energized as a result of the loss of an AC Source. ITS 3.8.2 Required Action A.1 Note requires entry into the applicable Conditions and Required Actions of LCO 3.8.10 when one required train is de-energized as a result of an inoperable offsite circuit. This changes the CTS by directing entry into LCO 3.8.10.

AC Sources are considered a support system to the AC distribution System (ITS 3.8.10). If AC Sources are inoperable such that a distribution subsystem is made inoperable, then ITS LCO 3.0.6 would allow taking only the AC Sources ACTIONS; taking exception to complying with the AC Distribution System ACTIONS. Since the AC Sources ACTIONS may not be sufficiently conservative in the event, specific direction to take appropriate ACTIONS for the Distribution System is added (proposed Note to ITS 3.8.2 ACTION A). This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.8.1.2.a requires one circuit between the offsite transmission network and the onsite Class 1E distribution system to be OPERABLE. ITS LCO 3.8.2.a requires one qualified circuit between the offsite transmission network and the onsite 1E AC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems – Shutdown," to be OPERABLE. This changes the CTS by being specific that the circuit be qualified and as to what the required circuit must be capable of powering.

The purpose of CTS 3.8.1.2.a is to ensure the offsite circuit is OPERABLE in order to supply the equipment supported by the onsite Class 1E distribution system. The existing requirement of CTS LCO 3.8.1.2.a for one offsite circuit to be OPERABLE during shutdown conditions is not specific that the circuit be qualified and as to what that circuit must be powering. The requirement in ITS LCO 3.8.2.a specifies that the circuit must be qualified and available to supply power to all equipment required to be OPERABLE in the current plant conditions. This change is acceptable since the added restrictions conservatively assure the needed offsite circuit is qualified (as described in the Bases) and powering all AC loads required to be OPERABLE. This change is designated as more restrictive because more explicit offsite circuit requirements have been added.

DISCUSSION OF CHANGES
ITS 3.8.2, AC SOURCES - SHUTDOWN

M02 CTS 3.8.1.2.b requires two DGs to be OPERABLE. ITS LCO 3.8.2.b requires two DGs capable of supplying one train of the onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.10. This changes the CTS by being specific as to what the required DGs must be capable of powering.

The purpose of CTS 3.8.1.2.b is to ensure the required DGs are OPERABLE. This change provides an explicit requirement as to what the required DGs must be capable of powering. Similar to the added restrictions for an OPERABLE offsite circuit (refer to DOC M01 above), the DGs required OPERABLE during shutdown conditions by CTS 3.8.1.2.b is not specific as to what the DGs must be powering. The requirements in ITS LCO 3.8.2.b will ensure the OPERABLE DGs are associated with one or more systems, subsystems, or components required to be OPERABLE. This added restriction enforces a level of Technical Specification control which currently is enforced only by administrative procedures. This change is designated as more restrictive because more explicit DG requirements have been added.

M03 CTS 3.8.1.2 is applicable during MODES 5 and 6. ITS 3.8.2 is applicable in MODES 5 and 6, and during the movement of irradiated fuel assemblies. In addition, a Note has been added to the ACTIONS of ITS 3.8.2 that states LCO 3.0.3 is not applicable. This changes the CTS by requiring the AC Sources to be OPERABLE under more conditions than is currently required.

The purpose of CTS 3.8.1.2 is to ensure that sufficient AC Sources are available to mitigate the consequences of an analyzed event during shutdown modes. This change provides an explicit requirement that the AC Sources must be OPERABLE during the movement of irradiated fuel assemblies. The movement of irradiated fuel assemblies may occur during MODE 5 or 6, however the operations could also occur while the unit is operating if moving fuel only in the spent fuel pool. CTS 3.8.1.1 (ITS 3.8.1) and CTS 3.8.1.2 do not provide the appropriate compensatory actions under this condition. The activity should be suspended immediately when the AC Sources are not available consistent with the immediate actions for CORE ALTERATIONS in the CTS 3.8.1.2 Action; that is the actions in LCO 3.0.3 will not place the unit in a safe condition. This change is acceptable because the proposed Applicability is consistent with the Applicability in the AC Distribution System – Shutdown Specification (CTS 3.8.2.2 and ITS 3.8.10). AC Sources provides the power for the AC Distribution System. This change is designated as more restrictive because the Applicability of the Specification has been expanded.

M04 The CTS 3.8.1.2 ACTION requires the suspension of CORE ALTERATIONS and positive reactivity changes when a required AC Source is inoperable. It does not include an action to restore the inoperable AC Source. ITS 3.8.2 Required Actions A.2.3 and B.3 require the immediate initiation of action to restore the required AC Sources to OPERABLE status. This changes the CTS by adding explicit requirements to restore the inoperable AC Sources to OPERABLE status.

The purpose of ITS 3.8.1.2 Required Actions A.2.3 and B.3 is to place the unit within the requirements of the LCO. When a required offsite circuit or one or more required DG(s) is inoperable, the actions imposed by the CTS 3.8.1.2

DISCUSSION OF CHANGES
ITS 3.8.2, AC SOURCES - SHUTDOWN

ACTION do not necessarily place the unit in a MODE or other specified condition in which CTS LCO 3.8.1.2 is not applicable. Therefore, proposed ITS 3.8.2 Required Actions A.2.3 and B.3 are being added. These Required Actions implement a requirement to immediately initiate action to restore the required AC Sources to an OPERABLE status. These additional restrictions are consistent with implicit assumptions and will ensure action is immediately taken to restore compliance with the LCO requirements. This change is designated as more restrictive because the Required Actions do not exist in the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.8.1.2.b requires two DG sets "1A-A and 2A-A or 1B-B and 2B-B" to be OPERABLE each with "two diesels driving a common generator." ITS LCO 3.8.2.b requires two DGs capable of supplying one train of the onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.10. This changes the CTS by moving the details of the specific DGs that provide power to a train, and that each DG includes "two diesels driving a common generator" from the CTS to the Bases. The discussion of specifying what the DGs must be capable of powering is provided in DOC M02.

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

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* The CTS 3.8.1.2 ACTION requires the suspension of certain activities when the required AC Source is inoperable. ITS 3.8.2 provides an alternate Required Action (ITS 3.8.2 Required Action A.1) that allows the declaration of affected required feature(s) with no offsite power available inoperable instead of requiring the specified activities to be suspended. This changes the CTS by allowing the affected required feature(s) with no offsite power available to be declared inoperable instead of suspending the specified activities.

DISCUSSION OF CHANGES
ITS 3.8.2, AC SOURCES - SHUTDOWN

The purpose of CTS 3.8.1.2 is to ensure the appropriate offsite circuit is OPERABLE. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a loss of offsite power occurring during the repair period. This changes the CTS by allowing the affected required feature(s) with no offsite power available to be declared inoperable instead of suspending specified activities (i.e., movement of irradiated fuel assemblies). Since the ITS 3.8.2 circuit OPERABILITY requirements are proposed to require supplying power to all required electrical power distribution subsystems, if one or more subsystems are not powered by an offsite circuit, that circuit is inoperable. Conservative actions can be assured if all required equipment with offsite power is declared inoperable and the associated ACTIONS of the individual equipment taken (ITS 3.8.2 Required Action A.1). This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

MHC003

Not Used

L02 ~~*(Category 4 – Relaxation of Required Action)* The CTS 3.8.1.2 ACTION specifies the compensatory action for an inoperable required AC Source. One of the compensatory actions is the suspension of CORE ALTERATIONS. Under similar conditions, ITS 3.8.2 does not require suspension of CORE ALTERATIONS. This changes the CTS by deleting the requirement to suspend CORE ALTERATIONS when a required AC source is inoperable.~~

~~The purpose of the CTS 3.8.1.2 ACTION to suspend CORE ALTERATIONS is to minimize the possibility of an event that may need the AC source to mitigate the consequences of the event. CORE ALTERATION is defined in CTS 1.9, in part, as "the movement of any fuel, sources, reactivity control components, or other components affecting reactivity, within the reactor vessel with the head removed and fuel in the vessel." CORE ALTERATIONS only occur when the reactor vessel head is removed - it only applies in MODE 6. There is only one accident considered during MODE 6 that involves a CORE ALTERATION: a fuel handling accident. According to the Standard Review Plan, a fuel handling accident is initiated by the dropping of an irradiated fuel assembly, either in the containment or in the fuel building. Suspension of CORE ALTERATIONS, except for suspension of movement of irradiated fuel, will not prevent or impair the mitigation of a fuel handling accident. ITS 3.8.2 retains the requirement to suspend movement of irradiated fuel assemblies in ITS 3.8.2 Required Action A.2.1 (for an inoperable required offsite circuit) and Required Action B.1 (for one or more inoperable required DG(s)). Therefore, since the only CORE ALTERATION analyzed in the safety analysis and potentially affected by a loss of a AC source is covered by the ITS Required Actions, deletion of the term "CORE ALTERATIONS" is acceptable. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.~~

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DISCUSSION OF CHANGES
ITS 3.8.2, AC SOURCES - SHUTDOWN

L03 *(Category 7 – Relaxation of Surveillance Frequency)* CTS 4.8.1.2 requires the AC electrical power sources to be demonstrated OPERABLE by the performance of each of the Surveillance Requirements of 4.8.1.1.1 and 4.8.1.1.2 (except for requirement 4.8.1.1.2.a.5. ITS SR 3.8.2.1 has included a similar allowance in the Note to SR 3.8.2.1. However, additional ITS SRs are exempt from being required to be performed. ITS SR 3.8.2.1 states the following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.9 through SR 3.8.1.11, and SR 3.8.1.13 through SR 3.8.1.17. This changes the CTS by not requiring the performance of CTS 4.8.1.1.2.g.1 (ITS SR 3.8.1.9), CTS 4.8.1.1.2.g.2 (ITS SR 3.8.1.10), CTS 4.8.1.1.2.d.4 (ITS SR 3.8.1.11), CTS 4.8.1.1.2.d.6.c) (ITS SR 3.8.1.13), CTS 4.8.1.1.2.g.3 (ITS SR 3.8.1.14), CTS 4.8.1.1.2.g.4 (ITS SR 3.8.1.15), CTS 4.8.1.1.2.d.9 (ITS SR 3.8.1.16) and CTS 4.8.1.1.2.d.10 (ITS SR 3.8.1.17).

The purpose of CTS 3.8.1.2 is to ensure the appropriate AC Sources are demonstrated to be OPERABLE. This change is acceptable because the new Surveillance Frequency provides an acceptable level of equipment reliability. Currently CTS 4.8.1.1.2.a.5) is not required to be performed (however it must be met). CTS 4.8.1.1.2.g.1 (ITS SR 3.8.1.9) is the DG single largest load reject test, CTS 4.8.1.1.2.g.2 (ITS SR 3.8.1.10) is the DG full load reject test, CTS 4.8.1.1.2.d.4 (ITS SR 3.8.1.11) is the DG start on a loss of offsite power test, CTS 4.8.1.1.2.d.6.c) (ITS SR 3.8.1.13) demonstrates the DG noncritical protective functions are bypassed on a loss of voltage signal concurrent with an ESF actuation test signal, CTS 4.8.1.1.2.g.3 (ITS SR 3.8.1.14) is the DG 24 hour run test, CTS 4.8.1.1.2.g.4 (ITS SR 3.8.1.15) is the DG hot restart test, CTS 4.8.1.1.2.d.9 (ITS SR 3.8.1.16) ensures manual synchronization and automatic load transfer from the DG to the offsite source can be made and the DG can be returned to ready to load status when offsite power is restored, and CTS 4.8.1.1.2.d.10 (ITS SR 3.8.1.17) is a test of the individual load sequence timers.

These tests normally require the DG to be paralleled with offsite power. This condition (one of two required DGs and the only required offsite source connected) presents a significant risk of a single fault resulting in station blackout. The NRC has previously recognized this in the exception stated in CTS 4.8.1.2. In an effort to consistently address this concern and to avoid potential conflicting Technical Specifications, the Surveillances that would require a DG to be connected to the offsite source or would require disconnection of the required offsite circuit and de-energization of required buses are excepted from performance requirements. The exception does not remove the requirement for the DGs to be capable of performing the particular function. The exception only removes the requirement to demonstrate the capability while that source of power is being relied on to meet the supporting LCO. This change is acceptable since it is the intent that these SRs must still be capable of being met, but actual performance is not required during periods when a DG and the offsite circuit are required to be OPERABLE. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L04 *(Category 5 – Deletion of Surveillance Requirements)* CTS 4.8.1.2 requires the AC electrical power sources to be demonstrated OPERABLE by the performance

DISCUSSION OF CHANGES
ITS 3.8.2, AC SOURCES - SHUTDOWN

of each of the Surveillance Requirements of 4.8.1.1.1 and 4.8.1.1.2 (except for requirements 4.8.1.1.2.a.5). ITS SR 3.8.2.1 has included a similar allowance in the Note to SR 3.8.2.1. However, the ITS is exempting SRs from being required to be met, not just exempting them from being performed. ITS SR 3.8.2.1 states the following SRs are not required to be met: SR 3.8.1.8, SR 3.8.1.12, SR 3.8.1.18, and SR 3.8.1.19. This changes the CTS by not requiring CTS 4.8.1.1.2.d.5 (ITS SR 3.8.1.12), CTS 4.8.1.1.2.d.6 (ITS SR 3.8.1.18), and CTS 4.8.1.1.2.e (ITS SR 3.8.1.19) to be met. The addition of ITS SR 3.8.1.8 is discussed in ITS 3.8.1 DOC M03.

The purpose of CTS 3.8.1.2 is to ensure the appropriate AC Sources are demonstrated OPERABLE. This change is acceptable because the deleted Surveillance Requirements are not necessary to verify that the equipment used to meet the LCO can perform its required functions. Thus, appropriate equipment continues to be tested in a manner and at a Frequency necessary to give confidence that the equipment can perform its assumed safety function. This change deletes certain Surveillances from being required to be met. These Surveillances are CTS 4.8.1.1.2.d.5 (ITS SR 3.8.1.12), the ESF actuation signal DG start test, CTS 4.8.1.1.2.d.6 (ITS SR 3.8.1.18), ESF concurrent with loss of offsite power signal test, and CTS 4.8.1.1.2.e (ITS SR 3.8.1.19), the simultaneous DG start test. ITS SR 3.8.1.12 and ITS SR 3.8.1.18 are not required to be met since the ESF signal is not required to be OPERABLE in the MODES or other specified conditions listed in the Applicability of ITS 3.8.2. The CTS and ITS also do not require the ECCS subsystem(s) to be OPERABLE in MODE 5 and 6. The DGs are required to support the equipment powered from the 6.9 kV shutdown boards. However, when the ECCS subsystem(s) are not required to be OPERABLE, then there is no reason to require the DG to autostart on an ESF actuation signal. In addition, the ESF actuation signal is only an anticipatory start signal; the DGs are only needed during a LOCA if a loss of offsite power occurs concurrently. The DGs are also required to start if a loss of offsite power occurs. The requirement to autostart the required DG(s) on a loss of offsite power signal is being maintained in the ITS (ITS SR 3.8.1.11). Thus, when in these conditions (associated ECCS subsystem(s) not required to be OPERABLE), there is no reason to require the DGs to be capable of automatically starting on an ESF actuation signal (either by itself or concurrent with a loss of offsite power signal). This change is designated as less restrictive because Surveillances that are required in CTS will not be required in the ITS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.8 ELECTRICAL POWER SYSTEMS

3.8.2 AC Sources - Shutdown

3.8.1.2 LCO 3.8.2 The following AC electrical power sources shall be OPERABLE:

3.8.1.2.a a. One qualified circuit between the offsite transmission network and the onsite Class 1E AC electrical power distribution ~~sub~~system~~(s)~~ required by LCO 3.8.10, "Distribution Systems - Shutdown;" and 1 2

3.8.1.2.b b. ~~One~~ Two diesel generators (DGs) capable of supplying one train of the onsite Class 1E AC electrical power distribution ~~sub~~system~~(s)~~ required by LCO 3.8.10. 1

Applicability
DOC M03 APPLICABILITY: MODES 5 and 6,
During movement of ~~[recently]~~ irradiated fuel assemblies. 3

ACTIONS

---NOTE---

DOC M03 LCO 3.0.3 is not applicable.

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION DOC A02	A. One required offsite circuit inoperable.	-------------------NOTE------------------- Enter applicable Conditions and Required Actions of LCO 3.8.10, with one required ~~train~~ 6.9 kV Shutdown Board de-energized as a result of Condition A. ---		1
DOC L01		A.1 Declare affected required feature(s) with no offsite power available inoperable. <u>OR</u>	Immediately	

ACTIONS (continued)

MHC003

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION	A.2.1 Suspend movement of ~~[recently]~~ irradiated fuel assemblies.	Immediately 3
AND A.2.2 Suspend CORE ALTERATIONS.		Immediately 4
	AND	
ACTION	A.2.2 3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.	Immediately 4
	AND	
DOC M04	A.2.3 4 Initiate action to restore required offsite power circuit to OPERABLE status.	Immediately 4
ACTION B. One or more required DG(s) inoperable.	B.1 Suspend movement of ~~[recently]~~ irradiated fuel assemblies.	Immediately 1 3
AND B.2 Suspend CORE ALTERATIONS.		Immediately 4
	AND	
ACTION	B.2 3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.	Immediately 4
	AND	
DOC M04	B.3 4 Initiate action to restore required DG(s) to OPERABLE status.	Immediately 4 1

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SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
3.8.1.2.b.2, 3.8.1.2.b.4, 4.8.1.2	SR 3.8.2.1	-----------------------------NOTE----------------------------- The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.9 through SR 3.8.1.11, and SR 3.8.1.13 through SR 3.8.1.~~16, and~~ 17 ~~[SR 3.8.1.18]~~. ---	1 3
		For AC sources required to be OPERABLE, the SRs of Specification 3.8.1, "AC Sources - Operating," except SR 3.8.1.8, SR 3.8.1.12, ~~SR 3.8.1.17,~~ SR 3.8.1.~~19~~ 18, and SR 3.8.1.~~20~~ 19, are applicable.	In accordance with applicable SRs 1

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3.8 ELECTRICAL POWER SYSTEMS

3.8.2 AC Sources - Shutdown

3.8.1.2 LCO 3.8.2 The following AC electrical power sources shall be OPERABLE:

3.8.1.2.a a. One qualified circuit between the offsite transmission network and the onsite Class 1E AC electrical power distribution ~~sub~~system~~(s)~~ required by LCO 3.8.10, "Distribution Systems - Shutdown"; and (1) (2)

3.8.1.2.b b. Two ~~One~~ diesel generators (DGs) capable of supplying one train of the onsite Class 1E AC electrical power distribution ~~sub~~system~~(s)~~ required by LCO 3.8.10. (1)

Applicability
DOC M03 APPLICABILITY: MODES 5 and 6,
During movement of ~~[recently]~~ irradiated fuel assemblies. (3)

ACTIONS

-----NOTE-----

DOC M03 LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION DOC A02 A. One required offsite circuit inoperable.	-----NOTE----- Enter applicable Conditions and Required Actions of LCO 3.8.10, with one required 6.9 kV Shutdown Board ~~train~~ de-energized as a result of Condition A. ----- (1)	
DOC L01	A.1 Declare affected required feature(s) with no offsite power available inoperable. OR	Immediately

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MHC003

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION		A.2.1 Suspend movement of ~~[recently]~~ irradiated fuel assemblies.	Immediately	3
	AND A.2.2 Suspend CORE ALTERATIONS.		Immediately	4
		AND		
ACTION		A.2.~~2~~ 3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.	Immediately	4
		AND		
DOC M04		A.2.~~3~~ 4 Initiate action to restore required offsite power circuit to OPERABLE status.	Immediately	4
ACTION	B. One or more required DG(s) inoperable.	B.1 Suspend movement of ~~[recently]~~ irradiated fuel assemblies.	Immediately	1 3
	AND B.2 Suspend CORE ALTERATIONS.		Immediately	4
		AND		
ACTION		B.~~2~~ 3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.	Immediately	4
		AND		
DOC M04		B.~~3~~ 4 Initiate action to restore required DG(s) to OPERABLE status.	Immediately	4 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
3.8.1.2.b.2, 3.8.1.2.b.4, 4.8.1.2 SR 3.8.2.1	------------------------------NOTE------------------------------ The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.9 through SR 3.8.1.11, and SR 3.8.1.13 through SR 3.8.1.~~16, and~~ 17 ~~[SR 3.8.1.18]~~. ---	
	For AC sources required to be OPERABLE, the SRs of Specification 3.8.1, "AC Sources - Operating," except SR 3.8.1.8, SR 3.8.1.12, ~~SR 3.8.1.17,~~ SR 3.8.1.~~19~~ 18, and SR 3.8.1.~~20~~ 19, are applicable.	In accordance with applicable SRs

1 3

1

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.2, AC SOURCES - SHUTDOWN

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

2. The punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

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

4. ITS 3.8.2 Required Actions A.2.2 and B.2 have been added to ISTS 3.8.2 Conditions A and B, respectively, to require immediate suspension of CORE ALTERATIONS when a required offsite circuit or DG is inoperable. CTS 3.8.1.2 ACTION requires suspending all operations involving CORE ALTERATIONS with less than the minimum required A.C. electrical power sources OPERABLE. This change reflects CTS requirements. Subsequent ISTS 3.8.2 Required Actions have been renumbered to reflect this addition. MHC003

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Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.2 AC Sources - Shutdown

BASES

BACKGROUND

A description of the AC sources is provided in the Bases for LCO 3.8.1, "AC Sources - Operating."

APPLICABLE SAFETY ANALYSES

The OPERABILITY of the minimum AC sources during MODES 5 and 6 and during movement of ~~[recently]~~ irradiated fuel assemblies ensures that: 2

a. The unit can be maintained in the shutdown or refueling condition for extended periods,

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status, and

c. Adequate AC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident ~~[involving handling recently irradiated fuel. Due to radioactive decay, AC electrical power is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~. 2

In general, when the unit is shut down, the Technical Specifications requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents. However, assuming a single failure and concurrent loss of all offsite or all onsite power is not required. ~~The rationale for~~ this is ~~based on the fact that~~ because many Design Basis Accidents (DBAs) that are analyzed in MODES 1, 2, 3, and 4 ~~have no specific analyses in MODES 5 and 6. Worst case bounding events~~ are deemed not credible in MODES 5 and 6 because the energy contained within the reactor pressure boundary, reactor coolant temperature and pressure, and the corresponding stresses result in the probabilities of occurrence being significantly reduced or eliminated, and result in minimal consequences. These limitations ~~deviations from DBA analysis assumptions and design requirements~~ during shutdown conditions are ~~allowed by~~ reflected in the LCO for required systems. 1

During MODES 1, 2, 3, and 4, various deviations from the analysis assumptions and design requirements are allowed within the Required Actions. This allowance is in recognition that certain testing and maintenance activities must be conducted provided an acceptable level of risk is not exceeded. During MODES 5 and 6, performance of a

BASES

APPLICABLE SAFETY ANALYSES (continued)

significant number of required testing and maintenance activities is also required. In MODES 5 and 6, the activities are ~~generally~~ planned and administratively controlled. Relaxations from MODE 1, 2, 3, and 4 LCO requirements are acceptable during shutdown modes based on: 1

a. The fact that time in an outage is limited. This is a risk prudent goal as well as a utility economic consideration.

b. Requiring appropriate compensatory measures for certain conditions. These may include administrative controls, reliance on systems that do not necessarily meet typical design requirements applied to systems credited in operating MODE analyses, or both.

c. Prudent utility consideration of the risk associated with multiple activities that could affect multiple systems.

d. Maintaining, to the extent practical, the ability to perform required functions (even if not meeting MODE 1, 2, 3, and 4 OPERABILITY requirements) with systems assumed to function during an event.

In the event of an accident during shutdown, this LCO ensures the capability to support systems necessary to avoid immediate difficulty, assuming either a loss of all offsite power or a loss of all onsite diesel generator (DG) power.

The AC sources satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

One offsite circuit capable of supplying the onsite Class 1E power distribution subsystem(s) of LCO 3.8.10, "Distribution Systems - Shutdown," ensures that all required loads are powered from offsite power. Two ~~An~~ OPERABLE DGs, associated with a distribution system train required to be OPERABLE by LCO 3.8.10, ensures a diverse power source is available to provide electrical power support, assuming a loss of the offsite circuit. Together, OPERABILITY of the required offsite circuit and DGs ensures the availability of sufficient AC sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents ~~[involving handling recently irradiated fuel]~~). 3 3 2

The qualified offsite circuit must be capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the 6.9 kV shutdown boards ~~Engineered Safety Feature (ESF) bus(es)~~. Qualified offsite circuits are those that are described in the Bases for LCO 3.8.1 ~~FSAR~~ and are part of the licensing basis for the unit. 1

BASES

LCO (continued)

INSERT 1 ~~[Offsite circuit #1 consists of Safeguards Transformer B, which is supplied from Switchyard Bus B, and is fed through breaker 52-3 powering the ESF transformer XNB01, which, in turn, powers the #1 ESF bus through its normal feeder breaker. The second offsite circuit consists of the Startup Transformer, which is normally fed from the Switchyard Bus A, and is fed through breaker PA 0201 powering the ESF transformer, which, in turn, powers the #2 ESF bus through its normal feeder breaker.]~~ 1

s their board VKG024

The DGs must be capable of starting, accelerating to rated speed and voltage, and connecting to ~~its~~ their respective ~~ESF bus~~ 6.9 kV shutdown board on detection of ~~bus~~ board undervoltage. This sequence must be accomplished within ~~[~~10~~]~~ seconds. The DG must be capable of accepting required loads within the assumed loading sequence intervals, and continue to operate until offsite power can be restored to the ~~ESF buses~~ 6.9 kV shutdown boards. These capabilities are required to be met from a variety of initial conditions such as DG in standby with the engine hot and DG in standby at ambient conditions. 3 2 1

VKG024

Proper sequencing of loads, including tripping of nonessential loads, is a required function for DG OPERABILITY.

~~[In addition, proper sequencer operation is an integral part of offsite circuit OPERABILITY since its inoperability impacts on the ability to start and maintain energized loads required OPERABLE by LCO 3.8.10.]~~ 4

~~It is acceptable for trains to be cross tied during shutdown conditions, allowing a single offsite power circuit to supply all required trains.~~ 1

APPLICABILITY

The AC sources required to be OPERABLE in MODES 5 and 6 and during movement of ~~[recently]~~ irradiated fuel assemblies provide assurance that: 2

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel assemblies in the core,

b. Systems needed to mitigate a fuel handling accident ~~[involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~ are available, 2

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available, and

1 **INSERT 1**

Each required offsite circuit is that combination of power sources described in the Bases of LCO 3.8.1.

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BASES

APPLICABILITY (continued)

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The AC power requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.1.

ACTIONS

LCO 3.0.3 is not applicable while in MODE 5 or 6. However, since irradiated fuel assembly movement can occur in MODE 1, 2, 3, or 4, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operations. Entering LCO 3.0.3, while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

A.1

An offsite circuit would be considered inoperable if it were not available to one required ESF train. Although two trains are required by LCO 3.8.10, the one train with offsite power available may be capable of supporting sufficient required features to allow continuation of ~~[recently]~~ irradiated fuel movement. By the allowance of the option to declare required features inoperable, with no offsite power available, appropriate restrictions will be implemented in accordance with the affected required features LCO's ACTIONS. 2

MHC003 A.2.4,

A.2.1, A.2.2, A.2.3, B.1, B.2, ~~and~~ B.3 , and B.4 3

With the offsite circuit not available to all required trains, the option would still exist to declare all required features inoperable. Since this option may involve undesired administrative efforts, the allowance for sufficiently conservative actions is made. With ~~the~~ one or more required DGs inoperable, the minimum required diversity of AC power sources is not available. It is, therefore, required to suspend movement of ~~[recently]~~ irradiated fuel assemblies, CORE ALTERATIONS, and operations involving positive reactivity additions that could result in loss of required SDM (MODE 5) or boron concentration (MODE 6). Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron 3 2 3

BASES

ACTIONS (continued)

concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes including temperature increases when operating with a positive MTC must also be evaluated to ensure they do not result in a loss of required SDM.

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability or the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC sources and to continue this action until restoration is accomplished in order to provide the necessary AC power to the unit safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required AC electrical power sources should be completed as quickly as possible in order to minimize the time during which the unit safety systems may be without sufficient power.

Pursuant to LCO 3.0.6, the Distribution System's ACTIONS would not be entered even if all AC sources to it are inoperable, resulting in de-energization. Therefore, the Required Actions of Condition A are modified by a Note to indicate that when Condition A is entered with no AC power to any required 6.9 kV shutdown board ~~ESF bus~~, the ACTIONS for LCO 3.8.10 must be immediately entered. This Note allows Condition A to provide requirements for the loss of the offsite circuit, whether or not a train is de-energized. LCO 3.8.10 would provide the appropriate restrictions for the situation involving a de-energized train. 1

SURVEILLANCE REQUIREMENTS

SR 3.8.2.1

SR 3.8.2.1 requires the SRs from LCO 3.8.1 that are necessary for ensuring the OPERABILITY of the AC sources in other than MODES 1, 2, 3, and 4. SR 3.8.1.8 is not required to be met since only one offsite circuit is required to be OPERABLE. SR 3.8.1.12 and SR 3.8.1.18 ~~19~~ are not required to be met because the ESF actuation signal is not required to be OPERABLE. ~~SR 3.8.1.17 is not required to be met because the required OPERABLE DG(s) is not required to undergo periods of being synchronized to the offsite circuit.~~ SR 3.8.1.19 ~~20~~ is excepted because starting independence is not required with the DG(s) that is not required to be operable. 3 5

This SR is modified by a Note. The reason for the Note is to preclude requiring the OPERABLE DG(s) from being paralleled with the offsite power network or otherwise rendered inoperable during performance of SRs, and to preclude deenergizing a required 6.9 kV shutdown board ~~4160 V ESF bus~~ or 1

BASES

SURVEILLANCE REQUIREMENTS (continued)

disconnecting a required offsite circuit during performance of SRs. With limited AC sources available, a single event could compromise both the required circuit and the DG(s). It is the intent that these SRs must still be capable of being met, but actual performance is not required during periods when the DG(s) and offsite circuit is required to be OPERABLE. Refer to the corresponding Bases for LCO 3.8.1 for a discussion of each SR. 3

REFERENCES None.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.2 AC Sources - Shutdown

BASES

BACKGROUND

A description of the AC sources is provided in the Bases for LCO 3.8.1, "AC Sources - Operating."

APPLICABLE SAFETY ANALYSES

The OPERABILITY of the minimum AC sources during MODES 5 and 6 and during movement of ~~[recently]~~ irradiated fuel assemblies ensures that: 2

a. The unit can be maintained in the shutdown or refueling condition for extended periods,

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status, and

c. Adequate AC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident ~~[involving handling recently irradiated fuel. Due to radioactive decay, AC electrical power is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~. 2

In general, when the unit is shut down, the Technical Specifications requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents. However, assuming a single failure and concurrent loss of all offsite or all onsite power is not required. ~~The rationale for~~ because this is ~~based on the fact that~~ many Design Basis Accidents (DBAs) that are analyzed in MODES 1, 2, 3, and 4 ~~have no specific analyses in MODES 5 and 6. Worst case bounding events~~ are deemed not credible in MODES 5 and 6 because the energy contained within the reactor pressure boundary, reactor coolant temperature and pressure, and the corresponding stresses result in the probabilities of occurrence being significantly reduced or eliminated, and result in minimal consequences. These limitations ~~deviations from DBA analysis assumptions and design requirements~~ during shutdown conditions are reflected in ~~allowed by~~ the LCO for required systems. 1

During MODES 1, 2, 3, and 4, various deviations from the analysis assumptions and design requirements are allowed within the Required Actions. This allowance is in recognition that certain testing and maintenance activities must be conducted provided an acceptable level of risk is not exceeded. During MODES 5 and 6, performance of a

BASES

APPLICABLE SAFETY ANALYSES (continued)

significant number of required testing and maintenance activities is also required. In MODES 5 and 6, the activities are ~~generally~~ planned and administratively controlled. Relaxations from MODE 1, 2, 3, and 4 LCO requirements are acceptable during shutdown modes based on: 1

a. The fact that time in an outage is limited. This is a risk prudent goal as well as a utility economic consideration.

b. Requiring appropriate compensatory measures for certain conditions. These may include administrative controls, reliance on systems that do not necessarily meet typical design requirements applied to systems credited in operating MODE analyses, or both.

c. Prudent utility consideration of the risk associated with multiple activities that could affect multiple systems.

d. Maintaining, to the extent practical, the ability to perform required functions (even if not meeting MODE 1, 2, 3, and 4 OPERABILITY requirements) with systems assumed to function during an event.

In the event of an accident during shutdown, this LCO ensures the capability to support systems necessary to avoid immediate difficulty, assuming either a loss of all offsite power or a loss of all onsite diesel generator (DG) power.

The AC sources satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

One offsite circuit capable of supplying the onsite Class 1E power distribution subsystem(s) of LCO 3.8.10, "Distribution Systems - Shutdown," ensures that all required loads are powered from offsite power. Two ~~An~~ OPERABLE DGs, associated with a distribution system train required to be OPERABLE by LCO 3.8.10, ensures a diverse power source is available to provide electrical power support, assuming a loss of the offsite circuit. Together, OPERABILITY of the required offsite circuit and DGs ensures the availability of sufficient AC sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents ~~[involving handling recently irradiated fuel]~~). 3 3 2

The qualified offsite circuit must be capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the 6.9 kV shutdown boards ~~Engineered Safety Feature (ESF) bus(es)~~. Qualified offsite circuits are those that are described in the Bases for LCO 3.8.1 ~~FSAR~~ and are part of the licensing basis for the unit. 1

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BASES

LCO (continued)

INSERT 1

~~[Offsite circuit #1 consists of Safeguards Transformer B, which is supplied from Switchyard Bus B, and is fed through breaker 52-3 powering the ESF transformer XNB01, which, in turn, powers the #1 ESF bus through its normal feeder breaker. The second offsite circuit consists of the Startup Transformer, which is normally fed from the Switchyard Bus A, and is fed through breaker PA 0201 powering the ESF transformer, which, in turn, powers the #2 ESF bus through its normal feeder breaker.]~~ 1

s their 6.9 kV shutdown board board VKG024

The DG must be capable of starting, accelerating to rated speed and voltage, and connecting to ~~its~~ respective ~~ESF bus~~ on detection of ~~bus~~ undervoltage. This sequence must be accomplished within [10] seconds. The DG must be capable of accepting required loads within the assumed loading sequence intervals, and continue to operate until offsite power can be restored to the ~~ESF~~ ~~buses~~. These capabilities are required to be met from a variety of initial conditions such as DG in standby with the engine hot and DG in standby at ambient conditions. 3 1 2 1

VKG024 6.9 kV shutdown boards

Proper sequencing of loads, including tripping of nonessential loads, is a required function for DG OPERABILITY.

~~[In addition, proper sequencer operation is an integral part of offsite circuit OPERABILITY since its inoperability impacts on the ability to start and maintain energized loads required OPERABLE by LCO 3.8.10.]~~ 4

~~It is acceptable for trains to be cross tied during shutdown conditions, allowing a single offsite power circuit to supply all required trains.~~ 1

APPLICABILITY

The AC sources required to be OPERABLE in MODES 5 and 6 and during movement of ~~[recently]~~ irradiated fuel assemblies provide assurance that: 2

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel assemblies in the core,

b. Systems needed to mitigate a fuel handling accident ~~[involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~ are available, 2

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available, and

1 **INSERT 1**

Each required offsite circuit is that combination of power sources described in the Bases of LCO 3.8.1.

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BASES

APPLICABILITY (continued)

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The AC power requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.1.

ACTIONS

LCO 3.0.3 is not applicable while in MODE 5 or 6. However, since irradiated fuel assembly movement can occur in MODE 1, 2, 3, or 4, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operations. Entering LCO 3.0.3, while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

A.1

An offsite circuit would be considered inoperable if it were not available to one required ESF train. Although two trains are required by LCO 3.8.10, the one train with offsite power available may be capable of supporting sufficient required features to allow continuation of ~~[recently]~~ irradiated fuel movement. By the allowance of the option to declare required features inoperable, with no offsite power available, appropriate restrictions will be implemented in accordance with the affected required features LCO's ACTIONS. 2

MHC003

A.2.1, A.2.2, A.2.3, A.2.4, B.1, B.2, ~~and~~ B.3, and B.4 3

With the offsite circuit not available to all required trains, the option would still exist to declare all required features inoperable. Since this option may involve undesired administrative efforts, the allowance for sufficiently conservative actions is made. With ~~the~~ one or more required DGs inoperable, the minimum required diversity of AC power sources is not available. It is, therefore, required to suspend movement of ~~[recently]~~ irradiated fuel assemblies, CORE ALTERATIONS, and operations involving positive reactivity additions that could result in loss of required SDM (MODE 5) or boron concentration (MODE 6). Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron 3 2 3

BASES

ACTIONS (continued)

concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes including temperature increases when operating with a positive MTC must also be evaluated to ensure they do not result in a loss of required SDM.

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability or the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC sources and to continue this action until restoration is accomplished in order to provide the necessary AC power to the unit safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required AC electrical power sources should be completed as quickly as possible in order to minimize the time during which the unit safety systems may be without sufficient power.

Pursuant to LCO 3.0.6, the Distribution System's ACTIONS would not be entered even if all AC sources to it are inoperable, resulting in de-energization. Therefore, the Required Actions of Condition A are modified by a Note to indicate that when Condition A is entered with no AC power to any required 6.9 kV shutdown board ~~ESF bus~~, the ACTIONS for LCO 3.8.10 must be immediately entered. This Note allows Condition A to provide requirements for the loss of the offsite circuit, whether or not a train is de-energized. LCO 3.8.10 would provide the appropriate restrictions for the situation involving a de-energized train. 1

SURVEILLANCE REQUIREMENTS

SR 3.8.2.1

SR 3.8.2.1 requires the SRs from LCO 3.8.1 that are necessary for ensuring the OPERABILITY of the AC sources in other than MODES 1, 2, 3, and 4. SR 3.8.1.8 is not required to be met since only one offsite circuit is required to be OPERABLE. SR 3.8.1.12 and SR 3.8.1.18 ~~19~~ are not required to be met because the ESF actuation signal is not required to be OPERABLE. ~~SR 3.8.1.17 is not required to be met because the required OPERABLE DG(s) is not required to undergo periods of being synchronized to the offsite circuit.~~ SR 3.8.1.19 ~~20~~ is excepted because starting independence is not required with the DG(s) that is not required to be operable. 3 5

This SR is modified by a Note. The reason for the Note is to preclude requiring the OPERABLE DG(s) from being paralleled with the offsite power network or otherwise rendered inoperable during performance of SRs, and to preclude deenergizing a required 6.9 kV shutdown board ~~4160 V ESF bus~~ or 1

BASES

SURVEILLANCE REQUIREMENTS (continued)

disconnecting a required offsite circuit during performance of SRs. With limited AC sources available, a single event could compromise both the required circuit and the DG~~.~~ s It is the intent that these SRs must still be capable of being met, but actual performance is not required during periods when the DG s and offsite circuit is required to be OPERABLE. 3 Refer to the corresponding Bases for LCO 3.8.1 for a discussion of each SR.

REFERENCES None.

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.2 BASES, AC SOURCES - SHUTDOWN

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

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

3. Changes have been made to be consistent with changes made to the Specifications.

4. Discussions regarding load sequencers have been deleted, because SQN does not use load sequencers. Each load is sequenced with the use of its associated time delay relay.

5. Editorial/grammatical error corrected.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.2, AC SOURCES - SHUTDOWN

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 3

ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL, AND STARTING AIR

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS

A01

ITS 3.8.3

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

Add proposed LCO 3.8.3 A02

LCO 3.8.3

3.8.1.1 ~~As a minimum, the following A.C. electrical power sources shall be OPERABLE:~~

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system@, and

b. Four separate and independent diesel generator sets each with:

1. Two diesels driving a common generator

2. Two engine-mounted fuel tanks containing a minimum volume of 250 gallons of fuel, per tank

See ITS 3.8.1

LA01

SR 3.8.3.1

3. A separate fuel storage system containing a minimum volume of ~~62,000 gallons~~ of fuel,

≥ a 7 day supply

4. A separate fuel transfer pump, and

See ITS 3.8.1

5. A separate 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger.

See ITS 3.8.4 and 3.8.9

Applicability

APPLICABILITY: ~~MODES 1, 2, 3 and 4~~.

When associated DG is required to be OPERABLE A02

ACTIONS

ACTION:

Add proposed ACTIONS Note L01

Add proposed ACTION A

Add proposed ACTIONS B, C, D, E, and F M01

a. With one offsite A.C. circuit of the above required A.C. electrical power source inoperable, demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter. Restore at least two offsite circuits to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b.# With diesel generator set(s) 1A-A and/or 2A-A or 1B-B and/or 2B-B of the above required A.C. electrical power sources inoperable,* demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter, and determining OPERABLE diesel generator sets are not inoperable due to common cause failure or performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours; restore at least four diesel generator sets to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

See ITS 3.8.1

\# Required actions, to verify OPERABLE diesel generator sets are not inoperable due to common cause failure or perform SR 4.8.1.1.2.a.4, shall be completed if this action is entered.

* No more than one diesel generator may be made simultaneously inoperable on a pre-planned basis for maintenance, modifications, or surveillance testing.

@ Offsite circuits utilizing USST 2A and USST 2B as the normal power sources require CSST A and CSST C to be available as the alternate power sources via automatic transfer at the associated 6.9 kV Unit Boards. (CSST B can be substituted for CSST A or CSST C.) This Note remains in effect until November 30, 2013, or until the USST modifications are implemented on Units 1 and 2, whichever occurs first.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

4.8.1.1.2 Each diesel generator set shall be demonstrated OPERABLE: In accordance with the Surveillance Frequency Control Program LA02

a. ~~At least once per 31 days~~ ~~on a staggered test basis~~ by: L02

1. Verifying the fuel level in the engine-mounted day tanks. See ITS 3.8.1

SR 3.8.3.1 2. Verifying the fuel level in the 7 day tank.

Add proposed SR 3.8.3.2 M01

3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the engine mounted fuel tanks

4. *Verifying the diesel starts from ambient condition and achieves in less than or equal to 10 seconds voltage and frequency of ≥ 6800 volts and ≥ 58.8 Hz and achieves a steady state voltage and frequency of ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz. The diesel generator shall be started for this test by using one of the following signals with startup on each signal verified at least once per 124 days:

a) Manual.

b) Simulated loss of offsite power by itself.

c) An ESF actuation test signal by itself.

5. *Verifying the generator is synchronized, loaded between 3960 kw and 4400 kw in less than or equal to 60 seconds, and operates for greater than or equal to 60 minutes, and

6. Verifying the diesel generator is aligned to provide standby power to the associated shutdown boards.

See ITS 3.8.1

b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the engine-mounted fuel tanks. See ITS 3.8.1

Add proposed SR 3.8.3.5 M02

SR 3.8.3.3 c. At a frequency in accordance with the Diesel Fuel Oil Testing Program, verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits specified in the Diesel Fuel Oil Testing Program.

Add proposed SR 3.8.3.4 M01

* The diesel generator start (10 sec) and load (60 sec) from standby conditions shall be performed at least once per 184 days in these surveillance tests. All other diesel generator engine starts and loading for the purpose of this surveillance testing may be preceded by an engine idle start, followed by gradual acceleration to synchronous speed (approximately 900 rpm), synchronization, and gradual loading. In this latter case, 10 second requirements do not apply. See ITS 3.8.1

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

8. Verifying that the auto-connected loads to each diesel generator do not exceed the continuous rating of 4400 kW.

9. Verifying the diesel generator's capability to:

a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power.

b) Transfer its loads to the offsite power source, and

c) Be restored to its shutdown status.

See ITS 3.8.1

10. Verifying that the automatic load sequence timers are OPERABLE with the setpoint for each sequence timer within $\pm$ 5 percent of its design setpoint.#

11. This surveillance is deleted.

e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting the diesel generators simultaneously and verifying that each diesel generator achieves in less than or equal to 10 seconds, ≥ 6800 volts and ≥ 58.8 Hz.

~~f. At least once per 10 years by:~~

~~1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank.~~

LA03

g. At least once per 18 months by:

1. Verifying the generator capability to reject a load of greater than or equal to 600 kw while maintaining voltage at within ± 10 percent of the initial pretest voltage and frequency at 60 $\pm$ 1.2 Hz. At no time shall the transient voltage exceed 8276V.

2. Verifying the generator capability to reject a load of 4400 kw without tripping. The generator voltage shall not exceed 8880V during and following the load rejection.

See ITS 3.8.1

#May be performed in Modes 1, 2, 3 & 4 if the associated equipment is out of service for maintenance or testing.

ITS

A01

ITS 3.8.3

ELECTRICAL POWER SYSTEMS

SHUTD0WN

Add proposed LCO 3.8.3

A02

LIMITING CONDITION FOR OPERATION

LCO 3.8.3 3.8.1.2 ~~As a minimum, the following A.C. electrical power sources shall be OPERABLE:~~

a. One circuit between the offsite transmission network and the onsite Class 1E distribution system, and

b. Diesel generator sets 1A-A and 2A-A or 1B-B and 2B-B each with:

1. Two diesels driving a common generator,

2. Two engine-mounted fuel tanks containing a minimum volume of 250 gallons of fuel per tank,

See ITS 3.8.2

≥ a 7 day supply

LA01

SR 3.8.3.1 3. A fuel storage system containing a minimum volume of ~~62,000 gallons~~ of fuel,

4. A fuel transfer pump, and

See ITS 3.8.2

5. A separate 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger.

See ITS 3.8.5 and 3.8.9

Applicability APPLICABILITY: ~~MODES 5 and 6~~.

When associated DG is required to be OPERABLE

A02

ACTIONS ACTION:

With less than the above minimum required A.C. electrical power sources OPERABLE, suspend all operations involving CORE ALTERATIONS and suspend operations involving positive reactivity additions that could result in loss of required shutdown margin or boron concentration.

See ITS 3.8.2

SURVEILLANCE REQUIREMENTS

4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the Surveillance Requirements of 4.8.1.1.1 and 4.8.1.1.2 (except for requirement 4.8.1.1.2.a.5), and 4.8.1.1.3.

See ITS 3.8.2 and 3.8.5

ITS

A01

ITS 3.8.3

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

Add proposed LCO 3.8.3

A02

LCO 3.8.3

3.8.1.1 ~~As a minimum, the following A.C. electrical power sources shall be OPERABLE:~~

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system@, and

b. Four separate and independent diesel generator sets each with:

1. Two diesels driving a common generator

2. Two engine-mounted fuel tanks containing a minimum volume of 250 gallons of fuel, per tank

See ITS 3.8.1

SR 3.8.3.1

3. A separate fuel storage system containing a minimum volume of ~~62,000 gallons~~ of fuel,

≥ a 7 day supply

LA01

4. A separate fuel transfer pump, and

See ITS 3.8.1

5. A separate 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger.

See ITS 3.8.4 and 3.8.9

Applicability

APPLICABILITY: ~~MODES 1, 2, 3 and 4.~~

When associated DG is required to be OPERABLE

A02

ACTIONS

ACTION:

Add proposed ACTIONS Note

Add proposed ACTION A

L01

Add proposed ACTIONS B, C, D, E, and F

M01

a. With one offsite A.C. circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter. Restore at least two offsite circuits to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b.# With diesel generator set(s) 1A-A and/or 2A-A or 1B-B and/or 2B-B of the above required A.C. electrical power sources inoperable,* demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter, and determining OPERABLE diesel generator sets are not inoperable due to common cause failure or performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours; restore at least four diesel generator sets to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

See ITS 3.8.1

Required actions, to verify OPERABLE diesel generator sets are not inoperable due to common cause failure or perform SR 4.8.1.1.2.a.4, shall be completed if this action is entered.

* No more than one diesel generator may be made simultaneously inoperable on a pre-planned basis for maintenance, modifications, or surveillance testing.

@ Offsite circuits utilizing USST 2A and USST 2B as the normal power sources require CSST A and CSST C to be available as the alternate power sources via automatic transfer at the associated 6.9 kV Unit Boards. (CSST B can be substituted for CSST A or CSST C.) This Note remains in effect until November 30, 2013, or until the USST modifications are implemented on Units 1 and 2, whichever occurs first.

ITS A01 ITS 3.8.3

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

4.8.1.1.2 Each diesel generator set shall be demonstrated OPERABLE: In accordance with the Surveillance Frequency Control Program LA02

a. ~~At least once per 31 days~~ ~~on a staggered test basis~~ by: L02

1. Verifying the fuel level in the engine-mounted day tanks. See ITS 3.8.1

SR 3.8.3.1 2. Verifying the fuel level in the 7 day tank. Add proposed SR 3.8.3.2 M01

3. Verifying the fuel transfer pump starts and transfers fuel from the storage system to the engine mounted fuel tanks.

4. *Verifying the diesel starts from ambient condition and achieves in less than or equal to 10 seconds generator voltage and frequency of ≥ 6800 volts and ≥ 58.8 Hz and achieves a steady state voltage and frequency of ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz. The diesel generator shall be started for this test by using one of the following signals with startup on each signal verified at least once per 124 days:

a) Manual.

b) Simulated loss of offsite power by itself.

c) An ESF actuation test signal by itself.

5. *Verifying the generator is synchronized, loaded between 3960 kw and 4400 kw in less than or equal to 60 seconds, and operates for greater than or equal to 60 minutes, and

6. Verifying the diesel generator is aligned to provide standby power to the associated shutdown boards.

See ITS 3.8.1

b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the engine-mounted fuel tanks. See ITS 3.8.1

Add proposed SR 3.8.3.5 M02

SR 3.8.3.3 c. At a frequency in accordance with the Diesel Fuel Oil Testing Program, verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits specified in the Diesel Fuel Oil Testing Program.

Add proposed SR 3.8.3.4 M01

* The diesel generator start (10 sec) and load (60 sec) from standby conditions shall be performed at least once per 184 days in these surveillance tests. All other diesel generator engine starts and loading for the purpose of this surveillance testing may be preceded by an engine idle start, followed by gradual acceleration to synchronous speed (approximately 900 rpm), synchronization, and gradual loading. In this latter case, 10 second requirements do not apply. See ITS 3.8.1

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

8. Verifying that the auto-connected loads to each diesel generator do not exceed the continuous rating of 4400 kw.

9. Verifying the diesel generator's capability to:

a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power.

b) Transfer its loads to the offsite power source, and

c) Be restored to its shutdown status.

See ITS 3.8.1

10. Verifying that the automatic load sequence timers are OPERABLE with the setpoint for each sequence timer within $\pm$ 5 percent of its design setpoint.#

11. This surveillance is deleted.

e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting the diesel generators simultaneously and verifying that each diesel generator achieves in less than or equal to 10 seconds, ≥ 6800 volts and ≥ 58.8 Hz.

~~f. At least once per 10 years by:~~

~~1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank.~~

LA03

g. At least once per 18 months by:

1. Verifying the generator capability to reject a load of greater than or equal to 600 kw while maintaining voltage at within ± 10 percent of the initial pretest voltage and frequency at 60 $\pm$ 1.2 Hz. At no time shall the transient voltage exceed 8276V.

2. Verifying the generator capability to reject a load of 4400 kw without tripping. The generator voltage shall not exceed 8880V during and following the load rejection.

See ITS 3.8.1

May be performed in Modes 1, 2, 3 & 4 if the associated equipment is out of service for maintenance or testing.

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 A01

ELECTRICAL POWER SYSTEMS

SHUTDOWN

Add proposed LCO 3.8.3 A02

LIMITING CONDITION FOR OPERATION

LCO 3.8.3 3.8.1.2 ~~As a minimum, the following A.C. electrical power sources shall be OPERABLE:~~

a. One circuit between the offsite transmission network and the onsite Class 1E distribution system, and

b. Diesel generator sets 1A-A and 2A-A or 1B-B and 2B-B each with:

I. Two diesels driving a common generator,

2. Two engine-mounted fuel tanks containing a minimum volume of 250 gallons of fuel per tank,

See ITS 3.8.2

≥ a 7 day supply LA01

SR 3.8.3.1 3. A fuel storage system containing a minimum volume of ~~62,000 gallons~~ of fuel,

4. A fuel transfer pump, and

5. A separate 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger.

See ITS 3.8.2

Applicability APPLICABILITY: ~~MODES 5 and 6~~. When associated DG is required to be OPERABLE A02

ACTIONS ACTION:

With less than the above minimum required A.C. electrical power sources OPERABLE, suspend all operations involving CORE ALTERATIONS and suspend operations involving positive reactivity additions that could result in loss of required shutdown margin or boron concentration.

See ITS 3.8.2

SURVEILLANCE REQUIREMENTS

4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the Surveillance Requirements of 4.8.1.1.1 and 4.8.1.1.2 (except for requirement 4.8.1.1.2.a.5), and 4.8.1.1.3.

See ITS 3.8.2

DISCUSSION OF CHANGES
ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL, AND STARTING AIR

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications - Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS LCOs 3.8.1.1 and 3.8.1.2 state the requirements for the AC Sources during operating and shutdown conditions, respectively. These requirements are used to form the LCO and Applicability for the ITS diesel fuel oil Specification. ITS LCO 3.8.3, "Diesel Fuel Oil, Lube Oil, and Starting Air," states that the stored diesel fuel oil, lube oil, and starting air subsystem shall be within limits for each required DG. The Applicability for this requirement is when the associated DG is required to be OPERABLE. This changes the CTS by combining the requirements for diesel fuel oil and diesel lube oil and starting air subsystem (See DOC M01 for discussion of diesel lube oil and starting air subsystem) into one Specification.

This change is acceptable because the current requirements are translated into ITS form with no technical changes. The additional requirements for DG lube oil and starting air subsystem are discussed in DOC M01. Diesel fuel oil, lube oil and starting air subsystem are a support system for each DG. The CTS and ITS maintain this relationship between the DGs and the Diesel Fuel Oil System, DG Lube oil System and Starting Air Subsystem. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 4.8.1.1.2.c requires, in part, to verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within limits specified in the Diesel Fuel Oil Testing program. The CTS does not provide any requirements for DG lube oil, stored diesel fuel oil total particulate level or starting air pressure. ITS LCO 3.8.3, in part, requires the stored diesel fuel oil, lube oil, and starting air to be within limits for each required DG with associated Required Actions and Completion times when outside these limits. The Applicability for these requirements is when the associated DG is required to be OPERABLE. ITS SR 3.8.3.2 requires verification that the lube oil inventory is ≥ a 7-day supply for each DG. ITS SR 3.8.3.3 requires verification that new and stored fuel oil properties are tested and maintained within limits, as specified in the Diesel Fuel Oil Testing Program. This includes stored fuel oil total particulate level and new fuel oil properties. ITS SR 3.8.3.4 requires verification that DG air start Tank A is ≥ 200 psig and Tank B pressure is ≥ 150 psig for each DG. ITS 3.8.3 ACTION B provides an ACTION if the limit of ITS SR 3.8.3.2 is not met. ITS 3.8.3 ACTION C specifies the compensatory actions for one or more DGs with stored fuel oil total

particulates not within limits. ITS 3.8.3 ACTION D specifies the compensatory actions for one or more DGs with new fuel oil properties not within limits. ITS ACTION E provides an ACTION if the limit of ITS SR 3.8.3.4 is not met. Finally, ITS ACTION F provides an ACTION if the Required Action and associated Completion Time of ACTION A, B, C, D, or E, are not met or if the diesel fuel oil, lube oil, or starting air subsystems are not within limits for reasons other than Condition A, B, C, D, or E. This changes the CTS by adding limits for stored diesel fuel oil total particulates, lube oil inventory, and starting air, Surveillance Requirements to verify the limits are being maintained, and explicit ACTIONS for when the limits are not met.

The purpose of ITS 3.8.3 is to provide appropriate limits, ACTIONS, and Surveillances for diesel fuel oil, lube oil, and the air start subsystems because these subsystems support the operation of the standby AC power sources (DGs). The purpose of ITS SR 3.8.3.2 is to provide the appropriate limits for stored lube oil volume. ITS 3.8.3 ACTIONS B provides an explicit Required Action and Completion Time for restoring stored lube oil volume to within limits. The purpose of ITS SR 3.8.3.3 is to provide the appropriate limits for stored and new fuel oil properties. ITS 3.8.3 ACTIONS C and D provide explicit Required Actions and Completion Times for restoring both total particulates and stored fuel oil properties (affected by the addition of new fuel oil whose properties are not within limits) to within limits. ITS 3.8.3 ACTION C is entered because of a failure to meet the acceptance criterion of total particulate concentration specified in ITS 5.5.11. Normally, trending of particulate levels allows sufficient time to correct high particulate levels prior to reaching the limit of acceptability. Poor sample procedures, contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence of particulates does not necessarily result in a failure of the fuel oil to burn properly in the diesel engine, particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and proper engine performance has been recently demonstrated (within 31 days), it is prudent to allow a brief period prior to declaring the associated DG inoperable. The 7 day Completion Time allows for further evaluation, re-sampling and re-analysis of the DG fuel oil. ITS 3.8.3 ACTION D is entered because of failure to meet the requirements specified in ITS 5.5.11.b. With the new fuel oil properties defined in the Bases for ITS SR 3.8.3.3 not within the required limits, a period of 30 days is allowed for restoring the stored fuel oil properties. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil did not cause the stored fuel oil to be outside of the required limits, or to restore the stored fuel oil properties to within limits. This restoration may involve feed and bleed procedures, filtering, or combinations of these procedures. Even if a DG start and load was required during this time interval and the stored fuel oil properties were outside limits, there is a high likelihood that the DG would still be capable of performing its intended function. The purpose of ITS SR 3.8.3.4 is to provide the appropriate limits for the DG starting air subsystem. ITS 3.8.3 ACTIONS E provides explicit Required Action and Completion Time for restoring starting air pressures to within limits. ITS 3.8.3 ACTION F covers the condition when a Required Action and associated Completion Time of any of the above ACTIONS could not be met, or if one or more DGs with diesel fuel oil, lube oil, or starting air subsystem is not within limits for reasons other than Condition A, B, C, D, or E. The allowances are considered acceptable since only a short time is allowed to exist

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with DG parameters not within limits. These changes are designated as more restrictive because explicit requirements are included in the Technical Specifications for stored diesel fuel oil total particulates, new diesel fuel oil properties and lube oil inventory limits.

M02 The CTS does not provide any requirements for checking and removing accumulated water from each fuel oil storage tank (7-day tanks). ITS SR 3.8.3.5 requires checking for and removing accumulated water from each fuel oil storage tank (7-day tanks). This changes the CTS by adding a new Surveillance Requirement to check and remove accumulated water from each fuel oil storage tank (7-day tanks).

Microbiological fouling is a major cause of fuel oil degradation. Numerous bacteria can grow in fuel oil and cause fouling but all must have a water environment to survive. Removal of water from the fuel storage tanks (7-day tanks) eliminates the necessary environment for bacterial survival. Water may come from any of several sources, including condensation, ground water, rain water, and contaminated fuel oil, and from breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system.

This change is designated as more restrictive because explicit requirements are added to the Technical Specifications for checking for and removing accumulated water from each fuel oil storage 7-day tank.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.8.1.1.b.3 and CTS 3.8.1.2.b.3 require a separate fuel storage system containing a minimum volume of 62,000 gallons of fuel. ITS SR 3.8.3.1 requires, in part, verifying that each fuel oil 7-day storage tank contains ≥ a 7-day supply of fuel oil when the associated diesel generator is required to be OPERABLE. This changes the CTS by moving the specific values for the fuel oil inventory to the Bases.

The removal of these details from the Technical Specifications is acceptable because this type of information is not necessary to provide adequate protection of public health and safety. The purpose of CTS 3.8.1.1.b.3 and CTS 3.8.1.2.b.3 is to ensure that the DGs have sufficient fuel oil to perform their safety function when the DGs are required to be OPERABLE. ITS SR 3.8.3.1 will continue to ensure that sufficient fuel is contained in the fuel oil storage tank for the DGs to perform their intended safety function when the DGs are required to be OPERABLE. In addition, this change is acceptable because these types of details will be adequately controlled in the Technical Specification Bases. Changes to the Bases are controlled by the Technical Specification Control

DISCUSSION OF CHANGES
ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL, AND STARTING AIR

Program in Chapter 5. The program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as less restrictive removal of detail change because details are being moved from the Technical Specifications to the ITS Bases

LA02 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.8.1.1.2.a.2 requires that the diesel generator fuel level in the 7 day tank be verified at least once per 31 days on a staggered test basis ITS SR 3.8.3.1 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." Refer to DOC L02 for changes to the STAGGERED TEST BASIS frequency. This changes the CTS by moving the specified Frequency for this SR and associated Bases to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequency is being removed from the Technical Specifications.

LA03 *(Type 4 – Removal of LCO, SR, or other TS Requirement to the TRM, UFSAR, ODCM, NQAP, CLRT Program, IST Program, or ISI Program)* CTS 4.8.1.1.2.f.1 requires draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank every 10 years. ITS 3.8.3 does not include these requirements for the fuel oil storage tanks. This changes the CTS by moving these fuel oil storage tank requirements from the Technical Specifications to the Technical Requirements Manual (TRM).

The removal of these details from the Technical Specifications is acceptable because this type of information is not necessary to provide adequate protection of public health and safety. The criteria and Frequencies established in the ITS 5.5.11, "Diesel Fuel Oil Testing Program," and ITS SR 3.8.3.3 will ensure the diesel fuel oil is at a quality that will ensure proper operation of the DG during a design basis accident. Also, this change is acceptable because the removed information will be adequately controlled in the TRM. Any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because information is being removed from the Technical Specifications.

DISCUSSION OF CHANGES
ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL, AND STARTING AIR

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.8.1.1 and CTS 3.8.1.2 do not provide explicit compensatory actions if the volume of fuel oil in a storage tank is less than the specified limit. Thus, if the minimum required volume is not met, the associated DG must be declared inoperable and the actions of CTS 3.8.1.1 or CTS 3.8.1.2 must be entered, as appropriate. ITS 3.8.3 ACTION A allows for not declaring the associated DG inoperable as long as the volume of stored fuel oil is greater than a six-day supply. ITS 3.8.3 Required Action A.1 allows 48 hours to restore the fuel oil volume to within limits. As stated in the ACTIONS Note, a separate entry into this new ACTION is allowed for each DG. If this Required Action and associated Completion Time are not met or if the fuel oil storage tank volume is < a 6-day supply, the associated DG must be declared inoperable immediately, as required by ITS 3.8.3 ACTION F. This changes the CTS by allowing the DGs to not be declared inoperable with the fuel oil 7-day storage tank volume not within the specified Surveillance limit as long as the associated DG has enough fuel oil for 6 days of operation at rated load.

The purpose of ITS 3.8.3 ACTION A is to allow time to restore the stored diesel fuel oil volume to within the specified limit for a given DG. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to a degraded condition in order to minimize risk associated with continued operation while providing time to restore inventory. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features including the capacity and capability of remaining systems or features, reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. The addition of ITS 3.8.3 ACTION A will allow each DG to not be declared inoperable with the associated stored diesel fuel oil volume not within the specified Surveillance limit as long as the DG has enough fuel oil for 6 days of operation at rated load. In this Condition, the 7-day fuel oil supply for the DG is not available. However, the Condition is restricted to fuel oil volume reductions that maintain at least a 6-day supply. These circumstances may be caused by events such as full load operation required after an inadvertent start while at minimum required fuel oil level, or feed and bleed operations, which may be necessary due to increasing particulate levels or any number of other oil quality degradations. This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of fuel oil to the tank. A period of 48 hours is considered sufficient to complete restoration of the required volume prior to declaring the associated DG inoperable. This period is acceptable based on the remaining capacity (> 6 days), the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period. This change is designated as less restrictive since less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L02 *(Category 7 – Relaxation of Surveillance Frequency)* CTS 4.8.1.1.2.a requires, in part, that each diesel generator set be demonstrated OPERABLE by verifying the fuel level in the 7 day tank at least once per 31 days on a STAGGERED TEST BASIS. ITS SR 3.8.3.1 requires this same verification every 31 days. This changes the CTS by deleting the requirement to perform the verification on a

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DISCUSSION OF CHANGES
ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL, AND STARTING AIR

STAGGERED TEST BASIS. See DOC LA02 for the discussion on moving the 31 day Frequency for ITS SR 3.8.3.1 to the Surveillance Frequency Control Program.

The purpose of CTS 4.8.1.1.2.a is to ensure that adequate fuel oil is available for each diesel generator set. CTS 1.35 STAGGERED TEST BASIS definition, defines a testing schedule for n systems, subsystems, or trains by dividing the specified test interval into n equal subintervals, with the testing of one system, subsystem, or train occurring at the beginning of each subinterval. In other words, a Surveillance Requirement to verify the OPERABILITY of each diesel generator set at a Frequency of 31 days on a STAGGERED TEST BASIS would result in each of the four diesel generator sets being verified OPERABLE every 31 days, with one diesel generator set being verified in alternating 7.75 day subintervals. Removal of the STAGGERED TEST BASIS scheduling requirement does not change the requirement to verify the OPERABILITY of each diesel generator set every 31 days, but rather removes the requirement to schedule testing every 7.75 days. The new Surveillance Frequency will not change the testing Frequency of each diesel generator set. The intent of the CTS staggered testing requirement is to evenly distribute testing of each diesel generator set across the system. However, as each diesel generator set is independent, no increase in reliability or safety is achieved by evenly staggering the testing subintervals. This change is acceptable, because removal of the staggered testing requirement will increase operational and scheduling flexibility without decreasing safety or system reliability. This change is designated as less restrictive, because the intervals between performances of the Surveillances for diesel generator set can be larger or smaller under the ITS than under the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

3.8.1.1
3.8.1.2

LCO 3.8.3 The stored diesel fuel oil, lube oil, and starting air subsystem shall be within limits for each required diesel generator (DG).

Applicability

APPLICABILITY: When associated DG is required to be OPERABLE.

ACTIONS

---NOTE---

DOC L01

Separate Condition entry is allowed for each DG.

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
DOC L01	A. One or more DGs with fuel level less than a ~~[~~7~~]~~ day supply and greater than a ~~[~~6~~]~~ day supply in storage tank.	A.1	Restore fuel oil level to within limits.	48 hours	1
DOC M01	B. One or more DGs with lube oil inventory less than a ~~[~~7~~]~~ day supply and greater than a ~~[~~6~~]~~ day supply.	B.1	Restore lube oil inventory to within limits.	48 hours	1
DOC M01	C. One or more DGs with stored fuel oil total particulates not within limit.	C.1	Restore fuel oil total particulates to within limits.	7 days	
DOC M01	D. One or more DGs with new fuel oil properties not within limits.	D.1	Restore stored fuel oil properties to within limits.	30 days	

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC M01	E. One or more DGs with starting air ~~receiver~~ Tank A pressure < ~~[225]~~ 200 psig and Tank B pressure ≥ ~~[125]~~ 150 psig.	E.1 Restore starting air ~~receiver~~ Tank A pressure to ≥ ~~[225]~~ 200 psig.	48 hours	2 1
DOC M01	F. Required Action and associated Completion Time not met. OR One or more DGs with diesel fuel oil, lube oil, or starting air subsystem not within limits for reasons other than Condition A, B, C, D, or E.	F.1 Declare associated DG inoperable.	Immediately	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.8.1.1.2.a.2 3.8.1.1.b.3 3.8.1.2.b.3	SR 3.8.3.1	Verify each fuel oil storage tank contains ≥ a ~~[~~7~~]~~ day supply of fuel.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	1 3

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SURVEILLANCE REQUIREMENTS (continued)

CTS	SURVEILLANCE		FREQUENCY	
DOC M01	SR 3.8.3.2	Verify lubricating oil inventory is ≥ a ~~[~~7~~]~~ day supply.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	1 3
4.8.1.1.2.c	SR 3.8.3.3	Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program	
DOC M01	SR 3.8.3.4	Verify each DG air start ~~receiver~~ Tank A pressure is ≥ ~~[225]~~ 200 psig and Tank B pressure is ≥ 150 psig.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	2 1 2 3
DOC M02	SR 3.8.3.5	Check for and remove accumulated water from each fuel oil storage tank (7-day tanks).	~~[[31] days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	2 3

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

3.8.1.1
3.8.1.2

LCO 3.8.3 The stored diesel fuel oil, lube oil, and starting air subsystem shall be within limits for each required diesel generator (DG).

Applicability

APPLICABILITY: When associated DG is required to be OPERABLE.

ACTIONS

---NOTE---

DOC L01

Separate Condition entry is allowed for each DG.

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC L01	A. One or more DGs with fuel level less than a ~~[~~7~~]~~ day supply and greater than a ~~[~~6~~]~~ day supply in storage tank.	A.1 Restore fuel oil level to within limits.	48 hours	1
DOC M01	B. One or more DGs with lube oil inventory less than a ~~[~~7~~]~~ day supply and greater than a ~~[~~6~~]~~ day supply.	B.1 Restore lube oil inventory to within limits.	48 hours	1
DOC M01	C. One or more DGs with stored fuel oil total particulates not within limit.	C.1 Restore fuel oil total particulates to within limits.	7 days	
DOC M01	D. One or more DGs with new fuel oil properties not within limits.	D.1 Restore stored fuel oil properties to within limits.	30 days	

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ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC M01	E. One or more DGs with starting air ~~receiver~~ Tank A pressure < ~~[225]~~ 200 psig and Tank B pressure ≥ ~~[125]~~ 150 psig.	E.1 Restore starting air ~~receiver~~ pressure to ≥ ~~[225]~~ psig.	48 hours	2 1
DOC M01	F. Required Action and associated Completion Time not met. OR One or more DGs with diesel fuel oil, lube oil, or starting air subsystem not within limits for reasons other than Condition A, B, C, D, or E.	F.1 Declare associated DG inoperable.	Immediately	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.8.1.1.2.a.2 3.8.1.1.b.3 3.8.1.2.b.3	SR 3.8.3.1	Verify each fuel oil storage tank contains ≥ a ~~[~~7~~]~~ day supply of fuel.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	1 3

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CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
DOC M01	SR 3.8.3.2	Verify lubricating oil inventory is ≥ a ~~[~~7~~]~~ day supply.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	1 3
4.8.1.1.2.c	SR 3.8.3.3	Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program	
DOC M01	SR 3.8.3.4	Verify each DG air start Tank A ~~receiver~~ pressure is ≥ 200 ~~[225]~~ psig and Tank B pressure is ≥ 150 psig.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	2 1 2 3
DOC M02	SR 3.8.3.5	Check for and remove accumulated water from each fuel oil storage tank (7-day tanks).	~~[[31] days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	2 3

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL, AND STARTING AIR

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

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

3. ISTS SR 3.8.3.1, ISTS SR 3.8.3.2, ISTS SR 3.8.3.4, and ISTS SR 3.8.3.5 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Therefore, the Frequency for ITS SR 3.8.3.1, ITS SR 3.8.3.2, ITS SR 3.8.3.4, and ITS SR 3.8.3.5 is "In accordance with the Surveillance Frequency Control Program."

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Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

BASES

7-day storage tank, comprised of four inter-connected tanks,

BACKGROUND

Each diesel generator (DG) is provided with a ~~storage tank~~ having a fuel oil capacity sufficient to operate that diesel for a period of ~~[~~7~~]~~ days while the DG is supplying maximum post loss of coolant accident load demand discussed in the U FSAR, Section ~~[~~9.5.4.~~2~~ 3~~]~~ (Ref. 1) ~~[~~and Regulatory INSERT 1 Guide 1.137 (Ref. 2)~~]~~. ~~The maximum load demand is calculated using the assumption that a minimum of any two DGs is available.~~ This onsite fuel oil capacity is sufficient to operate the DGs for longer than the time to replenish the onsite supply from outside sources. 1 2 1 2 1

Fuel oil is transferred from each diesel generator 7-day storage tank to ~~day tank~~ two engine-mounted "day" tanks by either of two transfer pumps associated with ~~each~~ the 7-day storage tank. Redundancy of pumps and piping precludes the failure of one pump, or the rupture of any pipe, valve or tank to result in the loss of more than one DG. ~~All outside tanks, pumps, and piping are located underground.~~ INSERT 2 1

For proper operation of the standby DGs, it is necessary to ensure the proper quality of the fuel oil. Regulatory Guide 1.137 (Ref. 2) addresses the recommended fuel oil practices as supplemented by ANSI N195 (Ref. 3). The fuel oil properties governed by these SRs are the water and sediment content, the kinematic viscosity, specific gravity (or API gravity), and impurity level.

The DG lubrication system is designed to provide sufficient lubrication to permit proper operation of its associated DG under all loading conditions. The system is required to circulate the lube oil to the diesel engine working surfaces and to remove excess heat generated by friction during operation. Each engine oil sump contains an inventory capable of supporting a minimum of ~~[~~7~~]~~ days of operation without requiring replenishment. ~~[The onsite storage in addition to the engine oil sump is sufficient to ensure [7] days of continuous operation.]~~ This supply is sufficient to allow the operator to replenish lube oil from outside sources. 2

Each DG has an air start system with adequate capacity for five successive start attempts on the DG without recharging the air start ~~receiver~~ tank(s). 1

INSERT 3 1

1 **INSERT 1**

The maximum load demand assumed is the diesel generator operating at 110% rated load for the first two hours then operating at 100% rated load for the remaining 166 hours.

1 **INSERT 2**

Each 7-day tank is embedded in the concrete substructure below its respective DG with the two 550-gallon engine-mounted "day" tanks located in the respective DG room.

1 **INSERT 3**

The Starting Air System for each diesel engine includes two tanks. The tanks are aligned in series to the starter motors. The upstream tank (Tank A) is maintained at 250-300 psig by the air compressor while the downstream tank (Tank B) is maintained at approximately 195 psig via a pressure control valve (PCV) between the two tanks.

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BASES

APPLICABLE SAFETY ANALYSES

U

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter ~~[~~6~~]~~ (Ref. 4), and in the FSAR, Chapter ~~[~~15~~]~~ (Ref. 5), assume Engineered Safety Feature (ESF) systems are OPERABLE. The DGs are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that fuel, Reactor Coolant System and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems. 1 2

Since diesel fuel oil, lube oil, and the air start subsystem support the operation of the standby AC power sources, they satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Stored diesel fuel oil is required to have sufficient supply for ~~[~~7~~]~~ days of full load operation. It is also required to meet specific standards for quality. Additionally, sufficient lubricating oil supply must be available to ensure the capability to operate at full load for ~~[~~7~~]~~ days. This requirement, in conjunction with an ability to obtain replacement supplies within ~~[~~7~~]~~ days, supports the availability of DGs required to shut down the reactor and to maintain it in a safe condition for an anticipated operational occurrence (AOO) or a postulated DBA with loss of offsite power. DG engine-mounted "day" tank ~~day tank~~ fuel requirements, as well as transfer capability from the storage tank to the day tank, are addressed in LCO 3.8.1, "AC Sources - Operating," and LCO 3.8.2, "AC Sources - Shutdown." 2 2 2 1

The starting air system is required to have a minimum capacity for five successive DG start attempts without recharging the air start tank(s) ~~receivers~~. 1

APPLICABILITY

The AC sources (LCO 3.8.1 and LCO 3.8.2) are required to ensure the availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. Since stored diesel fuel oil, lube oil, and the starting air subsystem support LCO 3.8.1 and LCO 3.8.2, stored diesel fuel oil, lube oil, and starting air are required to be within limits when the associated DG is required to be OPERABLE.

ACTIONS

The ACTIONS Table is modified by a Note indicating that separate Condition entry is allowed for each DG. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable DG subsystem. Complying with the Required Actions for one inoperable DG subsystem may allow for continued operation, and subsequent inoperable DG subsystem(s) are governed by separate Condition entry and application of associated Required Actions.

BASES

ACTIONS (continued)

A.1

In this Condition, the ~~[~~7~~]~~ day fuel oil supply for a DG is not available. However, the Condition is restricted to fuel oil level reductions that maintain at least a ~~[~~6~~]~~ day supply. The fuel oil level equivalent to a ~~[~~6~~]~~ day supply is [53719 ~~28,285~~] gallons. These circumstances may be caused by events, such as full load operation required after an inadvertent start while at minimum required level, or feed and bleed operations, which may be necessitated by increasing particulate levels or any number of other oil quality degradations. This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of fuel oil to the tank. A period of 48 hours is considered sufficient to complete restoration of the required level prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity (> ~~[~~6~~]~~ days), the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period. 2 2

B.1

In this Condition, the ~~[~~7~~]~~ day lube oil inventory i.e., sufficient lubricating oil to support ~~[~~7~~]~~ days of continuous DG operation at full load conditions is not available. However, the Condition is restricted to lube oil volume reductions that maintain at least a ~~[~~6~~]~~ day supply. The lube oil inventory equivalent to a ~~[~~6~~]~~ day supply is 120 ~~[425]~~ gallons (per diesel engine). This restriction allows sufficient time to obtain the requisite replacement volume. A period of 48 hours is considered sufficient to complete restoration of the required volume prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity (> ~~[~~6~~]~~ days), the low rate of usage, the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period. 2 2

C.1

This Condition is entered as a result of a failure to meet the acceptance criterion of SR 3.8.3.3 ~~5~~ for the stored fuel. Normally, trending of particulate levels allows sufficient time to correct high particulate levels prior to reaching the limit of acceptability. Poor sample procedures (bottom sampling), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, and particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and proper engine 5

BASES

ACTIONS (continued)

performance has been recently demonstrated (within 31 days), it is prudent to allow a brief period prior to declaring the associated DG inoperable. The 7 day Completion Time allows for further evaluation, resampling and re-analysis of the DG fuel oil.

D.1

With the new fuel oil properties defined in the Bases for SR 3.8.3.~~4~~ 3 not within the required limits, a period of 30 days is allowed for restoring the stored fuel oil properties. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or to restore the stored fuel oil properties. This restoration may involve feed and bleed procedures, filtering, or combinations of these procedures. Even if a DG start and load was required during this time interval and the fuel oil properties were outside limits, there is a high likelihood that the DG would still be capable of performing its intended function. 5

E.1

With starting air ~~receiver~~ Tank A pressure < ~~[225]~~ 200 psig, sufficient capacity for five successive DG start attempts does not exist. However, as long as ~~the receiver~~ Tank B pressure is > ~~[125]~~ 150 psig, there is adequate capacity for at least one start attempt, and the DG can be considered OPERABLE while the air receiver pressure is restored to the required limit. A period of 48 hours is considered sufficient to complete restoration to the required pressure prior to declaring the DG inoperable. This period is acceptable based on the remaining air start capacity, the fact that most DG starts are accomplished on the first attempt, and the low probability of an event during this brief period. 1 2 1 2

F.1

With a Required Action and associated Completion Time not met, or one or more DG's fuel oil, lube oil, or starting air subsystem not within limits for reasons other than addressed by Conditions A through ~~D~~ E, the associated DG may be incapable of performing its intended function and must be immediately declared inoperable. 5

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.3.1

This SR provides verification that there is an adequate inventory of fuel oil in the storage tanks to support each DG's operation for ~~[~~7~~]~~ days at full load. The fuel oil level equivalent to a ~~[~~7~~]~~ day supply is ~~[33,000]~~ 62,000 gallons when calculated in accordance with References 2 and 3. The required fuel storage volume is determined using the most limiting energy content of the stored fuel. Using the known correlation of diesel fuel oil absolute specific gravity or API gravity to energy content, the required diesel generator output, the corresponding fuel consumption rate, the onsite fuel storage volume required for ~~[~~7~~]~~ days of operation can be determined. SR 3.8.3.3 requires a new fuel to be tested to verify that the absolute specific gravity or API gravity is within the range assumed in the diesel fuel oil consumption calculations. The ~~[~~7~~]~~ day period is sufficient time to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location. 2 2 2

~~[The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period.~~ 3

~~OR~~

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 4

SR 3.8.3.2

This Surveillance ensures that sufficient lube oil inventory is available to support at least ~~[~~7~~]~~ days of full load operation for each DG. The lube oil inventory equivalent to a ~~[~~7~~]~~ day supply is ~~[500]~~ 142 gallons (per diesel engine) and is based on the DG manufacturer consumption values for the run time of the DG. ~~Implicit in this SR is the requirement to verify the capability to transfer the lube oil from its storage location to the DG, when the DG lube oil sump does not hold adequate inventory for [7] days of full load operation without the level reaching the manufacturer recommended minimum level.~~ 2 2

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[A 31 day Frequency is adequate to ensure that a sufficient lube oil supply is onsite, since DG starts and run time are closely monitored by the unit staff.~~ 3

~~OR~~

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

~~-----REVIEWER'S NOTE----- Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. -----]~~ 4

SR 3.8.3.3

The tests listed below are a means of determining whether new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate, detrimental impact on diesel engine combustion. If results from these tests are within acceptable limits, the fuel oil may be added to the 7-day storage tanks without concern for contaminating the entire volume of fuel oil in the 7-day storage tanks. These tests are to be conducted prior to adding the new fuel to the 7-day storage tank(s), but in no case is the time between receipt of new fuel and conducting the tests to exceed 31 days. The tests, limits, and applicable ASTM Standards are as follows: 1

a. Sample the new fuel oil in accordance with ASTM D4057-~~[~~ 1988 ~~]~~ (Ref. 6), 2

b. Verify in accordance with the tests specified in ASTM D975-~~[~~ 1990 ~~]~~ (Ref. 6) that the sample has an absolute specific gravity at 60/60°F of ≥ 0.83 and ≤ 0.89 or an API gravity at 60°F of ≥ 27° and ≤ 39° when tested in accordance with ASTM D1298-~~[~~ 1985 ~~]~~ (Ref. 6), a kinematic viscosity at 40°C of ≥ 1.9 centistokes and ≤ 4.1 centistokes, and a flash point of ≥ 125°F, and 2 2

c. Verify that the new fuel oil has a clear and bright appearance with proper color when tested in accordance with ASTM D4176-~~[~~ 2004 ~~]~~ or a water and sediment content within limits when tested in accordance with ~~[~~ASTM ~~D2709-[ ]]~~ D1796-1997 (Ref. 6). 2 2

BASES

SURVEILLANCE REQUIREMENTS (continued)

Failure to meet any of the above limits is cause for rejecting the new fuel oil, but does not represent a failure to meet the LCO concern since the fuel oil is not added to the 7-day storage tanks. 1

Within 31 days following the initial new fuel oil sample, the fuel oil is analyzed to establish that the other properties specified in Table 1 of ASTM D975-~~[~~ 1990 ~~]~~ (Ref. 7) are met for new fuel oil when tested in accordance with ASTM D975-~~[~~ 1990 ~~]~~ (Ref. 6), except that the analysis for sulfur may be performed in accordance with ASTM D1552-~~[~~ 1990 ~~]~~, ASTM D2622-~~[~~ 1987 ~~]~~, or ASTM D4294-~~[~~ 2002 ~~]~~ (Ref. 6). The 31 day period is acceptable because the fuel oil properties of interest, even if they were not within stated limits, would not have an immediate effect on DG operation. This Surveillance ensures the availability of high quality fuel oil for the DGs. 2 2

Fuel oil degradation during long term storage shows up as an increase in particulate, due mostly to oxidation. The presence of particulate does not mean the fuel oil will not burn properly in a diesel engine. The particulate can cause fouling of filters and fuel oil injection equipment, however, which can cause engine failure.

Particulate concentrations should be determined in accordance with ASTM D6217-11 ~~D5452-[ ]~~ (Ref. 6). This method involves a gravimetric determination of total particulate concentration in the fuel oil and has a limit of 10 mg/l. It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing. ~~[For those designs in which the total stored fuel oil volume is contained in two or more interconnected tanks,~~ Each fuel oil storage tank (7-day tank) must be considered and tested separately.~~]~~ 1 2 2 1

The Frequency of this test takes into consideration fuel oil degradation trends that indicate that particulate concentration is unlikely to change significantly between Frequency intervals.

SR 3.8.3.4

This Surveillance ensures that, without the aid of the refill compressor, sufficient air start capacity for each DG is available. The system design requirements provide for a minimum of ~~[~~five~~]~~ engine start cycles without recharging. ~~[A start cycle is defined by the DG vendor, but usually is measured in terms of time (seconds of cranking) or engine cranking speed.]~~ The pressure specified in this SR is intended to reflect the lowest value at which the ~~[~~five~~]~~ starts can be accomplished. 2

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[The 31 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and other indications available in the control room, including alarms, to alert the operator to below normal air start pressure.~~ 3

~~OR~~

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

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 4
~~---]~~

SR 3.8.3.5

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the fuel storage tanks (7-day tanks) eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, and contaminated fuel oil, and from breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. ~~The Surveillance Frequency of 31 days is established by Regulatory Guide 1.137 (Ref. 2). This SR is for preventive maintenance. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during performance of the Surveillance.~~ 1 3

~~OR~~

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

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

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1. FSAR, Section [9.5.4.~~2~~]. 3 1
2. Regulatory Guide 1.137~~.~~ , 1979. 1
3. ANSI N195, 1976.
4. FSAR, Chapter [6]. 1
5. FSAR, Chapter [15]. 2 1
6. ASTM Standards: D4057-[1988]; D975-[1990]; D1298-[1985]; D4176-[2004]; ~~[D2709-[ ];]~~ D1796-1997 D1552-[1990]; D2622-[1987]; D4294-[2002]; ~~D5452-[ ]~~ D6217-11. 1
7. ASTM Standards, D975-[1990], Table 1.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

BASES

7-day storage tank, comprised of four inter-connected tanks,

BACKGROUND

Each diesel generator (DG) is provided with a ~~storage tank~~ having a fuel oil capacity sufficient to operate that diesel for a period of ~~[~~7~~]~~ days while the DG is supplying maximum post loss of coolant accident load demand discussed in the U FSAR, Section ~~[~~9.5.4.~~2]~~ 3 (Ref. 1) ~~[~~and Regulatory Guide 1.137 (Ref. 2)~~]~~. INSERT 1 ~~The maximum load demand is calculated using the assumption that a minimum of any two DGs is available.~~ This onsite fuel oil capacity is sufficient to operate the DGs for longer than the time to replenish the onsite supply from outside sources. 1 2 1 2 1

each diesel generator 7-day | two engine-mounted "day" tanks

Fuel oil is transferred from storage tank to ~~day tank~~ by either of two transfer pumps associated with ~~each~~ the 7-day storage tank. Redundancy of pumps and piping precludes the failure of one pump, or the rupture of any pipe, valve or tank to result in the loss of more than one DG. ~~All outside tanks, pumps, and piping are located underground.~~ INSERT 2 1

For proper operation of the standby DGs, it is necessary to ensure the proper quality of the fuel oil. Regulatory Guide 1.137 (Ref. 2) addresses the recommended fuel oil practices as supplemented by ANSI N195 (Ref. 3). The fuel oil properties governed by these SRs are the water and sediment content, the kinematic viscosity, specific gravity (or API gravity), and impurity level.

The DG lubrication system is designed to provide sufficient lubrication to permit proper operation of its associated DG under all loading conditions. The system is required to circulate the lube oil to the diesel engine working surfaces and to remove excess heat generated by friction during operation. Each engine oil sump contains an inventory capable of supporting a minimum of ~~[~~7~~]~~ days of operation without requiring replenishment. ~~[The onsite storage in addition to the engine oil sump is sufficient to ensure [7] days of continuous operation.]~~ This supply is sufficient to allow the operator to replenish lube oil from outside sources. 2

Each DG has an air start system with adequate capacity for five successive start attempts on the DG without recharging the air start tank ~~receiver~~(s). 1

INSERT 3 1

1

INSERT 1

The maximum load demand assumed is the diesel generator operating at 110% rated load for the first two hours then operating at 100% rated load for the remaining 166 hours.

1

INSERT 2

Each 7-day tank is embedded in the concrete substructure below its respective DG with the two 550-gallon engine-mounted "day" tanks located in the respective DG room.

1

INSERT 3

The Starting Air System for each diesel engine includes two tanks. The tanks are aligned in series to the starter motors. The upstream tank (Tank A) is maintained at 250-300 psig by the air compressor while the downstream tank (Tank B) is maintained at approximately 195 psig via a pressure control valve (PCV) between the two tanks.

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BASES

APPLICABLE SAFETY ANALYSES

U

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter ~~[~~6~~]~~ (Ref. 4), and in the FSAR, Chapter ~~[~~15~~]~~ (Ref. 5), assume Engineered Safety Feature (ESF) systems are OPERABLE. The DGs are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that fuel, Reactor Coolant System and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems. 1 2

Since diesel fuel oil, lube oil, and the air start subsystem support the operation of the standby AC power sources, they satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Stored diesel fuel oil is required to have sufficient supply for ~~[~~7~~]~~ days of full load operation. It is also required to meet specific standards for quality. Additionally, sufficient lubricating oil supply must be available to ensure the capability to operate at full load for ~~[~~7~~]~~ days. This requirement, in conjunction with an ability to obtain replacement supplies within ~~[~~7~~]~~ days, supports the availability of DGs required to shut down the reactor and to maintain it in a safe condition for an anticipated operational occurrence (AOO) or a postulated DBA with loss of offsite power. DG engine-mounted “day” tank ~~day tank~~ fuel requirements, as well as transfer capability from the storage tank to the day tank, are addressed in LCO 3.8.1, "AC Sources - Operating," and LCO 3.8.2, "AC Sources - Shutdown." 2 2 2 1

The starting air system is required to have a minimum capacity for five successive DG start attempts without recharging the air start tank(s) ~~receivers~~. 1

APPLICABILITY

The AC sources (LCO 3.8.1 and LCO 3.8.2) are required to ensure the availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. Since stored diesel fuel oil, lube oil, and the starting air subsystem support LCO 3.8.1 and LCO 3.8.2, stored diesel fuel oil, lube oil, and starting air are required to be within limits when the associated DG is required to be OPERABLE.

ACTIONS

The ACTIONS Table is modified by a Note indicating that separate Condition entry is allowed for each DG. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable DG subsystem. Complying with the Required Actions for one inoperable DG subsystem may allow for continued operation, and subsequent inoperable DG subsystem(s) are governed by separate Condition entry and application of associated Required Actions.

ACTIONS (continued)

A.1

In this Condition, the ~~[~~7~~]~~ day fuel oil supply for a DG is not available. However, the Condition is restricted to fuel oil level reductions that maintain at least a ~~[~~6~~]~~ day supply. The fuel oil level equivalent to a ~~[~~6~~]~~ day supply is ~~[28,285]~~ 53719 gallons. These circumstances may be caused by events, such as full load operation required after an inadvertent start while at minimum required level, or feed and bleed operations, which may be necessitated by increasing particulate levels or any number of other oil quality degradations. This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of fuel oil to the tank. A period of 48 hours is considered sufficient to complete restoration of the required level prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity (> ~~[~~6~~]~~ days), the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period. 2 2

B.1

In this Condition, the ~~[~~7~~]~~ day lube oil inventory i.e., sufficient lubricating oil to support ~~[~~7~~]~~ days of continuous DG operation at full load conditions is not available. However, the Condition is restricted to lube oil volume reductions that maintain at least a ~~[~~6~~]~~ day supply. The lube oil inventory equivalent to a ~~[~~6~~]~~ day supply is ~~[425]~~ 120 gallons (per diesel engine). This restriction allows sufficient time to obtain the requisite replacement volume. A period of 48 hours is considered sufficient to complete restoration of the required volume prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity (> ~~[~~6~~]~~ days), the low rate of usage, the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period. 2 2

C.1

This Condition is entered as a result of a failure to meet the acceptance criterion of SR 3.8.3.~~5~~3 for the stored fuel. Normally, trending of particulate levels allows sufficient time to correct high particulate levels prior to reaching the limit of acceptability. Poor sample procedures (bottom sampling), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, and particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and proper engine 5

BASES

ACTIONS (continued)

performance has been recently demonstrated (within 31 days), it is prudent to allow a brief period prior to declaring the associated DG inoperable. The 7 day Completion Time allows for further evaluation, resampling and re-analysis of the DG fuel oil.

D.1

3

With the new fuel oil properties defined in the Bases for SR 3.8.3.~~4~~ not within the required limits, a period of 30 days is allowed for restoring the stored fuel oil properties. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or to restore the stored fuel oil properties. This restoration may involve feed and bleed procedures, filtering, or combinations of these procedures. Even if a DG start and load was required during this time interval and the fuel oil properties were outside limits, there is a high likelihood that the DG would still be capable of performing its intended function. 5

E.1

Tank A 200

With starting air ~~receiver~~ pressure < ~~[225]~~ psig, sufficient capacity for five successive DG start attempts does not exist. However, as long as ~~the receiver~~ pressure is > ~~[125]~~ psig, there is adequate capacity for at least one start attempt, and the DG can be considered OPERABLE while the air receiver pressure is restored to the required limit. A period of 48 hours is considered sufficient to complete restoration to the required pressure prior to declaring the DG inoperable. This period is acceptable based on the remaining air start capacity, the fact that most DG starts are accomplished on the first attempt, and the low probability of an event during this brief period. 1 2 1 2

Tank B 150

F.1

With a Required Action and associated Completion Time not met, or one or more DG's fuel oil, lube oil, or starting air subsystem not within limits for reasons other than addressed by Conditions A through ~~D~~ E, the associated DG may be incapable of performing its intended function and must be immediately declared inoperable. 5

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.3.1

This SR provides verification that there is an adequate inventory of fuel oil in the storage tanks to support each DG's operation for ~~[~~7~~]~~ days at full load. The fuel oil level equivalent to a ~~[~~7~~]~~ day supply is ~~[33,000]~~ 62,000 gallons when calculated in accordance with References 2 and 3. The required fuel storage volume is determined using the most limiting energy content of the stored fuel. Using the known correlation of diesel fuel oil absolute specific gravity or API gravity to energy content, the required diesel generator output, the corresponding fuel consumption rate, the onsite fuel storage volume required for ~~[~~7~~]~~ days of operation can be determined. SR 3.8.3.3 requires a new fuel to be tested to verify that the absolute specific gravity or API gravity is within the range assumed in the diesel fuel oil consumption calculations. The ~~[~~7~~]~~ day period is sufficient time to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location.

2

2

2

~~[The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period.~~

~~OR~~

3

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

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

4

SR 3.8.3.2

This Surveillance ensures that sufficient lube oil inventory is available to support at least ~~[~~7~~]~~ days of full load operation for each DG. The lube oil inventory equivalent to a ~~[~~7~~]~~ day supply is ~~[500]~~ 142 gallons (per diesel engine) and is based on the DG manufacturer consumption values for the run time of the DG. ~~Implicit in this SR is the requirement to verify the capability to transfer the lube oil from its storage location to the DG, when the DG lube oil sump does not hold adequate inventory for [7] days of full load operation without the level reaching the manufacturer recommended minimum level.~~

2

2

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[A 31 day Frequency is adequate to ensure that a sufficient lube oil supply is onsite, since DG starts and run time are closely monitored by the unit staff.~~ 3

~~OR~~

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

~~REVIEWER'S NOTE~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~]~~ 4

SR 3.8.3.3

The tests listed below are a means of determining whether new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate, detrimental impact on diesel engine combustion. If results from these tests are within acceptable limits, the fuel oil may be added to the 7-day storage tanks without concern for contaminating the entire volume of fuel oil in the 7-day storage tanks. These tests are to be conducted prior to adding the new fuel to the 7-day storage tank(s), but in no case is the time between receipt of new fuel and conducting the tests to exceed 31 days. The tests, limits, and applicable ASTM Standards are as follows: 1

a. Sample the new fuel oil in accordance with ASTM D4057-~~[ ]~~ 1988 (Ref. 6), 2

b. Verify in accordance with the tests specified in ASTM D975-~~[ ]~~ 1990 (Ref. 6) that the sample has an absolute specific gravity at 60/60°F of ≥ 0.83 and ≤ 0.89 or an API gravity at 60°F of ≥ 27° and ≤ 39° when tested in accordance with ASTM D1298-~~[ ]~~ 1985 (Ref. 6), a kinematic viscosity at 40°C of ≥ 1.9 centistokes and ≤ 4.1 centistokes, and a flash point of ≥ 125°F, and 2 2

c. Verify that the new fuel oil has a clear and bright appearance with proper color when tested in accordance with ASTM D4176-~~[ ]~~ 2004 or a water and sediment content within limits when tested in accordance with ~~[~~ASTM ~~D2709-[ ]]~~ D1796-1997 (Ref. 6). 2 2

BASES

SURVEILLANCE REQUIREMENTS (continued)

Failure to meet any of the above limits is cause for rejecting the new fuel oil, but does not represent a failure to meet the LCO concern since the fuel oil is not added to the [7-day] storage tanks. 1

Within 31 days following the initial new fuel oil sample, the fuel oil is analyzed to establish that the other properties specified in Table 1 of ASTM D975-~~[~~ 1990 ~~]~~ (Ref. 7) are met for new fuel oil when tested in accordance with ASTM D975-~~[~~ 1990 ~~]~~ (Ref. 6), except that the analysis for sulfur may be performed in accordance with ASTM D1552-~~[~~ 1990 ~~]~~, ASTM D2622-~~[~~ 1987 ~~]~~, or ASTM D4294-~~[~~ 2002 ~~]~~ (Ref. 6). The 31 day period is acceptable because the fuel oil properties of interest, even if they were not within stated limits, would not have an immediate effect on DG operation. This Surveillance ensures the availability of high quality fuel oil for the DGs. 2 2

Fuel oil degradation during long term storage shows up as an increase in particulate, due mostly to oxidation. The presence of particulate does not mean the fuel oil will not burn properly in a diesel engine. The particulate can cause fouling of filters and fuel oil injection equipment, however, which can cause engine failure.

Particulate concentrations should be determined in accordance with ASTM D6217-11 ~~D5452-[ ]~~ (Ref. 6). This method involves a gravimetric determination of total particulate concentration in the fuel oil and has a limit of 10 mg/l. It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing. ~~[For those designs in which the total stored fuel oil volume is contained in two or more interconnected tanks,~~ Each fuel oil storage tank (7-day tank) must be considered and tested separately.~~]~~ 1 2 2 1

The Frequency of this test takes into consideration fuel oil degradation trends that indicate that particulate concentration is unlikely to change significantly between Frequency intervals.

SR 3.8.3.4

This Surveillance ensures that, without the aid of the refill compressor, sufficient air start capacity for each DG is available. The system design requirements provide for a minimum of ~~[~~five~~]~~ engine start cycles without recharging. ~~[A start cycle is defined by the DG vendor, but usually is measured in terms of time (seconds of cranking) or engine cranking speed.]~~ The pressure specified in this SR is intended to reflect the lowest value at which the ~~[~~five~~]~~ starts can be accomplished. 2

SURVEILLANCE REQUIREMENTS (continued)

~~[The 31 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and other indications available in the control room, including alarms, to alert the operator to below normal air start pressure.~~ 3

~~OR~~

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

~~-----------------------------REVIEWER'S NOTE-----------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 4
~~--]~~

SR 3.8.3.5

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the fuel storage tanks (7-day tanks) eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, and contaminated fuel oil, and from breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. ~~The Surveillance Frequency of 31 days is established by Regulatory Guide 1.137 (Ref. 2). This SR is for preventive maintenance. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during performance of the Surveillance.~~ 1 3

~~OR~~

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--~~] 4

REFERENCES U

1. FSAR, Section [9.5.4.~~2~~]. 3 1
2. Regulatory Guide 1.137~~.~~ , 1979. 1
3. ANSI N195, 1976.
4. FSAR, Chapter [6]. 1 2
5. FSAR, Chapter [15]. 1
6. ASTM Standards: D4057-[1988]; D975-[1990]; D1298-[1985]; D4176-[2004]; ~~[D2709-[ ];]~~ D1796-1997 D1552-[1990]; D2622-[1987]; D4294-[2002]; ~~D5452-[ ]~~ D6217-11. 1
7. ASTM Standards, D975-[1990], Table 1.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.8.3 BASES, DIESEL FUEL OIL, LUBE OIL, AND STARTING AIR

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

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

3. ISTS SR 3.8.3.1, SR 3.8.3.2, 3.8.3.4 and 3.8.3.5 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Therefore, the Frequency for ITS SR 3.8.3.1, SR 3.8.3.2, 3.8.3.4 and 3.8.3.5 is "In accordance with the Surveillance Frequency Control Program."

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

5. Changes have been made to be consistent with changes made to the Specifications.

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Specific No Significant Hazards Considerations (NSHCs)

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DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL AND STARTING AIR

There are no specific No Significant Hazards Considerations for this Specification.

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ATTACHMENT 4

ITS 3.8.4, DC SOURCES - OPERATING

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS

A01

ITS 3.8.4

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

Add proposed LCO 3.8.4

A02

LIMITING CONDITION FOR OPERATION

LCO 3.8.4 3.8.1.1 ~~As a minimum, the following A.C. electrical power sources shall be OPERABLE~~:

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system@, and

b. Four separate and independent diesel generator sets each with:

1. Two diesels driving a common generator

2. Two engine-mounted fuel tanks containing a minimum volume of 250 gallons of fuel, per tank

See ITS 3.8.1

3. A separate fuel storage system containing a minimum volume of 62,000 gallons of fuel,

See ITS 3.8.3

4. A separate fuel transfer pump, and

See ITS 3.8.1

LCO 3.8.4 5. ~~A separate~~ 125-volt D.C. distribution panel, ~~125-volt D.C. battery bank and associated charger~~.

LA01

See ITS 3.8.9

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

ACTION:

Add proposed ACTION D

A03

a. With one offsite A.C. circuit of the above required A.C. electrical power source inoperable, demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter. Restore at least two offsite circuits to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b.# With diesel generator set(s) 1A-A and/or 2A-A or 1B-B and/or 2B-B of the above required A.C. electrical power sources inoperable,* demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter, and determining OPERABLE diesel generator sets are not inoperable due to common cause failure or performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours; restore at least four diesel generator sets to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

See ITS 3.8.1

\# Required actions, to verify OPERABLE diesel generator sets are not inoperable due to common cause failure or perform SR 4.8.1.1.2.a.4, shall be completed if this action is entered.

* No more than one diesel generator may be made simultaneously inoperable on a pre-planned basis for maintenance, modifications, or surveillance testing.

@ Offsite circuits utilizing USST 2A and USST 2B as the normal power sources require CSST A and CSST C to be available as the alternate power sources via automatic transfer at the associated 6.9 kV Unit Boards. (CSST B can be substituted for CSST A or CSST C.) This Note remains in effect until November 30, 2013, or until the USST modifications are implemented on Units 1 and 2, whichever occurs first.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

3. Verifying the diesel generator operates for at least 24 hours. During the first 2 hours to 2.25 hours of this test, the diesel generator shall be loaded between 4620 kw and 4840 kw and between 2380 kvar and 2600 kvar and during the remaining hours of this test, the diesel generator shall be loaded between 3960 kw and 4400 kw and between 2140 kvar and 2370 kvar.

The generator voltage and frequency shall be ≥ 6800 volts and ≥ 58.8 Hz within 10 seconds after the start signal. After energization, the steady state generator voltage and frequency shall be maintained ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz during this test. See ITS 3.8.1

4. Within 5 minutes of shutting down the diesel generator after it has operated ≥ 2 hours loaded between 3960 kw and 4400 kw and between 2140 kvar and 2370 kvar, verify that the diesel generator starts within 10 seconds after receipt of the start signal and operates for greater than or equal to 5 minutes. After energization, the steady state voltage and frequency shall be maintained ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz during this test.

See ITS 3.8.9

SR 3.8.4.1 4.8.1.1.3 The 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger for each diesel generator shall be demonstrated OPERABLE:

In accordance with the Surveillance Frequency Control Program LA02

SR 3.8.4.1 a. ~~At least once per 7 days~~ by verifying:

1. That the parameters in Table 4.8-1a meet the Category A limits. See ITS 3.8.6

SR 3.8.4.1 2. That the total battery terminal voltage is greater than or equal to ~~124 volts on float charge~~.

the minimum established float voltage LA03

b. At least once per 92 days by:

1. Verifying that the parameters in Table 4.8-1a meet the Category B limits,

2. Verifying there is no visible corrosion at either terminals or connectors, or the cell to terminal connection resistance of these items is less than 150 x 10^{-6} ohms, and

3. Verifying that the average electrolyte temperature of 6 connected cells is above 60°F.

c. At least once per 18 months by verifying that: See ITS 3.8.6

1. The cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration.

2. The battery to battery and terminal connections are clean, tight and coated with anti-corrosion material.

3. The resistance of each cell to terminal connection is less than or equal to 150 x 10^{-6} ohms.

4.8.1.1.4 This surveillance has been deleted.

ITS

A01

ITS 3.8.4

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTI0N - OPERATING

Add proposed LCO 3.8.4

A02

LIMITING CONDITION FOR OPERATION

See ITS 3.8.9

LCO 3.8.4 3.8.2.3 ~~The following D.C. vital battery channels shall be~~ energized and ~~OPERABLE:~~

~~CHANNEL I~~ Consisting of 125 - volt D.C. board No. I, ~~125 - volt D.C. battery bank No. I* and a full capacity charger.~~

~~CHANNEL II~~ Consisting of 125 - volt D.C. board No. II, ~~125 - volt D.C. battery bank No. II*, and a full capacity charger.~~

~~CHANNEL III~~ Consisting of 125 - volt D.C. board No. III, ~~125 - volt D.C. battery bank No. III*, and a full capacity charger.~~

~~CHANNEL IV~~ Consisting of 125 - volt D.C. board No. IV, ~~125 - volt D.C. battery bank No. IV*, and a full capacity charger.~~

LA01

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

ACTIONS ACTION:

a. With one 125-volt D.C. board inoperable, restore the inoperable board to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

See ITS 3.8.9

Add proposed Action A

L01

ACTION B b. With one 125-volt D.C. battery bank ~~and/or its charger~~ inoperable, restore the inoperable battery bank ~~and/or charger~~ to OPERABLE status within 2 hours or be in at least HOT

ACTION C STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

~~*D.C. Battery Bank V may be substituted for any other Battery Bank as needed.~~

LA01

ITS A01 ITS 3.8.4

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS

4.8.2.3.1 Each D.C. bus train shall be determined OPERABLE and energized with tie breakers open between redundant busses at least once per 7 days by verifying correct breaker alignment, indicated power availability from the charger and battery, and voltage on the bus of greater than or equal to 125 volts. See ITS 3.8.9

LA01

SR 3.8.4.1 SR 3.8.4.2 SR 3.8.4.3 4.8.2.3.2~~*~~ Each 125-volt battery bank and charger shall be demonstrated OPERABLE:

In accordance with the Surveillance Frequency Control Program LA02

SR 3.8.4.1 a. ~~At least once per 7 days by:~~

1. Verifying that the parameters in Table 4.8-2 meet the Category A limits, and See ITS 3.8.6

SR 3.8.4.1 2. Verifying total battery terminal voltage is greater than or equal to ~~129-volts on float charge~~.

the minimum established float voltage LA04

b. At least once per 92 days and within 7 days after a battery discharge (battery terminal voltage below 110-volts), or battery overcharge (battery terminal voltage above 150-volts), by:

1. Verifying that the parameters in Table 4.8-2 meet the Category B limits, See ITS 3.8.6

2. Verifying there is no visible corrosion at either terminals or connectors, or the connection resistance of these items is less than 150 x 10^{-6} ohms, and See ITS 5.5.15

3. Verifying that the average electrolyte temperature of 6 connected cells is above 60°F. See ITS 3.8.6

SR 3.8.4.2 c. ~~At least once per 18 months~~ by verifying that: In accordance with the Surveillance Frequency Control Program LA02

1. The cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration,

2. The cell-to-cell and terminal connections are clean, tight and coated with anti-corrosion material,

3. The resistance of each cell-to-terminal connection is less than or equal to 150 x 10^{-6} ohms, and

See ITS 5.5.15

SR 3.8.4.2 4. The battery charger will supply at least 150 amperes at ~~125 volts~~ for at least 4 hours.

~~129 volts~~ M01

greater than or equal to the minimum established float voltage LA05

Add proposed 2nd option for SR 3.8.4.2 L02

~~* This surveillance includes Battery Bank V, but not charger V.~~

LA01

ITS

A01

ITS 3.8.4

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

In accordance with the Surveillance Frequency Control Program LA02

SR 3.8.4.3 d. ~~At least once per 18 months~~ by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual or simulated emergency loads for ~~2 hours~~ when the battery is subjected to a battery service test.

the design duty cycle LA06

Add proposed SR 3.8.4.3 NOTE 2 M02

SR 3.8.4.3 Note 1 e. At least once per 60 months by verifying that the battery capacity is at least 82% of the manufacturer's rating when subjected to a performance discharge test. ~~Once per 60 month interval,~~ this performance discharge test may be performed in lieu of the battery service test.

See ITS 3.8.6

L03

f. Annual performance discharge tests of battery capacity shall be given to any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.

See ITS 3.8.6

In accordance with the Surveillance Frequency Control Program LA02

Add proposed SR 3.8.4.3 for DG batteries with a Frequency of ~~24 months~~ M03

ITS

A01

ITS 3.8.4

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

Add proposed LCO 3.8.4

A02

LCO 3.8.4 3.8.1.1 ~~As a minimum, the following A.C. electrical power sources shall be OPERABLE:~~

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system@, and

b. Four separate and independent diesel generator sets each with:

See ITS 3.8.1

1. Two diesels driving a common generator

2. Two engine-mounted fuel tanks containing a minimum volume of 250 gallons of fuel, per tank

3. A separate fuel storage system containing a minimum volume of 62,000 gallons of fuel,

See ITS 3.8.3

4. A separate fuel transfer pump, and

See ITS 3.8.1

LCO 3.8.4 5. ~~A separate~~ 125-volt D.C. distribution panel, ~~125-volt D.C. battery bank and associated charger~~.

LA01

See ITS 3.8.9

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

ACTION:

Add proposed ACTION D

A03

a. With one offsite A.C. circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter. Restore at least two offsite circuits to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b.# With diesel generator set(s) 1A-A and/or 2A-A or 1B-B and/or 2B-B of the above required A.C. electrical power sources inoperable,* demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter, and determining OPERABLE diesel generator sets are not inoperable due to common cause failure or performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours; restore at least four diesel generator sets to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

See ITS 3.8.1

\# Required actions, to verify OPERABLE diesel generator sets are not inoperable due to common cause failure or perform SR 4.8.1.1.2.a.4, shall be completed if this action is entered.

* No more than one diesel generator may be made simultaneously inoperable on a pre-planned basis for maintenance, modifications, or surveillance testing.

@ Offsite circuits utilizing USST 2A and USST 2B as the normal power sources require CSST A and CSST C to be available as the alternate power sources via automatic transfer at the associated 6.9 kV Unit Boards. (CSST B can be substituted for CSST A or CSST C.) This Note remains in effect until November 30, 2013, or until the USST modifications are implemented on Units 1 and 2, whichever occurs first.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

3. Verifying the diesel generator operates for at least 24 hours. During the first 2 hours to 2.25 hours of this test, the diesel generator shall be loaded between 4620 kw and 4840 kw and between 2380 kvar and 2600 kvar and during the remaining hours of this test, the diesel generator shall be loaded between 3960 kw and 4400 kw and between 2140 kvar and 2370 kvar.

   The generator voltage and frequency shall be ≥ 6800 volts and ≥ 58.8 Hz within 10 seconds after the start signal. After energization, the steady state generator voltage and frequency shall be maintained ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz during this test. See ITS 3.8.1

4. Within 5 minutes of shutting down the diesel generator after it has operated ≥ 2 hours loaded between 3960 kw and 4400 kw and between 2140 kvar and 2370 kvar, verify that the diesel generator starts within 10 seconds after receipt of the start signal and operates for greater than or equal to 5 minutes. After energization, the steady state voltage and frequency shall be maintained ≥ 6800 volts and ≤ 7260 volts and ≥ 58.8 Hz and ≤ 61.2 Hz during this test.

SR 3.8.4.1 4.8.1.1.3 The 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger for each diesel generator shall be demonstrated OPERABLE: See ITS 3.8.9

SR 3.8.4.1 a. ~~At least once per 7 days~~ In accordance with the Surveillance Frequency Control Program by verifying: LA02

1. That the parameters in Table 4.8-1a meet the Category A limits. See ITS 3.8.6

SR 3.8.4.1 2. That the total battery terminal voltage is greater than or equal to ~~124 volts on float charge~~ the minimum established float voltage. LA03

b. At least once per 92 days by:

1. Verifying that the parameters in Table 4.8-1a meet the Category B limits,

2. Verifying there is no visible corrosion at either terminals or connectors, or the cell to terminal connection resistance of these items is less than 150 x 10^{-6} ohms, and

3. Verifying that the average electrolyte temperature of 6 connected cells is above 60°F.

c. At least once per 18 months by verifying that: See ITS 3.8.6

1. The cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration.

2. The battery to battery and terminal connections are clean, tight and coated with anti-corrosion material.

3. The resistance of each cell to terminal connection is less than or equal to 150 x 10^{-6} ohms.

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ITS A01 ITS 3.8.4

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - OPERATING

LIMITING CONDITION FOR OPERATION

Add proposed LCO 3.8.4 A02

See ITS 3.8.9

LCO 3.8.4 3.8.2.3 ~~The following D.C. vital battery channels shall be OPERABLE~~ and energized:

~~CHANNEL I~~ Consisting of 125 -volt D.C. board No. I, ~~125 - volt D.C. battery bank No. I* and a full capacity charger.~~

~~CHANNEL II~~ Consisting of 125 - volt D.C. board No. II, ~~125 - volt D.C. battery bank No. II*, and a full capacity charger.~~

~~CHANNEL III~~ Consisting of 125 - volt D.C. board No. III, ~~125 - volt D.C. battery bank No. III*, and a full capacity charger.~~

~~CHANNEL IV~~ Consisting of 125 - volt D.C. board No. IV, ~~125 - volt D. C. battery bank No. IV*, and a full capacity charger.~~

LA01

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

ACTION:

a. With one 125-volt D.C. board inoperable or not energized, restore the inoperable board to OPERABLE and energized status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

See ITS 3.8.9

Add proposed Action A L01

ACTION B

b. With one 125-volt D.C. battery bank ~~and/or its charger~~ inoperable or not energized, restore the inoperable battery bank ~~and/or charger~~ to OPERABLE and energized status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION C

SURVEILLANCE REQUIREMENTS

4.8.2.3.1 Each D.C. bus train shall be determined OPERABLE and energized with tie breakers open between redundant busses at least once per 7 days by verifying correct breaker alignment, indicated power availability from the charger and battery, and voltage on the bus of greater than or equal to 125 volts.

See ITS 3.8.9

LA01

SR 3.8.4.1
SR 3.8.4.2
SR 3.8.4.3

4.8.2.3.2~~**~~ Each 125-volt battery bank and charger shall be demonstrated OPERABLE:

In accordance with the Surveillance Frequency Control Program LA02

SR 3.8.4.1 a. ~~At least once per 7 days by~~:

1. Verifying that the parameters in Table 4.8-2 meet the Category A limits, and

See ITS 3.8.6

~~* D.C. Battery Bank V may be substituted for any other Battery Bank as needed.~~
~~** This surveillance includes Battery Bank V, but not Charger V.~~

L01

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ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS

the minimum established float voltage LA04

SR 3.8.4.1 2. Verifying total battery terminal voltage is greater than or equal to ~~129-volts on float charge~~.

b. At least once per 92 days and within 7 days after a battery discharge (battery terminal voltage below 110-volts), or battery overcharge (battery terminal voltage above 150-volts), by: See ITS 3.8.6

1. Verifying that the parameters in Table 4.8-2 meet the Category B limits,

2. Verifying there is no visible corrosion at either terminals or connectors, or the connection resistance of these items is less than 150 x 10^{-6} ohms, and See ITS 5.5.15

3. Verifying that the average electrolyte temperature of 6 connected cells is above 60°F. See ITS 3.8.6

SR 3.8.4.2 c. ~~At least once per 18 months~~ by verifying that: In accordance with the Surveillance Frequency Control Program LA02

1. The cells, cell plates, and battery racks show no visual indication of physical damage or abnormal deterioration,

2. The cell-to-cell and terminal connections are clean, tight, and coated with anti-corrosion material, See ITS 5.5.15

3. The resistance of each cell-to-terminal connection is less than or equal to 150 x 10^{-6} ohms, and

LA05 greater than or equal to the minimum established float voltage ~~129 volts~~ M01

SR 3.8.4.2 4. The battery charger will supply at least 150 amperes at ~~125 volts~~ for at least 4 hours.

Add proposed 2nd option for SR 3.8.4.2 L02

SR 3.8.4.3 d. ~~At least once per 18 months~~ by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual or simulated emergency loads for ~~2 hours~~ when the battery is subjected to a battery service test.

the design duty cycle LA06

In accordance with the Surveillance Frequency Control Program LA02

e. At least once per 60 months by verifying that the battery capacity is at least 82% of the manufacturer's rating when subjected to a performance discharge test. ~~Once per 60 month interval,~~ this performance discharge test may be performed in lieu of the battery service test.

SR 3.8.4.3 Note 1 L03

f. Annual performance discharge tests of battery capacity shall be given to any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating. See ITS 3.8.6

Add proposed SR 3.8.4.3 NOTE 2 M02

Add proposed SR 3.8.4.3 for DG batteries with a Frequency of ~~24 months~~ M03

In accordance with the Surveillance Frequency Control Program LA02

DISCUSSION OF CHANGES
ITS 3.8.4, DC SOURCES - OPERATING

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications - Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.8.1.1 requires, in part, a separate 125 volt DC battery bank and associated charger for each of the four diesel generator (DG) sets. CTS 3.8.2.3 requires, in part, a 125-volt DC battery bank and a full capacity charger for each of four DC vital battery channels. ITS LCO 3.8.4 requires two vital DC electrical power trains and four DG DC electrical power subsystems to be OPERABLE. This changes the CTS by combining the requirements for the vital battery, vital battery charger, DG battery, and DG battery charger into one separate Specification.

The purpose, in part, of CTS 3.8.1.1 and CTS 3.8.2.3 is to define the limiting condition for operation for required direct current (DC) systems during plant operation. ITS LCO 3.8.4 retains the requirements of CTS 3.8.2.3 and the applicable part of CTS 3.8.1.1 associated with batteries and battery chargers. This change is designated as administrative because it does not result in technical changes to the CTS.

A03 CTS 3.8.1.1.b.5 requires, in part, a separate 125 volt DC battery bank and associated charger for each DG as a condition for OPERABILITY. ITS LCO 3.8.4 requires four DG DC electrical power subsystems to be OPERABLE. ITS 3.8.4 ACTION D has been added for one DG DC electrical power subsystem inoperable and requires the associated DG be declared inoperable immediately. This changes the CTS by providing explicit direction to declare the associated DG inoperable when its supporting battery or battery charger is inoperable.

The purpose of CTS 3.8.1.1.b.5 is to specify the OPERABILITY association between each DG set and its supporting battery and battery charger. ITS 3.8.4 ACTION D preserves this intent by explicitly requiring each DG to be declared inoperable if its associated DC electrical subsystem is inoperable. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 4.8.2.3.2 c.4 requires the battery charger supply at least 150 amperes at 125 volts for at least 4 hours. ITS SR 3.8.4.2 requires, in part, verification that each battery charger supplies greater than or equal to 150 amps at greater than or equal to the minimum established float voltage for greater than or equal to 4

DISCUSSION OF CHANGES
ITS 3.8.4, DC SOURCES - OPERATING

hours. This changes the CTS testing requirement from 125 volts to the minimum establish float voltage of 129 volts.

The purpose of CTS 4.8.2.3.2.c.4, in part, is to verify the OPERABILITY of the Vital battery charger. ITS 3.8.4.2 requires in part, verifying each battery charger supplies greater than or equal to 150 amps at greater than or equal to the minimum established float voltage (129 volts) for greater than or equal to 4 hours. This change is designated as more restrictive because the surveillance testing voltage for CTS has been changed from 125 volts to greater than or equal to 129 volts to reflect the minimum established float voltage.

M02 CTS 4.8.2.3.2.d requires a battery service test for the vital batteries. The Surveillance does not specify that the testing be performed under certain unit conditions. ITS SR 3.8.4.3 requires a similar verification of battery capacity but is modified by a Note. ITS SR 3.8.4.3, Note 2 states that for the battery service test the Surveillance shall not be performed on in-service vital batteries in MODE 1, 2, 3, or 4, however, credit may be taken for unplanned events that satisfy this SR. This changes the CTS requirement by specifying conditions for when the associated vital batteries are tested.

The purpose of CTS 4.8.2.3.2.d is to verify the OPERABILITY of the Vital DC Batteries. The addition of the Note limiting the conditions under which the Surveillance can be performed is acceptable, because performance of the Surveillance on in-service vital batteries could cause perturbations to the electrical distribution system. Restricting performance of the Surveillance to the spared vital battery during MODES 1, 2, 3, and 4 minimizes challenges to continued steady state operation and, as a result, the unit's safety systems. This change is designated as more restrictive because testing required by the CTS does not contain this limitation.

M03 CTS 4.8.1.1.3.a.2 provides testing requirements to verify OPERABILITY of DG batteries and chargers by verifying total battery terminal voltage is within limits. ITS SR 3.8.4.1 provides a similar test. In addition, ITS SR 3.8.4.3 requires verification every 24 months that each DG battery can supply and maintain in OPERABLE status the required emergency loads and any connected non-safety loads for the design duty cycle when subjected to a battery service test. ITS SR 3.8.4.3 includes an allowance (Note 1) allowing performance of a modified performance discharge test (ITS SR 3.8.6.6) in lieu of the battery service test. In addition, Note 2 allows credit to be taken for unplanned events that satisfy the SR. This changes the CTS by adding a new Surveillance Requirement for verifying the OPERABILITY of the DG batteries. (See DOC LA02 for a discussion of moving the 24 month Frequency for this Surveillance Requirement to the Surveillance Frequency Control Program.)

The purpose of the additional Surveillance Requirement is to ensure the DG battery is capable of adequately supplying its associated loads during a design basis accident. This change is acceptable because the new SR provides additional assurance that the DG batteries remain OPERABLE to perform their safety function. This change is designated as more restrictive because more Surveillance Requirements will be required in ITS than are required in CTS.

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DISCUSSION OF CHANGES
ITS 3.8.4, DC SOURCES - OPERATING

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.8.1.1.b.5 states, in part, that a separate 125 volt DC battery and associated charger, supporting each required diesel generator, shall be OPERABLE. CTS 3.8.2.3 states, in part, that the DC vital battery channels shall be energized and OPERABLE and lists the details of what constitutes a channel including a footnote (*) that allows Battery Bank V to be substituted for any other required Battery Bank. In addition, CTS 4.8.2.3.2 footnote (*) states, in part, that the surveillances are applicable to Battery Bank V, but not charger V. ITS LCO 3.8.4 requires two Vital DC electrical power trains and four DG DC electrical power subsystems to be OPERABLE. This changes the CTS by moving the details of the components of the DC Sources (battery and charger) from the CTS to the ITS Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirements for the Vital 125 V DC channels and DG DC electrical subsystems. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Control Program in Chapter 5. The program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA02 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.8.1.1.3.a.2 requires, in part, demonstrating each DG 125-volt battery bank and associated charger is OPERABLE by verifying that total battery terminal voltage is within limits at least once per 7 days. CTS 4.8.2.3.2.a.2 requires demonstrating each required DC Vital 125-volt battery bank and charger is OPERABLE by verifying total battery terminal voltage is within limits at least once per 7 days. CTS 4.8.2.3.2.c.4 requires demonstrating each DC Vital 125-volt required charger is OPERABLE by verifying that the battery charger will supply a prescribed current for a designated period at least once per 18 months. CTS 4.8.2.3.2.d requires demonstrating each DC Vital 125-volt battery bank is OPERABLE by verifying adequate battery capacity by performance of a prescribed test at least once per 18 months. ITS SR 3.8.4.1, SR 3.8.4.2, and SR 3.8.4.3 require similar Surveillances and specify the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for these SRs and associated Bases to the Surveillance Frequency Control Program. Additionally, ITS SR 3.8.4.3 has been added to perform a service test on each DG battery every 24 months. (See DOC M03 for the discussion on adding of this SR). The

DISCUSSION OF CHANGES
ITS 3.8.4, DC SOURCES - OPERATING

24 month Frequency for this Surveillances has also been relocated to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LA03 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.8.1.1.3.a.2 requires verifying DG total battery terminal voltage is greater than or equal to 124 volts on float charge. ITS SR 3.8.4.1 requires verification that the DG battery terminal voltage is greater than or equal to the minimum established float voltage. This changes the CTS by moving the specific values of the minimum established float voltage from the CTS to the ITS Bases.

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

LA04 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.8.2.3.2.a.2 requires verifying vital battery total battery terminal voltage to be greater than or equal to 129 volts on float charge. ITS SR 3.8.4.1 requires the verification that the vital battery terminal voltage is greater than or equal to the minimum established float voltage. This changes the CTS by moving the specific values of the minimum established float voltage from the CTS to the ITS Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate

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DISCUSSION OF CHANGES
ITS 3.8.4, DC SOURCES - OPERATING

protection of public health and safety. The ITS still retains the requirements that the vital battery terminal voltage be greater than or equal to the minimum established float voltage. This change is acceptable, because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA05 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.8.2.3.2.c.4 requires the vital battery chargers supply at least 150 amperes at 125 volts for at least 4 hours. ITS SR 3.8.4.2 requires the verification the vital battery charger supplies greater than or equal to 150 amps at greater than or equal to the minimum established float voltage for greater than or equal to 4 hours. This changes the CTS by moving the specific values of the minimum established float voltage from the CTS to the ITS Bases.

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

LA06 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.8.2.3.2.d requires, verifying the vital battery capacity is adequate to supply and maintain in OPERABLE status all of the actual or simulated emergency loads for 2 hours when the battery is subjected to a battery service test. ITS SR 3.8.4.3 requires, the verification that the vital battery capacity is adequate to supply and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test. This changes the CTS by moving the specific value of the design duty cycle, from the CTS to the ITS Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirements that the design duty cycle be maintained. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to the Bases to ensure the Bases are properly controlled. This change

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is designated as a less restrictive removal of detail change, because information relating to system design is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.8.2.3 ACTION b states, that with one 125-volt DC battery bank and/or charger inoperable, to restore the inoperable battery bank and/or charger to OPERABLE status within 2 hours or commence a unit shutdown. ITS 3.8.4 ACTION A has been added to provide Actions for the condition of one or more vital battery chargers inoperable. ITS 3.8.4 Required Action A.1 requires the restoration of the battery terminal voltage to greater than or equal to the minimum established float voltage within 2 hours. ITS 3.8.4 Required Action A.2 requires the verification that the battery float current is ≤ 2 amps once per 12 hours. ITS 3.8.4 Required Action A.3 requires the restoration of the battery chargers to OPERABLE status within 7 days. This changes the CTS by extending the time a required battery charger may be inoperable.

The purpose of CTS 3.8.2.3 is to ensure that the two trains of DC electrical power system (four vital DC channels) are capable of supplying the associated loads during a design bases accident. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with the safe operation under the specified Condition, considering the OPERABLE status of the redundant systems and features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. The proposed ITS 3.8.4 ACTION A provides up to a 7 day restoration time for an inoperable vital battery charger. However, this time is contingent on a focused and tiered approach to assuring adequate battery capability is maintained. The first priority for the operator is to minimize the battery discharge, which is required to be terminated within 2 hours (ITS 3.8.4 Required Action A.1). Presuming that the battery discharge (if occurring) can be terminated and that the DC bus remains energized (as required by a separate LCO), there is reasonable basis for extending the restoration time for an inoperable charger beyond the 2 hour limit. The second tiered action proposes 12 hours to establish that the battery has sufficient capacity to perform its assumed duty cycle (which may involve some recharging of lost capacity that occurred during the initial hours). Given the choice of a unit shutdown in this condition (as currently required) versus a 12 hour determination (at the end of which it is reasonable to assume the battery can be shown to have its assumed capacity) followed by a 7 day restoration period, is an acceptable relaxation. Since the focus of this allowance is that the battery capacity be preserved and assured, the means of accomplishing this may be the spare battery charger employed within the initial 2 hours, or the degraded inservice charger that continues to float the battery. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

DISCUSSION OF CHANGES
ITS 3.8.4, DC SOURCES - OPERATING

L02 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.8.2.3.2.c.4 requires, in part, the battery charger to supply at least 150 amperes at 125 volts for at least 4 hours. ITS SR 3.8.4.2 includes a similar test. In addition, the SR provides an alternative test method. This test method requires a verification that each vital battery charger can recharge the battery to the fully charge state within 36 hours while supplying the largest combined demands of the various continuous steady state loads, after a battery discharge to the bounding design basis event discharge state. This changes the CTS by allowing an alternate test method that is not currently allowed.

The purpose of CTS 4.8.2.3.2.c.4 is to verify the required 125 V DC vital battery chargers can recharge their respective batteries following a loss of offsite power event. This change is acceptable because the relaxed Surveillance Requirement acceptance criteria are adequate to verify the equipment used to meet the LCO can perform its required functions. This alternate test provides an acceptable method for determining charger capability by actually recharging a discharge battery within 36 hours while supplying the required loads. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L03 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.8.2.3.2.d requires, in part, a verification of the station battery capacity when the battery is subjected to a service test. CTS 4.8.2.3.2.e allows substitution of a performance discharge test in lieu of the battery service test once per 60 month interval. ITS SR 3.8.4.3 is modified by Note 1 which allows the modified performance discharge test in SR 3.8.6.6 to be performed in lieu of the service test in SR 3.8.4.3. This changes the CTS by allowing a modified performance discharge test to be substituted for a service test for any performance of the Surveillance, instead of the current once per 60 months.

This change is acceptable because the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. The modified performance discharge test is a test of the battery capacity and its ability to provide a high rate, short duration load (usually the highest rate of the duty cycle). As stated in the Bases for ITS SR 3.8.6.6, the battery terminal voltage for the modified performance discharge test must remain above the minimum battery terminal voltage specified in the battery service test for the duration of time equal to that of the service test. This modified test has been shown to be as effective in determining battery capacity as the standard service test. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources - Operating

3.8.2.3 LCO 3.8.4 ~~The Train A and Train B~~ Two Vital DC electrical power trains and four diesel generator (DG) DC electrical power subsystems shall be OPERABLE. 1

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

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC L01	A. One ~~[~~or two~~]~~ vital battery charger~~[s]~~ on one ~~subsystem~~ train inoperable.	A.1 Restore battery terminal voltage to greater than or equal to the minimum established float voltage.	~~[~~2 hours~~]~~	2 3 1
		AND		
		A.2 Verify battery float current ≤ ~~[~~2~~]~~ amps.	Once per ~~[~~12~~]~~ hours	3
		AND		
		A.3 Restore vital battery charger~~[s]~~ to OPERABLE status.	~~[72] hours~~ 7 days	1 3 4
	~~[B. One [or two] batter[y][ies on one subsystem] inoperable.~~	~~B.1 Restore batter[y][ies] to OPERABLE status.~~	~~[2] hours]~~	5
3.8.2.3 ACTION b	~~C~~ B. One vital DC electrical power ~~subsystem~~ train inoperable for reasons other than Condition A ~~[or B]~~.	~~C~~ B.1 Restore vital DC electrical power ~~subsystem~~ train to OPERABLE status.	~~[~~2~~]~~ hours	5 3 1 3
3.8.2.3 ACTION b	~~D~~ C. Required Action and Associated Completion Time of Condition A or B not met.	~~D~~ C.1 Be in MODE 3.	6 hours	5 2
		AND		
		~~D~~ C.2 Be in MODE 5.	36 hours	

INSERT 1

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2 **INSERT 1**

DOC A03	D. One or more DG DC electrical power subsystem(s) inoperable.	D.1	Declare associated DG(s) inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.8.1.1.3.a.2, 4.8.2.3.2.a.2	SR 3.8.4.1	Verify battery terminal voltage is greater than or equal to the minimum established float voltage.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	6
4.8.2.3.2.c.4 DOC L02	SR 3.8.4.2	Verify each vital battery charger supplies ≥ 150 ~~[400]~~ amps at greater than or equal to the minimum established float voltage for ≥ 4 ~~[8]~~ hours. OR Verify each vital battery charger can recharge the battery to the fully charged state within 36 ~~[24]~~ hours while supplying the largest combined demands of the various continuous steady state loads, after a battery discharge to the bounding design basis event discharge state.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	1 3 3 6 1 3

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
4.8.2.3.2.d, 4.8.2.3.2.e, DOC M03 SR 3.8.4.3	-----------------------------NOTES---------------------------- 1. The modified performance discharge test in SR 3.8.6.6 may be performed in lieu of SR 3.8.4.3 for the vital batteries. INSERT 2 DOC M02 3 ~~2~~. This Surveillance shall not ~~normally~~ be performed on in-service vital batteries in MODE 1, 2, 3, or 4. ~~However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.~~ Credit may be taken for unplanned events that satisfy this SR. --- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a actual or simulated battery service test.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program] 2 7 1 6

7 **INSERT 2**

DOC M03 2. The modified performance discharge test in SR 3.8.6.7 may be performed in lieu of SR 3.8.4.3 for the DG batteries.

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources - Operating

3.8.2.3 LCO 3.8.4 ~~The Train A and Train B~~ Two Vital DC electrical power trains and four diesel generator (DG) DC electrical power subsystems shall be OPERABLE. 1

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

ACTIONS

CTS	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC L01	A. One ~~[or two]~~ vital battery charger~~[s]~~ on one ~~subsystem~~ train inoperable.	A.1 Restore battery terminal voltage to greater than or equal to the minimum established float voltage. AND A.2 Verify battery float current ≤ ~~[~~2~~]~~ amps. AND A.3 Restore vital battery charger~~[s]~~ to OPERABLE status.	~~[~~2 hours~~]~~ Once per ~~[~~12~~]~~ hours 7 days ~~[72] hours~~	3 2 1 3 1 3 4
	~~[B. One [or two] batter[y][ies on one subsystem] inoperable.~~	~~B.1 Restore batter[y][ies] to OPERABLE status.~~	~~[2] hours]~~	5
3.8.2.3 ACTION b	~~C.~~ B. One vital DC electrical power ~~subsystem~~ train inoperable for reasons other than Condition A ~~[or B]~~.	~~C.1~~ B.1 Restore vital DC electrical power ~~subsystem~~ train to OPERABLE status.	~~[~~2~~]~~ hours	5 3 1 3
3.8.2.3 ACTION b	~~D.~~ C. Required Action and Associated Completion Time of Condition A or B not met.	~~D.1~~ C.1 Be in MODE 3. AND ~~D.2~~ C.2 Be in MODE 5.	6 hours 36 hours	5 2

INSERT 1

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2 INSERT 1

DOC A03	D. One or more DG DC electrical power subsystem(s) inoperable.	D.1	Declare associated DG(s) inoperable.	Immediately

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SURVEILLANCE REQUIREMENTS

CTS		SURVEILLANCE	FREQUENCY	
4.8.1.1.3.a.2, 4.8.2.3.2.a.2	SR 3.8.4.1	Verify battery terminal voltage is greater than or equal to the minimum established float voltage.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	6
4.8.2.3.2.c.4 DOC L02	SR 3.8.4.2	Verify each vital battery charger supplies ≥ 150 ~~[400]~~ amps at greater than or equal to the minimum established float voltage for ≥ 4 ~~[8]~~ hours. OR Verify each vital battery charger can recharge the battery to the fully charged state within 36 ~~[24]~~ hours while supplying the largest combined demands of the various continuous steady state loads, after a battery discharge to the bounding design basis event discharge state.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	1 3 3 6 1 3

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
4.8.2.3.2.d, 4.8.2.3.2.e, DOC M03 DOC M02 SR 3.8.4.3	------------------------------NOTES---------------------------- 1. The modified performance discharge test in SR 3.8.6.6 may be performed in lieu of SR 3.8.4.3 for the vital batteries. INSERT 2 3 ~~2~~. This Surveillance shall not ~~normally~~ be performed on in-service vital batteries in MODE 1, 2, 3, or 4. ~~However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.~~ Credit may be taken for unplanned events that satisfy this SR. --- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required actual or simulated emergency loads for the design duty cycle when subjected to a battery service test.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program]

2 7 1 6

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7 INSERT 2

DOC M03 2. The modified performance discharge test in SR 3.8.6.7 may be performed in lieu of SR 3.8.4.3 for the DG batteries.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.8.4, DC SOURCES - OPERATING

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

2. An LCO, ACTION, and Surveillance Requirements have been added to ITS 3.8.4 to reflect SQN current licensing basis whereby diesel generator (DG) OPERABILITY is dependent on the associated DG DC electrical power subsystem.

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

4. ISTS Required Action A.3 states, to restore a battery charger to OPERABLE status within [72] hours. Reviewer's Notes allow Licensees adopting a Completion Time for Required Action A.3 of 7 days provided a commitment is made that an alternate means to charge the batteries will be available that is capable of being supplied power from a source that is independent of the offsite power supply. SQN will commit that an alternate means will be available to charge the batteries, and that the supplied power source is independent from the offsite power supply.

5. The bracketed ISTS 3.8.4 ACTION B has been deleted since it is not necessary. ISTS 3.8.4 ACTION C (ITS 3.8.4 ACTION B) covers the condition of an inoperable battery. Due to this deletion, the subsequent ACTIONS have been arranged in sequence.

6. ISTS SR 3.8.4.1, ISTS SR 3.8.4.2, and ISTS SR 3.8.4.3 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Therefore, the Frequency for ITS SR 3.8.4.1, SR 3.8.4.2, and SR 3.8.4.3 is "In accordance with the Surveillance Frequency Control Program."

7. No portion of the battery service test can be performed on in-service vital batteries in MODES 1, 2, 3, or 4 without making the battery inoperable. The battery service test is normally performed by removing a vital battery from service and placing the spare vital battery in-service. Furthermore, the battery service test is not performed in steps, where only part of the test can be performed. Therefore, this part of the Note has been deleted.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.4 DC Sources - Operating

BASES INSERT 1 sub

BACKGROUND

The ~~station~~ 125 V Vital DC electrical power sub system provides the AC emergency power system with control power. It also provides both motive and control power to selected safety related equipment and preferred AC vital ~~bus~~ instrument power board power (via inverters). INSERT 2 As required by 10 CFR 50, Appendix A, GDC 17 (Ref. 1), the DC electrical power system is designed to have sufficient independence, redundancy, and testability to perform its safety functions, assuming a single failure. The DC electrical power system also conforms to the recommendations of Regulatory Guide 1.6 (Ref. 2) and IEEE-308 (Ref. 3). 1 1

VKG024

The [125~~/250~~] Vital VDC electrical power sub system consists of two independent and redundant safety related Class 1E DC electrical power ~~subsystems~~ trains INSERT 3 (~~[Train A and Train B]~~). Each ~~subsystem~~ train consists of [two] 125 VDC batteries ~~[(each battery [50]% capacity)]~~, the associated battery charger(s) for each battery, and all the associated control equipment and interconnecting cabling. 2 1 1

INSERT 4 [~~The 250 VDC source is obtained by use of the two 125 VDC batteries connected in series.~~ Additionally there is [one] spare battery charger ~~per subsystem~~ INSERT 5, which provides backup service in the event that the preferred battery charger is out of service. If the spare battery charger is substituted for one of the preferred battery chargers, then the requirements of independence and redundancy between ~~subsystems~~ trains are maintained.] 2

During normal operation, the [125~~/250~~] Vital VDC load is powered from the battery chargers with the batteries floating on the system. In case of loss of normal power to the battery charger, the DC load is automatically powered from the station batteries. 2 1

The ~~[Train A and Train B]~~ Vital DC electrical power ~~subsystems~~ trains provide the control power for its associated Class 1E AC power load group, ~~[4.16]~~ 6.9 kV ~~switchgear,~~ Shutdown Boards and [480] V load centers. The DC electrical power ~~subsystems~~ trains also provide DC electrical power to the inverters, which in turn power the AC vital ~~buses~~ instrument power boards. 2 1 2 1 1 1

The DC power distribution system is described in more detail in Bases for LCO 3.8.9, "Distribution System - Operating," and LCO 3.8.10, "Distribution Systems - Shutdown."

1 **INSERT 1**

The DC electrical power system consists of the 125 V Vital DC electrical power subsystem and the diesel generator (DG) DC electrical power subsystem.

1 **INSERT 2**

Control power and generator field flashing for each DG is provided by the DG DC electrical power subsystem.

1 **INSERT 3**

Train A is associated with channels I and III and Train B is associated with channels II and IV

2 **INSERT 4**

The 125 V Vital DC electrical power subsystem has manual access to a fifth vital battery system. The fifth 125 VDC Vital Battery System is intended to serve as a replacement for any one of the four 125 VDC vital batteries during testing, maintenance, and outages with no loss of system reliability under any mode of operation.

2 **INSERT 5**

for channels I and II and one spare charger for channels III and IV

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BASES

BACKGROUND (continued)

Each 125~~/250~~ Vital VDC battery is separately housed in a ventilated room apart from its charger and distribution centers. Each ~~subsystem~~ train is located in an area separated physically and electrically from the other ~~subsystem~~ train to ensure that a single failure in one ~~subsystem~~ train does not cause a failure in a redundant ~~subsystem~~ train. ~~[~~There is no sharing between redundant Class 1E ~~subsystems~~ trains, such as batteries, battery chargers, or distribution panels.~~]~~ 1 2 1

Each Vital battery has adequate storage capacity to meet the duty cycle(s) discussed in the U FSAR, Chapter ~~[~~8~~]~~ (Ref 4). The battery is designed with additional capacity above that required by the design duty cycle to allow for temperature variations and other factors. 1 2

The batteries for ~~Train A and Train B~~ 125 V Vital DC electrical power ~~subsystems~~ trains are sized to produce required capacity at ~~80~~ 82% of nameplate rating, corresponding to warranted capacity at end of life cycles and the 100% design demand. The minimum design voltage limit is ~~[~~105~~/210~~ V~~]~~. 1 2

The Vital battery cells are of flooded lead acid construction with a nominal specific gravity of ~~[~~1.215~~]~~. This specific gravity corresponds to an open circuit battery voltage of ~~approximately 120~~ 123.78 V for a ~~[58]~~ 60 cell battery (i.e., cell voltage of ~~[2.065]~~ 2.063 volts per cell (Vpc)). The open circuit voltage is the voltage maintained when there is no charging or discharging. ~~Once fully charged with its open circuit voltage ≥ [2.065] Vpc, the battery cell will maintain its capacity for [30] days without further charging per manufacturer's instructions.~~ Optimal long term performance however, is obtained by maintaining a minimum float voltage ~~[2.20 to 2.25] Vpc~~ of 129 V DC. This provides adequate over-potential, which limits the formation of lead sulfate and self discharge. ~~The nominal float voltage of [2.22] Vpc corresponds to a total float voltage output of [128.8] V for a [58] cell battery as discussed in the FSAR, Chapter [8] (Ref. 4).~~ 2 3 2 1

Each ~~Train A and Train B~~ Vital DC electrical power ~~subsystem~~ train battery charger has ample power output capacity for the steady state operation of connected loads required during normal operation, while at the same time maintaining its battery bank fully charged. Each battery charger also has sufficient excess capacity to restore the battery from the design minimum charge to its fully charged state within ~~[24]~~ 12 hours ~~while supplying normal steady state loads discussed in the FSAR, Chapter [8] (Ref. 4)~~ INSERT 6. 1 2 1

~~The~~ Each vital battery charger is normally in the float-charge mode. Float-charge is the condition in which the charger is supplying the connected loads and the battery cells are receiving adequate current to optimally charge the battery. This assures the internal losses of a battery are overcome and the battery is maintained in a fully charged state. 1

1 **INSERT 6**

(with accident loads being supplied) following a 30 minute AC power outage and in approximately 36 hours (with normal loads being supplied) following a 4 hour AC power outage.

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BASES

BACKGROUND (continued)

each Vital battery

When desired, ~~the~~ charger can be placed in the equalize mode. The equalize mode is at a higher voltage than the float mode and charging current is correspondingly higher. The battery charger is operated in the equalize mode after a battery discharge or for routine maintenance. Following a battery discharge, the battery recharge characteristic accepts current at the current limit of the battery charger (if the discharge was significant, e.g., following a battery service test) until the battery terminal voltage approaches the charger voltage setpoint. Charging current then reduces exponentially during the remainder of the recharge cycle. Lead-calcium batteries have recharge efficiencies of greater than 95%, so once at least 105% of the ampere-hours discharged have been returned, the battery capacity would be restored to the same condition as it was prior to the discharge. This can be monitored by direct observation of the exponentially decaying charging current or by evaluating the amp-hours discharged from the battery and amp-hours returned to the battery. 1 1

INSERT 7

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the U FSAR, Chapter ~~[~~6~~]~~ (Ref. 5) and Chapter ~~[~~15~~]~~ (Ref. 6), assume that Engineered Safety Feature (ESF) systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the DGs, emergency auxiliaries, and control and switching during all MODES of operation. 1 2 1

The OPERABILITY of the DC sources is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining the DC sources OPERABLE during accident conditions in the event of:

a. An assumed loss of all offsite AC power or all onsite AC power and

b. A worst-case single failure.

The DC sources satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

VKG024

The Vital DC electrical power ~~subsystems~~ trains, each ~~subsystem~~ train consisting of ~~[~~two~~]~~ batteries, battery charger ~~[~~for each battery~~]~~ and the corresponding control equipment and interconnecting cabling supplying power to the associated ~~bus~~ board within the ~~subsystem~~ train are required to be OPERABLE to ensure the availability of the required power to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. Loss of any DC electrical power ~~subsystem~~ train does not prevent the minimum safety function from being performed (Ref. 4). 1 2 1 2 1 1

INSERT 8 1

1 **INSERT 7**

Control power for the DGs is provided by the four DG battery systems, one per DG. Each system is comprised of one 125VDC battery, the associated charger for each battery, and all associated control equipment and interconnecting cabling.

1 **INSERT 8**

The DG DC electrical power subsystems, each subsystem consisting of one battery, one battery charger and the corresponding control equipment and interconnecting cabling supply power to the associated DG control circuit are required to be OPERABLE to ensure the availability of the required power to support the operability of the diesel generator.

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BASES

LCO (continued)

Vital train

An OPERABLE DC electrical power ~~subsystem~~ requires all required batteries and respective chargers to be operating and connected to the associated DC ~~bus~~(~~e~~s). 1 1

VKG024 board

APPLICABILITY

The DC electrical power sources are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure safe unit operation and to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients and

b. Adequate core cooling is provided, and containment integrity and other vital functions are maintained in the event of a postulated DBA.

The DC electrical power requirements for MODES 5 and 6 are addressed in the Bases for LCO 3.8.5, "DC Sources - Shutdown."

ACTIONS

A.1, A.2, and A.3

train vital

Condition A represents one ~~subsystem~~ with one ~~[~~or two~~]~~ battery chargers inoperable (e.g., the voltage limit of SR 3.8.4.1 is not maintained). The ACTIONS provide a tiered response that focuses on returning the battery to the fully charged state and restoring a fully qualified charger to OPERABLE status in a reasonable time period. Required Action A.1 requires that the battery terminal voltage be restored to greater than or equal to the minimum established float voltage within 2 hours. This time provides for returning the inoperable charger to OPERABLE status or providing an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage. Restoring the battery terminal voltage to greater than or equal to the minimum established float voltage provides good assurance that, within ~~[~~12~~]~~ hours, the battery will be restored to its fully charged condition (Required Action A.2) from any discharge that might have occurred due to the charger inoperability. 1 2 2

~~-----REVIEWER'S NOTE-----~~
~~A plant that cannot meet the 12 hour Completion Time due to an inherent battery charging characteristic can propose an alternate time equal to 2 hours plus the time experienced to accomplish the exponential charging current portion of the battery charge profile following the service test (SR 3.8.4.3).~~
~~-----~~ 4

BASES

ACTIONS (continued)

A discharged battery having terminal voltage of at least the minimum established float voltage indicates that the battery is on the exponential charging current portion (the second part) of its recharge cycle. The time to return a battery to its fully charged state under this condition is simply a function of the amount of the previous discharge and the recharge characteristic of the battery. Thus there is good assurance of fully recharging the battery within ~~[~~12~~]~~ hours, avoiding a premature shutdown with its own attendant risk.

If established battery terminal float voltage cannot be restored to greater than or equal to the minimum established float voltage within ~~[~~2~~]~~ hours, and the charger is not operating in the current-limiting mode, a faulty charger is indicated. A faulty charger that is incapable of maintaining established battery terminal float voltage does not provide assurance that it can revert to and operate properly in the current limit mode that is necessary during the recovery period following a battery discharge event that the DC system is designed for.

If the charger is operating in the current limit mode after 2 hours that is an indication that the battery is partially discharged and its capacity margins will be reduced. The time to return the battery to its fully charged condition in this case is a function of the battery charger capacity, the amount of loads on the associated DC system, the amount of the previous discharge, and the recharge characteristic of the battery. The charge time can be extensive, and there is not adequate assurance that it can be recharged within ~~[~~12~~]~~ hours (Required Action A.2).

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Required Action A.2 requires that the battery float current be verified as less than or equal to ~~[~~2~~]~~ amps. This indicates that, if the battery had been discharged as the result of the inoperable battery charger, it is now fully capable of supplying the maximum expected load requirement. The ~~[~~2~~]~~ amp value is based on returning the battery to ~~[95]~~% charge and assumes a ~~[~~5~~]~~% design margin for the battery. If at the expiration of the initial ~~[~~12~~]~~ hour period the battery float current is not less than or equal to ~~[~~2~~]~~ amps this indicates there may be additional battery problems and the battery must be declared inoperable.

2

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Any licensee wishing to adopt Completion Time greater than 72 hours for Required Action A.3 will need to demonstrate that the longer Completion Time is appropriate for the plant in accordance with the guidance in Regulatory Guide (RG) 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," and RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis."~~

4

BASES

ACTIONS (continued)

~~Alternatively, a 7 day Completion Time can be justified by an acceptable method, such as a regulatory commitment that an alternate means to charge the batteries will be available that is capable of being supplied power from a power source that is independent of the offsite power supply. Otherwise, the 72 hour Completion Time must be adopted.~~ 4

~~---~~

vital

Required Action A.3 limits the restoration time for the inoperable vital battery charger to 7 days ~~[72] hours~~. This action is applicable if an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage has been used (e.g., fifth ~~balance of plant non-Class 1E~~ battery charger). The 7 day ~~[72] hour~~ Completion Time reflects a reasonable time to effect restoration of the qualified battery charger to OPERABLE status. 1 2 1 2

~~B.1~~

~~-------------------------------REVIEWER'S NOTES------------------------------~~

~~1. The 2 hour Completion Times of Required Actions B.1 and C.1 are in brackets. Any licensee wishing to request a longer Completion Time will need to demonstrate that the longer Completion Time is appropriate for the plant in accordance with the guidance in RG 1.177 and RG 1.174.~~

~~2. Condition B is included if Required Action B.1 (one [or two] batter[y][ies on one subsystem] inoperable) and Required Action C.1 (one DC electrical power subsystem inoperable for reasons other than Condition A [or B]) would have different Completion Times. If the plant design supports different Completion Times when a battery is inoperable but the charger is OPERABLE, then Condition B is used. If not, Condition B is deleted and only Condition C is used.~~

~~---~~

~~Condition B represents one subsystem with one [or two] batter[y][ies] inoperable. With one [or two] batter[y][ies] inoperable, the DC bus is being supplied by the OPERABLE battery charger[s]. Any event that results in a loss of the AC bus supporting the battery charger[s] will also result in loss of DC to that subsystem. Recovery of the AC bus, especially if it is due to a loss of offsite power, will be hampered by the fact that many of the components necessary for the recovery (e.g., diesel generator control and field flash, AC load shed and diesel generator output circuit breakers, etc.) likely rely upon the batter[y][ies]. In addition the energization transients of any DC loads that are beyond the capability of the battery charger[s] and normally require the assistance of the~~ 6

BASES

ACTIONS (continued)

~~batter[y][ies] will not be able to be brought online. The [2] hour limit allows sufficient time to effect restoration of an inoperable battery given that the majority of the conditions that lead to battery inoperability (e.g., loss of battery charger, battery cell voltage less than [2.07] V, etc.) are identified in Specifications 3.8.4, 3.8.5, and 3.8.6 together with additional specific Completion Times.~~ 6

~~C~~ B.1 6

Condition ~~C~~ B represents one ~~subsystem~~ vital DC train with a loss of ability to completely respond to an event, and a potential loss of ability to remain energized during normal operation. It is therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete loss of DC power to the affected ~~subsystem~~ train. The 2 hour limit is consistent with the allowed time for an inoperable vital DC distribution subsystem.

If one of the required vital DC electrical power ~~subsystems~~ trains is inoperable for reasons other than Condition A ~~or B~~ (e.g., inoperable battery charger ~~and associated inoperable battery~~), the remaining vital DC electrical power ~~subsystem~~ train has the capacity to support a safe shutdown and to mitigate an accident condition. Since a subsequent worst~~-~~ case single failure could, however, result in the loss of the minimum necessary vital DC electrical ~~subsystems~~ trains to mitigate a worst case accident, continued power operation should not exceed 2 hours. The 2 hour Completion Time is based on Regulatory Guide 1.93 (Ref. 7) and reflects a reasonable time to assess unit status as a function of the inoperable vital DC electrical power ~~subsystem~~ train and, if the vital DC electrical power ~~subsystem~~ train is not restored to OPERABLE status, to prepare to effect an orderly and safe unit shutdown. 6 1

~~D~~ C.1 and ~~D~~ C.2 6

If the inoperable vital DC electrical power ~~subsystem~~ train cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems. The Completion Time to bring the unit to MODE 5 is consistent with the time required in Regulatory Guide 1.93 (Ref. 7).

INSERT 9 1

1 **INSERT 9**

D.1

If the DG DC electrical power subsystem(s) is inoperable, the associated DG(s) may be incapable of performing their intended function and must be immediately declared inoperable. This declaration also requires entry into applicable Conditions and Required Actions for inoperable DG(s), LCO 3.8.1, "AC Sources – Operating."

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.1

Verifying battery terminal voltage while on float charge for the batteries helps to ensure the effectiveness of the battery chargers, which support the ability of the batteries to perform their intended function. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery and maintain the battery in a fully charged state while supplying the continuous steady state loads of the associated DC train or subsystem. On float charge, battery cells will receive adequate current to optimally charge the battery. The voltage requirements are based on the nominal design voltage of the battery and are consistent with the minimum float voltage established by the battery manufacturer (~~[2.20] Vpc times the number of connected cells or [127.6]~~ 129 V for the Vital batteries and 124 V for the DG batteries ~~for a 58 cell battery at the battery terminals~~). This voltage maintains the battery plates in a condition that supports maintaining the grid life. ~~[The 7 day Frequency is consistent with manufacturer recommendations.~~

~~OR~~

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

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

SR 3.8.4.2

This SR verifies the design capacity of the vital battery chargers. According to Regulatory Guide 1.32 (Ref. 8), the battery charger supply is recommended to be based on the largest combined demands of the various steady state loads and the charging capacity to restore the battery from the design minimum charge state to the fully charged state, irrespective of the status of the unit during these demand occurrences. The minimum required amperes and duration ensures that these requirements can be satisfied.

This SR provides two options. One option requires that each battery charger be capable of supplying ~~[400]~~ 150 amps at the minimum established float voltage (129 V DC) for ~~[8]~~ 4 hours. The ampere requirements are based on the

BASES

SURVEILLANCE REQUIREMENTS (continued)

output rating of the chargers. The voltage requirements are based on the charger voltage level after a response to a loss of AC power. ~~The time period is sufficient for the charger temperature to have stabilized and to have been maintained for at least [2] hours.~~ 7

The other option requires that each vital battery charger be capable of recharging the battery after a service test coincident with supplying the largest coincident demands of the various continuous steady state loads (irrespective of the status of the plant during which these demands occur). This level of loading may not normally be available following the battery service test and will need to be supplemented with additional loads. The duration for this test may be longer than the charger sizing criteria since the battery recharge is affected by float voltage, temperature, and the exponential decay in charging current. The battery is recharged when the measured charging current is ≤ ~~[~~2~~]~~ amps. 1 2

~~[The Surveillance Frequency is acceptable, given the unit conditions required to perform the test and the other administrative controls existing to ensure adequate charger performance during these [18 month] intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.~~

~~OR~~ 5

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~----------]~~ 4

SR 3.8.4.3

A battery service test is a special test of the battery capability, as found, to satisfy the design requirements (battery duty cycle (2 hours for Vital batteries)) of the DC electrical power system. The discharge rate and test length should correspond to the design duty cycle requirements as specified in Reference 4. 1

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[The Surveillance Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.32 (Ref. 8) and Regulatory Guide 1.129 (Ref. 9), which state that the battery service test should be performed during refueling operations, or at some other outage, with intervals between tests not to exceed [18 months].~~ 5

~~OR~~

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 4

This SR is modified by ~~two~~ three Notes. Note~~1~~s 1 and 2 allow~~s~~ the performance of a modified performance discharge test in lieu of a service test.

The reason for Note ~~2~~ 3 is that performing the Surveillance on in-service vital batteries would perturb the electrical distribution system and challenge safety systems. Therefore, prior to performing a battery service test, the in-service vital battery to be tested is removed from service and the spare vital battery is placed in-service. ~~This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for the assessment.~~ Credit may be taken for unplanned events that satisfy this SR. 6

1

BASES

REFERENCES

1. 10 CFR 50, Appendix A, GDC 17.
2. Regulatory Guide 1.6, March 10, 1971.
3. IEEE-308-~~[1978]~~ 1971. 2
4. U FSAR, Chapter ~~[~~8~~]~~.
5. FSAR, Chapter ~~[~~6~~]~~.
6. FSAR, Chapter ~~[~~15~~]~~. 1 2
7. Regulatory Guide 1.93, December 1974.
8. Regulatory Guide 1.32, February ~~1977~~ 1972. 1
9. Regulatory Guide 1.129, December 1974.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.4 DC Sources - Operating

BASES INSERT 1 sub

BACKGROUND

VKG024

The ~~station~~ DC electrical power system provides the AC emergency power system with control power. It also provides both motive and control power to selected safety related equipment and preferred AC vital ~~bus~~ power (via inverters). As required by 10 CFR 50, Appendix A, GDC 17 (Ref. 1), the DC electrical power system is designed to have sufficient independence, redundancy, and testability to perform its safety functions, assuming a single failure. The DC electrical power system also conforms to the recommendations of Regulatory Guide 1.6 (Ref. 2) and IEEE-308 (Ref. 3). 1 1

125 V Vital
instrument power board
INSERT 2

Vital sub

The [125~~/250]~~ VDC electrical power system consists of two independent and redundant safety related Class 1E DC electrical power ~~subsystems~~ (~~[Train A and Train B]~~). Each ~~subsystem~~ consists of [two] 125 VDC batteries ~~[(each battery [50]% capacity)]~~, the associated battery charger(s) for each battery, and all the associated control equipment and interconnecting cabling. 2 1 1

trains
INSERT 3
train

INSERT 4 [~~The 250 VDC source is obtained by use of the two 125 VDC batteries connected in series.~~ Additionally there is [one] spare battery charger ~~per subsystem~~, which provides backup service in the event that the preferred battery charger is out of service. If the spare battery charger is substituted for one of the preferred battery chargers, then the requirements of independence and redundancy between ~~subsystems~~ are maintained.] 2

INSERT 5
trains

Vital

During normal operation, the [125~~/250]~~ VDC load is powered from the battery chargers with the batteries floating on the system. In case of loss of normal power to the battery charger, the DC load is automatically powered from the station batteries. 2 1

Vital trains

The ~~[Train A and Train B]~~ DC electrical power ~~subsystems~~ provide the control power for its associated Class 1E AC power load group, ~~[4.16]~~ kV ~~switchgear,~~ and [480] V load centers. The DC electrical power ~~subsystems~~ also provide DC electrical power to the inverters, which in turn power the AC vital ~~buses~~. 2 1 2 1 1 1

6.9
Shutdown Boards
trains
instrument power boards

The DC power distribution system is described in more detail in Bases for LCO 3.8.9, "Distribution System - Operating," and LCO 3.8.10, "Distribution Systems - Shutdown."

1 **INSERT 1**

The DC electrical power system consists of the 125 V Vital DC electrical power subsystem and the diesel generator (DG) DC electrical power subsystem.

1 **INSERT 2**

Control power and generator field flashing for each DG is provided by the DG DC electrical power subsystem.

1 **INSERT 3**

Train A is associated with channels I and III and Train B is associated with channels II and IV

2 **INSERT 4**

The 125 V Vital DC electrical power subsystem has manual access to a fifth vital battery system. The fifth 125 VDC Vital Battery System is intended to serve as a replacement for any one of the four 125 VDC vital batteries during testing, maintenance, and outages with no loss of system reliability under any mode of operation.

2 **INSERT 5**

for channels I and II and one spare charger for channels III and IV

BASES

BACKGROUND (continued)

Each 125~~/250~~ Vital VDC battery is separately housed in a ventilated room apart from its charger and distribution centers. Each ~~subsystem~~ train is located in an area separated physically and electrically from the other ~~subsystem~~ train to ensure that a single failure in one ~~subsystem~~ train does not cause a failure in a redundant ~~subsystem~~ train. ~~[~~There is no sharing between redundant Class 1E ~~subsystems~~ trains, such as batteries, battery chargers, or distribution panels.~~]~~ 1 2 1

Each Vital battery has adequate storage capacity to meet the duty cycle(s) discussed in the U FSAR, Chapter ~~[~~8~~]~~ (Ref 4). The battery is designed with additional capacity above that required by the design duty cycle to allow for temperature variations and other factors. 1 2

The batteries for ~~Train A and Train B~~ 125 V Vital DC electrical power ~~subsystems~~ trains are sized to produce required capacity at ~~80~~ 82% of nameplate rating, corresponding to warranted capacity at end of life cycles and the 100% design demand. The minimum design voltage limit is ~~[~~105~~/210~~ V~~]~~. 1 2

The Vital battery cells are of flooded lead acid construction with a nominal specific gravity of ~~[~~1.215~~]~~. This specific gravity corresponds to an open circuit battery voltage of ~~approximately 120~~ 123.78 V for a ~~[58]~~ 60 cell battery (i.e., cell voltage of ~~[2.065]~~ 2.063 volts per cell (Vpc)). The open circuit voltage is the voltage maintained when there is no charging or discharging. ~~Once fully charged with its open circuit voltage ≥ [2.065] Vpc, the battery cell will maintain its capacity for [30] days without further charging per manufacturer's instructions.~~ Optimal long term performance however, is obtained by maintaining a minimum float voltage ~~[2.20 to 2.25] Vpc~~ of 129 V DC. This provides adequate over-potential, which limits the formation of lead sulfate and self discharge. ~~The nominal float voltage of [2.22] Vpc corresponds to a total float voltage output of [128.8] V for a [58] cell battery as discussed in the FSAR, Chapter [8] (Ref. 4).~~ 2 3 2 1

Each ~~Train A and Train B~~ Vital DC electrical power ~~subsystem~~ train battery charger has ample power output capacity for the steady state operation of connected loads required during normal operation, while at the same time maintaining its battery bank fully charged. Each battery charger also has sufficient excess capacity to restore the battery from the design minimum charge to its fully charged state within ~~[24]~~ 12 hours ~~while supplying normal steady state loads discussed in the FSAR, Chapter [8] (Ref. 4)~~ INSERT 6. 1 2 1

~~The~~ Each vital battery charger is normally in the float-charge mode. Float-charge is the condition in which the charger is supplying the connected loads and the battery cells are receiving adequate current to optimally charge the battery. This assures the internal losses of a battery are overcome and the battery is maintained in a fully charged state. 1

1 **INSERT 6**

(with accident loads being supplied) following a 30 minute AC power outage and in approximately 36 hours (with normal loads being supplied) following a 4 hour AC power outage.

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BASES

BACKGROUND (continued)

each Vital battery

When desired, ~~the~~ charger can be placed in the equalize mode. The equalize mode is at a higher voltage than the float mode and charging current is correspondingly higher. The battery charger is operated in the equalize mode after a battery discharge or for routine maintenance. Following a battery discharge, the battery recharge characteristic accepts current at the current limit of the battery charger (if the discharge was significant, e.g., following a battery service test) until the battery terminal voltage approaches the charger voltage setpoint. Charging current then reduces exponentially during the remainder of the recharge cycle. Lead-calcium batteries have recharge efficiencies of greater than 95%, so once at least 105% of the ampere-hours discharged have been returned, the battery capacity would be restored to the same condition as it was prior to the discharge. This can be monitored by direct observation of the exponentially decaying charging current or by evaluating the amp-hours discharged from the battery and amp-hours returned to the battery. 1

INSERT 7

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the U FSAR, Chapter ~~[~~6~~]~~ (Ref. 5) and Chapter ~~[~~15~~]~~ (Ref. 6), assume that Engineered Safety Feature (ESF) systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the DGs, emergency auxiliaries, and control and switching during all MODES of operation. 1 2 1

The OPERABILITY of the DC sources is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining the DC sources OPERABLE during accident conditions in the event of:

a. An assumed loss of all offsite AC power or all onsite AC power and

b. A worst-case single failure.

The DC sources satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

VKG024

The Vital DC electrical power trains ~~subsystems~~, each train ~~subsystem~~ consisting of ~~[~~two~~]~~ batteries, battery charger ~~[~~for each battery~~]~~ and the corresponding control equipment and interconnecting cabling supplying power to the associated board ~~bus~~ within the train ~~subsystem~~ are required to be OPERABLE to ensure the availability of the required power to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. Loss of any DC electrical power train ~~subsystem~~ does not prevent the minimum safety function from being performed (Ref. 4). 1 2 1 2 1 1

INSERT 8 1

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1 **INSERT 7**

Control power for the DGs is provided by the four DG battery systems, one per DG. Each system is comprised of one 125VDC battery, the associated charger for each battery, and all associated control equipment and interconnecting cabling.

1 **INSERT 8**

The DG DC electrical power subsystems, each subsystem consisting of one battery, one battery charger and the corresponding control equipment and interconnecting cabling supply power to the associated DG control circuit are required to be OPERABLE to ensure the availability of the required power to support the operability of the diesel generator.

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BASES

LCO (continued)

VKG024

An OPERABLE Vital DC electrical power ~~subsystem~~ train requires all required batteries and respective chargers to be operating and connected to the associated DC ~~bus~~ board(~~e~~s). 1 1

APPLICABILITY

The DC electrical power sources are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure safe unit operation and to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients and

b. Adequate core cooling is provided, and containment integrity and other vital functions are maintained in the event of a postulated DBA.

The DC electrical power requirements for MODES 5 and 6 are addressed in the Bases for LCO 3.8.5, "DC Sources - Shutdown."

ACTIONS

A.1, A.2, and A.3

Condition A represents one ~~subsystem~~ train with one ~~[~~or two~~]~~ vital battery chargers inoperable (e.g., the voltage limit of SR 3.8.4.1 is not maintained). The ACTIONS provide a tiered response that focuses on returning the battery to the fully charged state and restoring a fully qualified charger to OPERABLE status in a reasonable time period. Required Action A.1 requires that the battery terminal voltage be restored to greater than or equal to the minimum established float voltage within 2 hours. This time provides for returning the inoperable charger to OPERABLE status or providing an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage. Restoring the battery terminal voltage to greater than or equal to the minimum established float voltage provides good assurance that, within ~~[~~12~~]~~ hours, the battery will be restored to its fully charged condition (Required Action A.2) from any discharge that might have occurred due to the charger inoperability. 1 2 2

~~-----REVIEWER'S NOTE-----~~
~~A plant that cannot meet the 12 hour Completion Time due to an inherent battery charging characteristic can propose an alternate time equal to 2 hours plus the time experienced to accomplish the exponential charging current portion of the battery charge profile following the service test (SR 3.8.4.3).~~
~~----------~~ 4

BASES

ACTIONS (continued)

A discharged battery having terminal voltage of at least the minimum established float voltage indicates that the battery is on the exponential charging current portion (the second part) of its recharge cycle. The time to return a battery to its fully charged state under this condition is simply a function of the amount of the previous discharge and the recharge characteristic of the battery. Thus there is good assurance of fully recharging the battery within ~~[~~12~~]~~ hours, avoiding a premature shutdown with its own attendant risk.

If established battery terminal float voltage cannot be restored to greater than or equal to the minimum established float voltage within ~~[~~2~~]~~ hours, and the charger is not operating in the current-limiting mode, a faulty charger is indicated. A faulty charger that is incapable of maintaining established battery terminal float voltage does not provide assurance that it can revert to and operate properly in the current limit mode that is necessary during the recovery period following a battery discharge event that the DC system is designed for.

If the charger is operating in the current limit mode after 2 hours that is an indication that the battery is partially discharged and its capacity margins will be reduced. The time to return the battery to its fully charged condition in this case is a function of the battery charger capacity, the amount of loads on the associated DC system, the amount of the previous discharge, and the recharge characteristic of the battery. The charge time can be extensive, and there is not adequate assurance that it can be recharged within ~~[~~12~~]~~ hours (Required Action A.2).

2

VKG018

Required Action A.2 requires that the battery float current be verified as less than or equal to ~~[~~2~~]~~ amps. This indicates that, if the battery had been discharged as the result of the inoperable battery charger, it is now fully capable of supplying the maximum expected load requirement. The ~~[~~2~~]~~ amp value is based on returning the battery to 98 ~~[95]~~% charge and assumes a ~~[~~5~~]~~% design margin for the battery. If at the expiration of the initial ~~[~~12~~]~~ hour period the battery float current is not less than or equal to ~~[~~2~~]~~ amps this indicates there may be additional battery problems and the battery must be declared inoperable.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Any licensee wishing to adopt Completion Time greater than 72 hours for Required Action A.3 will need to demonstrate that the longer Completion Time is appropriate for the plant in accordance with the guidance in Regulatory Guide (RG) 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," and RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis."~~

4

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BASES

ACTIONS (continued)

~~Alternatively, a 7 day Completion Time can be justified by an acceptable method, such as a regulatory commitment that an alternate means to charge the batteries will be available that is capable of being supplied power from a power source that is independent of the offsite power supply. Otherwise, the 72 hour Completion Time must be adopted.~~ 4

~~---~~

Required Action A.3 limits the restoration time for the inoperable vital battery charger to ~~[72] hours~~ 7 days. This action is applicable if an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage has been used (e.g., ~~balance of plant non-Class 1E~~ fifth battery charger). The ~~[72] hour~~ 7 day Completion Time reflects a reasonable time to effect restoration of the qualified battery charger to OPERABLE status. 1 2 1 2

~~B.1~~

~~--------------------------------REVIEWER'S NOTES-------------------------------~~

~~1. The 2 hour Completion Times of Required Actions B.1 and C.1 are in brackets. Any licensee wishing to request a longer Completion Time will need to demonstrate that the longer Completion Time is appropriate for the plant in accordance with the guidance in RG 1.177 and RG 1.174.~~

~~2. Condition B is included if Required Action B.1 (one [or two] batter[y][ies on one subsystem] inoperable) and Required Action C.1 (one DC electrical power subsystem inoperable for reasons other than Condition A [or B]) would have different Completion Times. If the plant design supports different Completion Times when a battery is inoperable but the charger is OPERABLE, then Condition B is used. If not, Condition B is deleted and only Condition C is used.~~ 6

~~---~~

~~Condition B represents one subsystem with one [or two] batter[y][ies] inoperable. With one [or two] batter[y][ies] inoperable, the DC bus is being supplied by the OPERABLE battery charger[s]. Any event that results in a loss of the AC bus supporting the battery charger[s] will also result in loss of DC to that subsystem. Recovery of the AC bus, especially if it is due to a loss of offsite power, will be hampered by the fact that many of the components necessary for the recovery (e.g., diesel generator control and field flash, AC load shed and diesel generator output circuit breakers, etc.) likely rely upon the batter[y][ies]. In addition the energization transients of any DC loads that are beyond the capability of the battery charger[s] and normally require the assistance of the~~

BASES

ACTIONS (continued)

~~batter[y][ies] will not be able to be brought online. The [2] hour limit allows sufficient time to effect restoration of an inoperable battery given that the majority of the conditions that lead to battery inoperability (e.g., loss of battery charger, battery cell voltage less than [2.07] V, etc.) are identified in Specifications 3.8.4, 3.8.5, and 3.8.6 together with additional specific Completion Times.~~ 6

~~C~~B.1 6

Condition ~~C~~ B represents one ~~subsystem~~ vital DC train with a loss of ability to completely respond to an event, and a potential loss of ability to remain energized during normal operation. It is therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete loss of DC power to the affected ~~subsystem~~ train. The 2 hour limit is consistent with the allowed time for an inoperable vital DC distribution subsystem.

If one of the required vital DC electrical power ~~subsystems~~ trains is inoperable for reasons other than Condition A ~~or B~~ (e.g., inoperable battery charger ~~and associated inoperable battery~~), the remaining vital DC electrical power ~~subsystem~~ train has the capacity to support a safe shutdown and to mitigate an accident condition. Since a subsequent worst~~-~~ case single failure could, however, result in the loss of the minimum necessary vital DC electrical ~~subsystems~~ trains to mitigate a worst case accident, continued power operation should not exceed 2 hours. The 2 hour Completion Time is based on Regulatory Guide 1.93 (Ref. 7) and reflects a reasonable time to assess unit status as a function of the inoperable vital DC electrical power ~~subsystem~~ train and, if the vital DC electrical power ~~subsystem~~ train is not restored to OPERABLE status, to prepare to effect an orderly and safe unit shutdown. 6 1

~~D~~C.1 and ~~D~~C.2 6

If the inoperable vital DC electrical power ~~subsystem~~ train cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems. The Completion Time to bring the unit to MODE 5 is consistent with the time required in Regulatory Guide 1.93 (Ref. 7).

INSERT 9 1

1 **INSERT 9**

D.1

If the DG DC electrical power subsystem(s) is inoperable, the associated DG(s) may be incapable of performing their intended function and must be immediately declared inoperable. This declaration also requires entry into applicable Conditions and Required Actions for inoperable DG(s), LCO 3.8.1, "AC Sources – Operating."

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.1

Verifying battery terminal voltage while on float charge for the batteries helps to ensure the effectiveness of the battery chargers, which support the ability of the batteries to perform their intended function. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery and maintain the battery in a fully charged state while supplying the continuous steady state loads of the associated train or DC subsystem. On float charge, battery cells will receive adequate current to optimally charge the battery. The voltage requirements are based on the nominal design voltage of the battery and are consistent with the minimum float voltage established by the battery manufacturer (~~[2.20] Vpc times the number of connected cells or [127.6]~~ 129 V for the Vital batteries and 124 V for the DG batteries ~~for a 58 cell battery at the battery terminals~~). This voltage maintains the battery plates in a condition that supports maintaining the grid life. ~~[The 7 day Frequency is consistent with manufacturer recommendations.~~

~~OR~~

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

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

SR 3.8.4.2

This SR verifies the design capacity of the vital battery chargers. According to Regulatory Guide 1.32 (Ref. 8), the battery charger supply is recommended to be based on the largest combined demands of the various steady state loads and the charging capacity to restore the battery from the design minimum charge state to the fully charged state, irrespective of the status of the unit during these demand occurrences. The minimum required amperes and duration ensures that these requirements can be satisfied.

This SR provides two options. One option requires that each battery charger be capable of supplying ~~[400]~~ 150 amps at the minimum established float voltage (129 V DC) for ~~[8]~~ 4 hours. The ampere requirements are based on the

BASES

SURVEILLANCE REQUIREMENTS (continued)

output rating of the chargers. The voltage requirements are based on the charger voltage level after a response to a loss of AC power. ~~The time period is sufficient for the charger temperature to have stabilized and to have been maintained for at least [2] hours.~~ 7

The other option requires that each vital battery charger be capable of recharging the battery after a service test coincident with supplying the largest coincident demands of the various continuous steady state loads (irrespective of the status of the plant during which these demands occur). This level of loading may not normally be available following the battery service test and will need to be supplemented with additional loads. The duration for this test may be longer than the charger sizing criteria since the battery recharge is affected by float voltage, temperature, and the exponential decay in charging current. The battery is recharged when the measured charging current is ≤ ~~[~~2~~]~~ amps. 1 2

~~[The Surveillance Frequency is acceptable, given the unit conditions required to perform the test and the other administrative controls existing to ensure adequate charger performance during these [18 month] intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.~~ 5

~~OR~~

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

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~------------------------------------]~~ 4

SR 3.8.4.3

A battery service test is a special test of the battery capability, as found, to satisfy the design requirements (battery duty cycle (2 hours for Vital batteries)) of the DC electrical power system. The discharge rate and test length should correspond to the design duty cycle requirements as specified in Reference 4. 1

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SURVEILLANCE REQUIREMENTS (continued)

~~[The Surveillance Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.32 (Ref. 8) and Regulatory Guide 1.129 (Ref. 9), which state that the battery service test should be performed during refueling operations, or at some other outage, with intervals between tests not to exceed [18 months].~~ 5

~~OR~~

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ 4

This SR is modified by ~~two~~ three Notes. Note ~~1~~ s 1 and 2 allow~~s~~ the performance of a modified performance discharge test in lieu of a service test.

The reason for Note ~~2~~ 3 is that performing the Surveillance on in-service vital batteries would perturb the electrical distribution system and challenge safety systems. Therefore, prior to performing a battery service test, the in-service vital battery to be tested is removed from service and the spare vital battery is placed in-service. ~~This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for the assessment.~~ Credit may be taken for unplanned events that satisfy this SR. 6

1

BASES

REFERENCES

1. 10 CFR 50, Appendix A, GDC 17.
2. Regulatory Guide 1.6, March 10, 1971.
3. IEEE-308-~~[1978]~~ 1971. 2
4. U FSAR, Chapter ~~[~~8~~]~~.
5. U FSAR, Chapter ~~[~~6~~]~~.
6. U FSAR, Chapter ~~[~~15~~]~~. 1 2
7. Regulatory Guide 1.93, December 1974.
8. Regulatory Guide 1.32, February ~~1977~~ 1972. 1
9. Regulatory Guide 1.129, December 1974.

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.4 BASES, DC SOURCES - OPERATING

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.
2. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.
3. These battery design values have been deleted because they are more specific than necessary and are not required to provide sufficient background for this Specification.
4. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.
5. ISTS SR 3.8.4.1, ISTS SR 3.8.4.2, and ISTS SR 3.8.4.3 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Therefore, the Frequency for ITS SR 3.8.4.1, SR 3.8.4.2, and SR 3.8.4.3 is "In accordance with the Surveillance Frequency Control Program."
6. Changes have been made to be consistent with changes made to the Specifications.
7. Removed information related to the basis for the time that a battery charger is required to be capable of supplying 150 amps at the minimum established float voltage, as the SQN current licensing basis does not include time for the charger temperature to stabilize.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.4, DC SOURCES - OPERATING

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 5

ITS 3.8.5, DC SOURCES - SHUTDOWN

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS

A01

ITS 3.8.5

ELECTRICAL POWER SYSTEMS

SHUTD0WN

Add proposed LCO 3.8.5

A02

LIMITING CONDITION FOR OPERATION

LCO 3.8.5

3.8.1.2 ~~As a minimum, the following A.C. electrical power sources shall be OPERABLE~~:

a. One circuit between the offsite transmission network and the onsite Class 1E distribution system, and

b. Diesel generator sets 1A-A and 2A-A or 1B-B and 2B-B each with:

1. Two diesels driving a common generator,

2. Two engine-mounted fuel tanks containing a minimum volume of 250 gallons of fuel per tank,

See ITS 3.8.2

3. A fuel storage system containing a minimum volume of 62,000 gallons of fuel,

See ITS 3.8.3

4. A fuel transfer pump, and

See ITS 3.8.2

LA01

LCO 3.8.5

5. ~~A separate~~ 125-volt D.C. distribution panel, ~~125-volt D.C. battery bank and associated charger~~.

See ITS 3.8.10

Applicability

APPLICABILITY: MODES 5 and 6.

, During movement of irradiated fuel assemblies.

M01

ACTION:

With less than the above minimum required A.C. electrical power sources OPERABLE, suspend all operations involving CORE ALTERATIONS and suspend operations involving positive reactivity additions that could result in loss of required shutdown margin or boron concentration.

See ITS 3.8.2

Add proposed ACTION B

A03

SURVEILLANCE REQUIREMENTS

SR 3.8.5.2

4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the Surveillance Requirements of 4.8.1.1.1 and 4.8.1.1.2 (except for requirement 4.8.1.1.2.a.5), and 4.8.1.1.3.

See ITS 3.8.2

Add proposed SR 3.8.4.3 for DG batteries

M02

ITS

A01

ITS 3.8.5

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - SHUTDOWN

Add proposed LCO 3.8.5

A02

LIMITING CONDITION FOR OPERATION

See ITS 3.8.10

LCO 3.8.5 3.8.2.4 ~~As a minimum, the following D.C. electrical equipment~~ and boards ~~shall be~~ energized and ~~OPERABLE~~:

2 - 125-volt D.C. boards either I and III or II and IV, and

See ITS 3.8.10

LCO 3.8.5 ~~2* - 125-volt battery banks and chargers, one associated with each operable D.C. board~~

LA01

Applicability APPLICABILITY: MODES 5 and 6.

, During movement of irradiated fuel assemblies.

M01

ACTION:

Add ACTIONS Note

M01

With less than the above complement of D.C. equipment and board OPERABLE~~, establish CONTAINMENT INTEGRITY within 8 hours.~~

See ITS 3.8.10

Add proposed ACTION A

L01

SURVEILLANCE REQUIREMENTS

4.8.2.4.1 The above required 125-volt D.C. vital battery boards shall be determined OPERABLE and energized at least once per 7 days by verifying correct breaker alignment and indicated power availability with an overall battery voltage of greater than or equal to 125 volts.

See ITS 3.8.10

SR 3.8.5.1 4.8.2.4.2 The above required 125-volt D.C. vital battery banks and chargers shall be demonstrated OPERABLE per Surveillance Requirement 4.8.2.3.2.

~~* D.C. Battery Bank V may be substituted for any other Battery Bank.~~

LA01

ITS

A01

ITS 3.8.5

ELECTRICAL POWER SYSTEMS

SHUTDOWN

Add proposed LCO 3.8.5

A02

LIMITING CONDITION FOR OPERATION

LCO 3.8.5

3.8.1.2 ~~As a minimum, the following A.C. electrical power sources shall be OPERABLE:~~

a. One circuit between the offsite transmission network and the onsite Class 1E distribution system, and

b. Diesel generator sets 1A-A and 2A-A or 1B-B and 2B-B each with:

I. Two diesels driving a common generator,

2. Two engine-mounted fuel tanks containing a minimum volume of 250 gallons of fuel per tank,

See ITS 3.8.2

3. A fuel storage system containing a minimum volume of 62,000 gallons of fuel,

See ITS 3.8.3

4. A fuel transfer pump, and

See ITS 3.8.2

LA01

LCO 3.8.5

5. ~~A separate~~ 125-volt D.C. distribution panel, ~~125-volt D.C. battery bank and associated charger.~~

See ITS 3.8.10

Applicability

APPLICABILITY: MODES 5 and 6.

,During movement of irradiated fuel assemblies

M01

ACTION:

With less than the above minimum required A.C. electrical power sources OPERABLE, suspend all operations involving CORE ALTERATIONS and suspend operations involving positive reactivity additions that could result in loss of required shutdown margin or boron concentration.

See ITS 3.8.2

Add proposed ACTION

A03

SURVEILLANCE REQUIREMENTS

SR 3.8.5.2

4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the Surveillance Requirements of 4.8.1.1.1 and 4.8.1.1.2 (except for requirement 4.8.1.1.2.a.5), and 4.8.1.1.3.

See ITS 3.8.2

Add proposed SR 3.8.4.3 for DG batteries

M02

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - SHUTDOWN

LIMITING CONDITION FOR OPERATION

Add proposed LCO 3.8.5 A02

LCO 3.8.5 3.8.2.4 ~~As a minimum, the following D.C. electrical equipment~~ and boards ~~shall be and~~ OPERABLE and energized: See ITS 3.8.10

2 - 125-volt D.C. boards either I and III or II and IV, and See ITS 3.8.10

LCO 3.8.5 ~~2* - 125-volt battery banks and chargers, one associated with each operable D.C. board~~ LA01

Applicability APPLICABILITY: MODES 5 and 6. ,During movement of irradiated fuel assemblies M01

ACTION: Add ACTIONS Note M01

With less than the above complement of D.C. equipment and board OPERABLE and energized, ~~establish CONTAINMENT INTEGRITY within 8 hours.~~ See ITS 3.8.10

Add proposed ACTION A L01

SURVEILLANCE REQUIREMENTS

4.8.2.4.1 The above required 125-volt D.C. vital battery boards shall be determined OPERABLE and energized at least once per 7 days by verifying correct breaker alignment and voltage on the board with an overall battery voltage of greater than or equal to 125 volts. See ITS 3.8.10

SR 3.8.5.1 4.8.2.4.2 The above required 125-volt D.C. vital battery banks and chargers shall be demonstrated OPERABLE per Surveillance Requirement 4.8.2.3.2.

~~* D.C. Battery Bank V may be substituted for any other Battery Bank.~~ LA01

DISCUSSION OF CHANGES
ITS 3.8.5, DC SOURCES - SHUTDOWN

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications - Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.8.1.2 requires, in part, a separate 125-volt DC battery bank and associated charger for each required diesel generator (DG). CTS 3.8.2.4 requires, in part, two 125-volt DC battery banks and chargers, one associated with each OPERABLE DC board. ITS LCO 3.8.5 requires one vital DC electrical power train to be OPERABLE and the DG DC electrical power subsystems required to support one train of DGs to be OPERABLE. This changes the CTS by combining the requirements for the vital batteries, vital battery chargers, DG batteries, and DG battery chargers into one separate Specification.

The change is acceptable because no changes are made to CTS requirements. The change in format from the CTS to the ITS maintains the technical requirements. This change is designated as administrative because it does not result in technical changes to the CTS.

A03 CTS 3.8.1.2.b.5 requires, in part, DG sets with a separate and independent 125-volt DC battery bank and associated charger for the DG to be OPERABLE. ITS LCO 3.8.5 requires, in part, the required DG DC electrical power subsystems to be OPERABLE to support DG OPERABILITY. ITS 3.8.5 ACTION B requires for an inoperable DG DC electrical power subsystem to immediately declare the associated DG inoperable. This changes the CTS by specifying an Action to declare a DG inoperable if its associated DC subsystem is inoperable.

The purpose of CTS 3.8.1.2 is to specify the requirements for DG OPERABILITY. ITS 3.8.5 ACTION B preserves the intent of CTS 3.8.1.2 by declaring the DG inoperable if its associated DC subsystem is inoperable. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.8.1.2 and CTS 3.8.2.4 is applicable in MODES 5 and 6. ITS 3.8.5 is applicable in MODES 5 and 6 and during movement of irradiated fuel assemblies. A Note has been added to the ACTIONS which states that LCO 3.0.3 is not applicable. This changes the CTS by adding the Applicability of during movement of irradiated fuel assemblies and adds the Note to the ACTIONS stating that LCO 3.0.3 is not applicable.

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DISCUSSION OF CHANGES
ITS 3.8.5, DC SOURCES - SHUTDOWN

This change is acceptable because the proposed requirements are necessary to ensure the DC electrical power sources are OPERABLE to support equipment required to be OPERABLE during movement of irradiated fuel assemblies. Movement of fuel normally occurs during MODES 5 and 6, however, it can also occur outside of containment in other plant MODES (MODES 1, 2, 3, and 4) or other conditions (i.e., reactor defueled). This Specification is needed to ensure the appropriate DC electrical power source requirements are specified during fuel handling and ensure the appropriate actions are taken (i.e., stop fuel movement) when the minimum electrical supplies are not available (See DOC L01 for the changes to the Required Actions). This change adds a clarification Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODES 5 or 6, LCO 3.0.3 is not applicable and would not specify any action. If moving irradiated fuel assemblies while in MODES 1, 2, 3, or 4, the fuel movement is independent of reactor operations and the inability to suspend movement in accordance with the ITS 3.8.5 Required Actions would not be sufficient reason to require a reactor shutdown. This Note has been added for clarification and is necessary since defaulting to LCO 3.0.3 would require the reactor to be shutdown, but would not require suspension of activities with a potential for releasing radioactive materials. This change is designated as more restrictive because the ITS requires the equipment to be OPERABLE during movement of irradiated fuel assemblies both inside and outside of the containment, not only in MODES 5 and 6.

M02 The CTS 4.8.1.2 provides testing requirements to verify OPERABILITY of DG batteries and chargers in MODES 5 and 6 by verifying total battery terminal voltage is within limits. ITS SR 3.8.4.1 provides a similar test. In addition, ITS SR 3.8.4.3 requires verification that each DG battery can supply and maintain the required emergency loads and any connected non-safety loads for the design duty cycle when subjected to a battery service test. ITS SR 3.8.5.1 adds the requirement that these new surveillance requirements are also applicable in MODES 5 and 6 and during movement of irradiated fuel. This changes the CTS by requiring an additional battery Surveillance Requirement in MODES 5 and 6 and during movement of irradiated fuel.

The purpose of the additional Surveillance Requirement is to ensure each required DG battery is capable of adequately supplying its associated loads during postulated accidents. This change is acceptable because the new SR provides additional assurance that the DG batteries remain OPERABLE to perform their safety function. This change is designated as more restrictive because it adds an SR to the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.8.2.4 states, in part, two 125-volt battery banks and

DISCUSSION OF CHANGES
ITS 3.8.5, DC SOURCES - SHUTDOWN

chargers (one associated with each OPERABLE DC board) are required to support either channels I and III (Train A) or channels II and IV (Train B). Footnote (*) allows battery bank V to be substituted for any other battery bank. CTS 3.8.1.2 states, in part, a separate 125-volt DC battery bank and associated charger shall be OPERABLE for the required Diesel Generator sets 1A-A and 2A-A or 1B-B and 2B-B. ITS LCO 3.8.5 requires one vital DC electrical power train and the DG DC electrical power subsystems required to support one train of DGs to be OPERABLE. This changes the CTS by moving the details of the DG DC electrical power subsystems and vital DC electrical power subsystems from the CTS to the Bases.

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

<u>LESS RESTRICTIVE CHANGES</u>

L01 *(Category 4 – Relaxation of Required Action)* With less than the minimum complement of DC sources OPERABLE, CTS 3.8.2.4 ACTION requires the establishment of containment integrity within 8 hours. ITS 3.8.5 ACTION A requires suspending movement of irradiated fuel assemblies, suspending operations involving a positive reactivity addition that could result in the loss of required SDM or boron concentration, and the initiation of actions to restore required DC electrical power sources to operable status. This changes the CTS by replacing the existing Required Action to restore containment integrity with Actions that will prevent a fuel handling accident from occurring and Actions that will ensure the reactor remains subcritical.

The purpose of the CTS 3.8.2.4 Action is to isolate the containment to minimize any release from the plant if an event were to occur during shutdown conditions with no DC Sources OPERABLE. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The purposed Required Actions require the suspension of movement of irradiated fuel assemblies, suspension of operations involving positive reactivity additions that could result in the loss of required SDM or boron concentration, and the initiation of actions to restore required DC electrical power source to OPERABLE status. Suspending the movement of irradiated fuel assemblies will prevent a fuel handling accident from occurring and suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit will ensure the reactor remains subcritical. The actions to restore the required DC

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DISCUSSION OF CHANGES
ITS 3.8.5, DC SOURCES - SHUTDOWN

electrical power source to OPERABLE status will ensure the plant is placed in compliance with the LCO in an expeditious manner. The proposed actions will immediately minimize the potential for any accident releases outside of the containment and are considered acceptable in lieu of the current action to restore containment integrity within 8 hours. The actions may be considered somewhat more restrictive since immediate action is required, however, is classified as less restrictive since the current actions to restore containment integrity have been deleted. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources - Shutdown

3.8.1.2.b.5, 3.8.2.4

LCO 3.8.5 ~~[DC electrical power subsystem shall be OPERABLE to support the DC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems - Shutdown."]~~ 1

~~[~~One Vital DC electrical power ~~subsystem~~ INSERT 1 shall be OPERABLE.~~]~~ 2 3

~~------REVIEWER'S NOTE------~~
~~This second option above applies for plants having a pre-ITS licensing basis (CTS) for electrical power requirements during shutdown conditions that required only one DC electrical power subsystem to be OPERABLE. Action A the bracketed optional wording in Condition B are also eliminated for this case. The first option above is adopted for plants that have a CTS requiring the same level of DC electrical power subsystem support as is required for power operating conditions.~~
~~-----------~~ 1

Applicability DOC M01

APPLICABILITY: MODES 5 and 6,
During movement of ~~[recently]~~ irradiated fuel assemblies. 4

ACTIONS

-----NOTE-----

DOC M01

LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~[A. One [or two] battery charger[s on one subsystem] inoperable.~~ ~~AND~~ ~~The redundant subsystem battery and charger[s] OPERABLE.~~	~~A.1 Restore battery terminal voltage to greater than or equal to the minimum established float voltage.~~ ~~AND~~ ~~A.2 Verify battery float current ≤ [2] amps.~~ ~~AND~~	~~2 hours~~ ~~Once per [12] hours~~

1

2 **INSERT 1**

3.8.1.2.b.5 train and the diesel generator (DG) DC electrical power subsystems required to support one train of DGs

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	~~A.3 Restore battery charger[s] to OPERABLE status.~~	~~[72] hours]~~ 1
DOC L01 A ~~B~~. One ~~[or more]~~ required vital DC electrical power train ~~subsystem[s]~~ inoperable ~~[for reasons other than Condition A~~. ~~OR~~ ~~Required Actions and associated Completion Time of Condition A not met].~~ INSERT 2	~~B.1 Declare affected required feature(s) inoperable.~~ ~~OR~~ ~~B.2.1~~ A.1 Suspend movement of ~~[recently]~~ irradiated fuel assemblies. AND ~~B.2.2~~ A.2 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration. AND ~~B.2.3~~ A.3 Initiate action to restore required DC electrical power train ~~subsystems~~ to OPERABLE status.	~~Immediately~~ 1 4 5 3 Immediately 5 4 1 Immediately 5 Immediately 5 3 6

6 **INSERT 2**

DOC A03	B. One or more required DG DC electrical power subsystem(s) inoperable.	B.1 Declare associated DG(s) inoperable.	Immediately

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SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
4.8.1.2, 4.8.2.4.2, DOC M02 SR 3.8.5.1	~~-----NOTE-----~~ ~~The following SRs are not required to be performed: SR 3.8.4.2 and SR 3.8.4.3.~~ ~~----------~~ For DC sources required to be OPERABLE, the following SRs are applicable: SR 3.8.4.1 SR 3.8.4.2 SR 3.8.4.3	In accordance with applicable SRs 7

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources - Shutdown

3.8.1.2.b.5, 3.8.2.4

LCO 3.8.5 ~~[DC electrical power subsystem shall be OPERABLE to support the DC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems - Shutdown."]~~ 1

Vital INSERT 1

~~[~~One DC electrical power ~~subsystem~~ shall be OPERABLE.~~]~~ 2 3

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~This second option above applies for plants having a pre-ITS licensing basis (CTS) for electrical power requirements during shutdown conditions that required only one DC electrical power subsystem to be OPERABLE. Action A the bracketed optional wording in Condition B are also eliminated for this case. The first option above is adopted for plants that have a CTS requiring the same level of DC electrical power subsystem support as is required for power operating conditions.~~
~~---~~ 1

Applicability DOC M01

APPLICABILITY: MODES 5 and 6,
During movement of ~~[recently]~~ irradiated fuel assemblies. 4

ACTIONS

---NOTE---

DOC M01 LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~[A. One [or two] battery charger[s on one subsystem] inoperable.~~ ~~AND~~ ~~The redundant subsystem battery and charger[s] OPERABLE.~~	~~A.1 Restore battery terminal voltage to greater than or equal to the minimum established float voltage.~~ ~~AND~~ ~~A.2 Verify battery float current ≤ [2] amps.~~ ~~AND~~	~~2 hours~~ ~~Once per [12] hours~~

1

2 **INSERT 1**

3.8.1.2.b.5 train and the diesel generator (DG) DC electrical power subsystems required to support one train of DGs

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	~~A.3 Restore battery charger[s] to OPERABLE status.~~	~~[72] hours]~~ 1
DOC L01 A ~~B~~. One ~~[or more]~~ required vital DC electrical power train ~~subsystem[s]~~ inoperable ~~[for reasons other than Condition A~~. ~~OR~~ ~~Required Actions and associated Completion Time of Condition A not met].~~ INSERT 2	~~B.1 Declare affected required feature(s) inoperable.~~ ~~OR~~ A.1 ~~B.2.1~~ Suspend movement of ~~[recently]~~ irradiated fuel assemblies. AND A.2 ~~B.2.2~~ Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration. AND A.3 ~~B.2.3~~ Initiate action to restore required DC electrical power train ~~subsystems~~ to OPERABLE status.	~~Immediately~~ 1 4 5 3 Immediately 5 4 1 Immediately 5 Immediately 5 3 6

6 **INSERT 2**

DOC A03	B. One or more required DG DC electrical power subsystem(s) inoperable.	B.1 Declare associated DG(s) inoperable.	Immediately

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.8.1.2, 4.8.2.4.2, DOC M02 SR 3.8.5.1	~~-------NOTE-------~~ ~~The following SRs are not required to be performed: SR 3.8.4.2 and SR 3.8.4.3.~~ ~~----------------~~ For DC sources required to be OPERABLE, the following SRs are applicable: SR 3.8.4.1 SR 3.8.4.2 SR 3.8.4.3	In accordance with applicable SRs 7

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JUSTIFICATION FOR DEVIATIONS
ITS 3.8.5, DC SOURCES - SHUTDOWN

1. The bracketed optional ISTS LCO 3.8.5 and "Reviewers Note" have been deleted since the current licensing basis only requires one DC electrical power subsystem to be OPERABLE. ISTS 3.8.5 ACTION A has been deleted since only one required DC electrical power train is specified in the LCO. This allowance is only acceptable if the first option of the LCO is used. The subsequent Condition and Required Actions have been renumbered and modified, as applicable.

2. The second option of ISTS LCO 3.8.5 has been modified to specify one vital DC electrical power train and the diesel generator (DG) electrical power subsystems required to support one train of DGs is required to be OPERABLE. This change is consistent with the current licensing basis whereby each DG is supported by a separate DG DC electrical power subsystem instead of relying on the vital DC electrical power distribution subsystem.

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

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

5. ISTS 3.8.5 Required Action B.1 provides an option to declare affected required feature(s) inoperable with one or more required DC electrical power subsystems inoperable. The ISTS Bases states this is acceptable because the remaining train with DC power available may be capable of supporting sufficient features to allow continued fuel movement. Thus this Required Action assumes two DC power sources are required by the LCO. This option has been deleted since only one train of vital DC electrical power is required to be OPERABLE by the LCO. Subsequent Required Actions have been renumbered and modified, as applicable.

6. ITS ACTION B has been added to ISTS 3.8.5 to ensure that a DG is declared inoperable if its associated DC electrical power subsystem is inoperable.

7. The allowance to not perform SR 3.8.4.2 and SR 3.8.4.3 has been deleted. The Sequoyah design includes a spare vital battery and charger per train. Therefore, the battery and charger SRs can be performed without making the train inoperable for the entire duration of the test.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.5 DC Sources - Shutdown

BASES

BACKGROUND	A description of the DC sources is provided in the Bases for LCO 3.8.4, "DC Sources - Operating."

APPLICABLE SAFETY ANALYSES

U

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter ~~[~~6~~]~~ (Ref. 1) and Chapter ~~[~~15~~]~~ (Ref. 2), assume that Engineered Safety Feature systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the diesel generators, emergency auxiliaries, and control and switching during all MODES of operation. 1 2

The OPERABILITY of the DC subsystems is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum DC electrical power sources during MODES 5 and 6 and during movement of ~~[recently]~~ irradiated fuel assemblies ensures that: 2

a. The unit can be maintained in the shutdown or refueling condition for extended periods,

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status, and

c. Adequate DC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident ~~[involving handling recently irradiated fuel. Due to radioactive decay, DC electrical power is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)].~~ 2

In general, when the unit is shut down, the Technical Specifications requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents. However, assuming a single failure and concurrent loss of all offsite or all onsite power is not required. The rationale for this is based on the fact that many DBAs that are analyzed in MODES ~~[~~1, 2, 3, and 4~~]~~ have no specific analyses in MODES ~~[~~5 and 6~~]~~ because the energy contained within the reactor pressure 2

APPLICABLE SAFETY ANALYSES (continued)

boundary, reactor coolant temperature and pressure, and the corresponding stresses result in the probabilities of occurrence being significantly reduced or eliminated, and in minimal consequences. These deviations from DBA analysis assumptions and design requirements during shutdown conditions are allowed by the LCO for required systems.

The shutdown Technical Specification requirements are designed to ensure that the unit has the capability to mitigate the consequences of certain postulated accidents. Worst case DBAs which are analyzed for operating MODES are generally viewed not to be a significant concern during shutdown MODES due to the lower energies involved. The Technical Specifications therefore require a lesser complement of electrical equipment to be available during shutdown than is required during operating MODES. More recent work completed on the potential risks associated with shutdown, however, have found significant risk associated with certain shutdown evolutions. As a result, in addition to the requirements established in the Technical Specifications, the industry has adopted NUMARC 91-06, "Guidelines for Industry Actions to Assess Shutdown Management," as an Industry initiative to manage shutdown tasks and associated electrical support to maintain risk at an acceptable low level. This may require the availability of additional equipment beyond that required by the shutdown Technical Specifications.

The DC sources satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

One vital INSERT 1

~~The~~ DC electrical power ~~subsystems, [each required] [~~the required~~]~~ ~~[subsystem~~ consisting of two batteries, one battery charger per battery, and the corresponding control equipment and interconnecting cabling within the ~~subsystem~~, ~~[are]~~ ~~[~~is~~]~~ required to be OPERABLE ~~to support [required] [one] subsystem[s] of the distribution systems [required OPERABLE by LCO 3.8.10, "Distribution Systems - Shutdown."]~~ This ensures the availability of sufficient DC electrical power sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents ~~[involving handling recently irradiated fuel]~~). 1 2

train

train

INSERT 2 3

APPLICABILITY

The DC electrical power sources required to be OPERABLE in MODES 5 and 6, and during movement of ~~[recently]~~ irradiated fuel assemblies, provide assurance that: 2

a. Required features to provide adequate coolant inventory makeup are available for the irradiated fuel assemblies in the core,

1

INSERT 1

train consists of two channels. Train A consists of channels I and III and Train B consists of channels II and IV.

3

INSERT 2

Control power for the DGs is provided by four DG DC electrical power subsystems, one per DG. Each DG DC electrical power subsystem is comprised of one 125 VDC battery, an associated charger, and associated control equipment and interconnecting cabling. One DG DC electrical power subsystem is required to be OPERABLE for each required DG.

BASES

APPLICABILITY (continued)

b. Required features needed to mitigate a fuel handling accident ~~[involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~ are available, 2

c. Required features necessary to mitigate the effects of events that can lead to core damage during shutdown are available, and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The DC electrical power requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.4.

ACTIONS

LCO 3.0.3 is not applicable while in MODE 5 or 6. However, since irradiated fuel assembly movement can occur in MODE 1, 2, 3, or 4, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operations. Entering LCO 3.0.3, while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

~~A.1, A.2, and A.3~~ 4

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~ACTION A is included only when plant-specific implementation of LCO 3.8.5 includes the potential to require both subsystems of the DC System to be OPERABLE. If plant-specific implementation results in LCO 3.8.5 requiring only one subsystem of the DC System to be OPERABLE, then ACTION A is omitted and ACTION B is renumbered as ACTION A.~~ 5
~~---~~

~~Condition A represents one subsystem with one [or two] battery chargers inoperable (e.g., the voltage limit of SR 3.8.4.1 is not maintained). The ACTIONS provide a tiered response that focuses on returning the battery to the fully charged state and restoring a fully qualified charger to OPERABLE status in a reasonable time period. Required Action A.1 requires that the battery terminal voltage be restored to greater than or equal to the minimum established float voltage within 2 hours. This time provides for returning the inoperable charger to OPERABLE status or providing an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage. Restoring~~ 4

BASES

ACTIONS (continued)

~~the battery terminal voltage to greater than or equal to the minimum established float voltage provides good assurance that, within [12] hours, the battery will be restored to its fully charged condition (Required Action A.2) from any discharge that might have occurred due to the charger inoperability.~~ 4

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~A plant that cannot meet the 12 hour Completion Time due to an inherent battery charging characteristic can propose an alternate time equal to 2 hours plus the time experienced to accomplish the exponential charging current portion of the battery charge profile following the service test (SR 3.8.4.3).~~ 5
~~---~~

~~A discharged battery having terminal voltage of at least the minimum established float voltage indicates that the battery is on the exponential charging current portion (the second part) of its recharge cycle. The time to return a battery to its fully charged state under this condition is simply a function of the amount of the previous discharge and the recharge characteristic of the battery. Thus there is good assurance of fully recharging the battery within [12] hours, avoiding a premature shutdown with its own attendant risk.~~

~~If established battery terminal float voltage cannot be restored to greater than or equal to the minimum established float voltage within 2 hours, and the charger is not operating in the current-limiting mode, a faulty charger is indicated. A faulty charger that is incapable of maintaining established battery terminal float voltage does not provide assurance that it can revert to and operate properly in the current limit mode that is necessary during the recovery period following a battery discharge event that the DC system is designed for.~~ 4

~~If the charger is operating in the current limit mode after 2 hours that is an indication that the battery is partially discharged and its capacity margins will be reduced. The time to return the battery to its fully charged condition in this case is a function of the battery charger capacity, the amount of loads on the associated DC system, the amount of the previous discharge, and the recharge characteristic of the battery. The charge time can be extensive, and there is not adequate assurance that it can be recharged within [12] hours (Required Action A.2).~~

~~Required Action A.2 requires that the battery float current be verified as less than or equal to [2] amps. This indicates that, if the battery had been discharged as the result of the inoperable battery charger, it has now~~

BASES

ACTIONS (continued)

~~been fully recharged. If at the expiration of the initial [12] hour period the battery float current is not less than or equal to [2] amps this indicates there may be additional battery problems and the battery must be declared inoperable.~~ 4

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Any licensee wishing to adopt a Completion Time greater than 72 hours for Required Action A.3 will need to demonstrate that the Completion Time is appropriate for the plant in accordance with the guidance in Regulatory Guide (RG) 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications." Otherwise, the 72 hour Completion Time must be adopted.~~
~~---~~ 5

~~Required Action A.3 limits the restoration time for the inoperable battery charger to [72] hours. This action is applicable if an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage has been used (e.g., balance of plant non-Class 1E battery charger). The [72] hour Completion Time reflects a reasonable time to effect restoration of the qualified battery charger to OPERABLE status.~~ 4

A.1, A.2 and A.3 ~~B.1, B.2.1, B.2.2, and B.2.3~~

INSERT 3 ~~[If two subsystems are required by LCO 3.8.10, the remaining subsystem with DC power available may be capable of supporting sufficient systems to allow continuation of [recently] irradiated fuel movement]. By allowing the option to declare required features inoperable with the associated DC power source(s) inoperable, appropriate restrictions will be implemented in accordance with the affected required features LCO ACTIONS. In many instances this option may involve undesired administrative efforts.~~ 2
Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend movement of ~~[recently]~~ irradiated fuel assemblies, and operations involving positive reactivity additions) that could result in loss of required SDM (MODE 5) or boron concentration (MODE 6). Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes including temperature increases when operating with a positive MTC must also be evaluated to ensure they do not result in a loss of required SDM. 2

2 **INSERT 3**

With the required train of DC electrical power sources inoperable, the minimum required DC electrical power source is not available.

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BASES

ACTIONS (continued)

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required DC electrical power train ~~subsystem[s]~~ and to continue this action until restoration is accomplished in order to provide the necessary DC electrical power to the unit safety systems. 1

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required DC electrical power subsystems should be completed as quickly as possible in order to minimize the time during which the unit safety systems may be without sufficient power.

INSERT 4 3

SURVEILLANCE REQUIREMENTS

SR 3.8.5.1

SR 3.8.5.1 requires performance of all Surveillances required by SR 3.8.4.1 through SR 3.8.4.3. Therefore, see the corresponding Bases for LCO 3.8.4 for a discussion of each SR.

~~This SR is modified by a Note. The reason for the Note is to preclude requiring the OPERABLE DC sources from being discharged below their capability to provide the required power supply or otherwise rendered inoperable during the performance of SRs. It is the intent that these SRs must still be capable of being met, but actual performance is not required.~~ 4

REFERENCES

U

1. UFSAR, Chapter ~~[~~6~~]~~.
2. UFSAR, Chapter ~~[~~15~~]~~. 1 2

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3 **INSERT 4**

B.1

If one or more DG DC electrical power subsystems are inoperable, the associated DGs may be incapable of performing their intended function and must be immediately declared inoperable. This declaration also requires entry into the applicable Conditions and Required Actions for inoperable DGs, LCO 3.8.2, "AC Sources – Shutdown".

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.5 DC Sources - Shutdown

BASES

BACKGROUND	A description of the DC sources is provided in the Bases for LCO 3.8.4, "DC Sources - Operating."

APPLICABLE SAFETY ANALYSES

U

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter ~~[~~6~~]~~ (Ref. 1) and Chapter ~~[~~15~~]~~ (Ref. 2), assume that Engineered Safety Feature systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the diesel generators, emergency auxiliaries, and control and switching during all MODES of operation. 1 2

The OPERABILITY of the DC subsystems is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum DC electrical power sources during MODES 5 and 6 and during movement of ~~[recently]~~ irradiated fuel assemblies ensures that: 2

a. The unit can be maintained in the shutdown or refueling condition for extended periods,

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status, and

c. Adequate DC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident ~~[involving handling recently irradiated fuel. Due to radioactive decay, DC electrical power is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)].~~ 2

In general, when the unit is shut down, the Technical Specifications requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents. However, assuming a single failure and concurrent loss of all offsite or all onsite power is not required. The rationale for this is based on the fact that many DBAs that are analyzed in MODES ~~[~~1, 2, 3, and 4~~]~~ have no specific analyses in MODES ~~[~~5 and 6~~]~~ because the energy contained within the reactor pressure 2

BASES

APPLICABLE SAFETY ANALYSES (continued)

boundary, reactor coolant temperature and pressure, and the corresponding stresses result in the probabilities of occurrence being significantly reduced or eliminated, and in minimal consequences. These deviations from DBA analysis assumptions and design requirements during shutdown conditions are allowed by the LCO for required systems.

The shutdown Technical Specification requirements are designed to ensure that the unit has the capability to mitigate the consequences of certain postulated accidents. Worst case DBAs which are analyzed for operating MODES are generally viewed not to be a significant concern during shutdown MODES due to the lower energies involved. The Technical Specifications therefore require a lesser complement of electrical equipment to be available during shutdown than is required during operating MODES. More recent work completed on the potential risks associated with shutdown, however, have found significant risk associated with certain shutdown evolutions. As a result, in addition to the requirements established in the Technical Specifications, the industry has adopted NUMARC 91-06, "Guidelines for Industry Actions to Assess Shutdown Management," as an Industry initiative to manage shutdown tasks and associated electrical support to maintain risk at an acceptable low level. This may require the availability of additional equipment beyond that required by the shutdown Technical Specifications.

The DC sources satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

One vital ~~The~~ DC electrical power INSERT 1 ~~subsystems, [each required]~~ ~~[~~the required~~]~~ ~~[subsystem~~ train consisting of two batteries, one battery charger per battery, and the corresponding control equipment and interconnecting cabling within the train ~~subsystem~~, ~~[are]~~ ~~[~~is~~]~~ required to be OPERABLE ~~to support [required] [one] subsystem[s] of the distribution systems [required OPERABLE by LCO 3.8.10, "Distribution Systems - Shutdown."]~~ This ensures the availability of sufficient DC electrical power sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents INSERT 2 ~~[involving handling recently irradiated fuel]~~). 1 2 3

APPLICABILITY

The DC electrical power sources required to be OPERABLE in MODES 5 and 6, and during movement of ~~[recently]~~ irradiated fuel assemblies, provide assurance that: 2

a. Required features to provide adequate coolant inventory makeup are available for the irradiated fuel assemblies in the core,

1 **INSERT 1**

train consists of two channels. Train A consists of channels I and III and Train B consists of channels II and IV.

3 **INSERT 2**

Control power for the DGs is provided by four DG DC electrical power subsystems, one per DG. Each DG DC electrical power subsystem is comprised of one 125 VDC battery, an associated charger, and associated control equipment and interconnecting cabling. One DG DC electrical power subsystem is required to be OPERABLE for each required DG.

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BASES

APPLICABILITY (continued)

b. Required features needed to mitigate a fuel handling accident ~~[involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~ are available, 2

c. Required features necessary to mitigate the effects of events that can lead to core damage during shutdown are available, and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The DC electrical power requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.4.

ACTIONS

LCO 3.0.3 is not applicable while in MODE 5 or 6. However, since irradiated fuel assembly movement can occur in MODE 1, 2, 3, or 4, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operations. Entering LCO 3.0.3, while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

~~A.1, A.2, and A.3~~ 4

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~ACTION A is included only when plant-specific implementation of LCO 3.8.5 includes the potential to require both subsystems of the DC System to be OPERABLE. If plant-specific implementation results in LCO 3.8.5 requiring only one subsystem of the DC System to be OPERABLE, then ACTION A is omitted and ACTION B is renumbered as ACTION A.~~
~~---~~ 5

~~Condition A represents one subsystem with one [or two] battery chargers inoperable (e.g., the voltage limit of SR 3.8.4.1 is not maintained). The ACTIONS provide a tiered response that focuses on returning the battery to the fully charged state and restoring a fully qualified charger to OPERABLE status in a reasonable time period. Required Action A.1 requires that the battery terminal voltage be restored to greater than or equal to the minimum established float voltage within 2 hours. This time provides for returning the inoperable charger to OPERABLE status or providing an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage. Restoring~~ 4

BASES

ACTIONS (continued)

~~the battery terminal voltage to greater than or equal to the minimum established float voltage provides good assurance that, within [12] hours, the battery will be restored to its fully charged condition (Required Action A.2) from any discharge that might have occurred due to the charger inoperability.~~ 4

~~-----------------------------REVIEWER'S NOTE-----------------------------~~
~~A plant that cannot meet the 12 hour Completion Time due to an inherent battery charging characteristic can propose an alternate time equal to 2 hours plus the time experienced to accomplish the exponential charging current portion of the battery charge profile following the service test (SR 3.8.4.3).~~
~~--~~ 5

~~A discharged battery having terminal voltage of at least the minimum established float voltage indicates that the battery is on the exponential charging current portion (the second part) of its recharge cycle. The time to return a battery to its fully charged state under this condition is simply a function of the amount of the previous discharge and the recharge characteristic of the battery. Thus there is good assurance of fully recharging the battery within [12] hours, avoiding a premature shutdown with its own attendant risk.~~

~~If established battery terminal float voltage cannot be restored to greater than or equal to the minimum established float voltage within 2 hours, and the charger is not operating in the current-limiting mode, a faulty charger is indicated. A faulty charger that is incapable of maintaining established battery terminal float voltage does not provide assurance that it can revert to and operate properly in the current limit mode that is necessary during the recovery period following a battery discharge event that the DC system is designed for.~~ 4

~~If the charger is operating in the current limit mode after 2 hours that is an indication that the battery is partially discharged and its capacity margins will be reduced. The time to return the battery to its fully charged condition in this case is a function of the battery charger capacity, the amount of loads on the associated DC system, the amount of the previous discharge, and the recharge characteristic of the battery. The charge time can be extensive, and there is not adequate assurance that it can be recharged within [12] hours (Required Action A.2).~~

~~Required Action A.2 requires that the battery float current be verified as less than or equal to [2] amps. This indicates that, if the battery had been discharged as the result of the inoperable battery charger, it has now~~

BASES

ACTIONS (continued)

~~been fully recharged. If at the expiration of the initial [12] hour period the battery float current is not less than or equal to [2] amps this indicates there may be additional battery problems and the battery must be declared inoperable.~~ 4

~~-----REVIEWER'S NOTE-----~~
~~Any licensee wishing to adopt a Completion Time greater than 72 hours for Required Action A.3 will need to demonstrate that the Completion Time is appropriate for the plant in accordance with the guidance in Regulatory Guide (RG) 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications." Otherwise, the 72 hour Completion Time must be adopted.~~
~~----------~~ 5

~~Required Action A.3 limits the restoration time for the inoperable battery charger to [72] hours. This action is applicable if an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage has been used (e.g., balance of plant non-Class 1E battery charger). The [72] hour Completion Time reflects a reasonable time to effect restoration of the qualified battery charger to OPERABLE status.~~ 4

A.1, A.2 and A.3 ~~B.1, B.2.1, B.2.2, and B.2.3~~

INSERT 3 ~~[If two subsystems are required by LCO 3.8.10, the remaining subsystem with DC power available may be capable of supporting sufficient systems to allow continuation of [recently] irradiated fuel movement]. By allowing the option to declare required features inoperable with the associated DC power source(s) inoperable, appropriate restrictions will be implemented in accordance with the affected required features LCO ACTIONS. In many instances this option may involve undesired administrative efforts.~~ 2
Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend movement of ~~[recently]~~ irradiated fuel assemblies, and operations involving positive reactivity additions) that could result in loss of required SDM (MODE 5) or boron concentration (MODE 6). Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes including temperature increases when operating with a positive MTC must also be evaluated to ensure they do not result in a loss of required SDM. 2