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SOUTHERN COMPANY

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NL-10-0272

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

Joseph M. Farley Nuclear Plant
License Amendment Request for Adoption of TSTF-425-A, Revision 3,
Risk-Informed Justification for the Relocation of Specific Surveillance Frequency
Requirements to a Licensee Controlled Program
Using the Consolidated Line Item Improvement Process

Ladies and Gentlemen:

In accordance with the provisions of 10 CFR 50.90 of Title 10 of the Code of Federal Regulations (10 CFR), Southern Nuclear Operating Company (SNC) is submitting a request for an amendment to the Technical Specifications (TS) for the Joseph M. Farley Nuclear Plant (FNP).

The proposed amendment would modify the FNP TS by relocating specific surveillance frequencies to a licensee-controlled program with the implementation of Nuclear Energy Institute (NEI) 04–10, Rev.1 "Risk-Informed Technical Specification Initiative 5B, Risk-Informed Method for Control of Surveillance Frequencies." The availability of this TS improvement was announced in the Federal Register on July 6, 2009 (74 FR 31996) as part of the consolidated line item improvement process (CLIIP).

Enclosure 1 provides the basis for the proposed changes to the FNP TS, the requested confirmation of applicability, and the plant specific verifications. Enclosure 2 provides Documentation of PRA Technical Adequacy. Enclosure 3 provides the existing FNP TS pages marked-up to show the proposed changes for FNP. Enclosure 4 provides the clean typed proposed FNP TS pages. Enclosure 5 provides the proposed TS Bases changes for FNP. Enclosure 6 provides a cross reference between the FNP TS and the TSTF 425 Marked-up pages.

SNC requests approval of the proposed license amendment by April 29, 2011 with the amendment being implemented within 120 days of receipt of amendment.

A001
NRR

In accordance with 10 CFR 50.91, "Notice for Public Comment; State Consultation," a copy of this application, with enclosures, is being provided to the appropriate designated Alabama Officials.

This letter contains no NRC commitments. If you have any questions, please contact N. J. Stringfellow at (205) 992-7037.

Mr. M. J. Ajluni states he is the Nuclear Licensing Director of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and to the best of his knowledge and belief, the facts set forth in this letter are true.

Respectfully submitted,

Mark J Ajluni

M. J. Ajluni
Nuclear Licensing Director

Sworn to and subscribed before me this 29 *day of* October*, 2010.*

Charlotte A. Graham
Notary Public

My commission expires: 6/9/12

Enclosures:
1. Basis of Proposed Change
2. Documentation of PRA Technical Accuracy
3. Markup for FNP Proposed TS Changes
4. Clean Typed Pages for FNP Proposed TS Changes
5. Markup for FNP Proposed TS Bases Changes
6. Technical Specification Cross Reference for FNP and TSTF 425 Mark ups

cc: Southern Nuclear Operating Company
Mr. J. T. Gasser, Executive Vice President
Mr. J. R. Johnson, Vice President – Farley
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RType: CFA04.054

U. S. Nuclear Regulatory Commission
Mr. L. A. Reyes, Regional Administrator
Mr. R. E. Martin, NRR Project Manager – Farley
Mr. E. L. Crowe, Senior Resident Inspector – Farley
Mr. P. Boyle, NRR Project Manager - Farley

Alabama Department of Public Health
Dr. D. E. Williamson, State Health Officer

Joseph M. Farley Nuclear Plant
License Amendment Request for Adoption of TSTF-425-A, Revision 3, Risk-Informed Justification for the Relocation of Specific Surveillance Frequency Requirements to a Licensee Controlled Program Using the Consolidated Line Item Improvement Process

Enclosure 1

Basis for Proposed Change

Enclosure 1

Basis for Proposed Change

Table of Contents

Basis for Proposed Change

1.0 Description

The proposed change would modify the Joseph M. Farley Nuclear Plant (FNP) Technical Specifications (TS) by relocating specific surveillance frequencies to a licensee-controlled program with the adoption of Technical Specification Task Force (TSTF)-425, Revision 3, "Risk-Informed Justification for the Relocation of Specific Surveillance Frequency Requirements to a Licensee Controlled Program (Risk Informed Technical Specification Task Force (RITSTF) Initiative 5)." Additionally, the change would add a new program, the Surveillance Frequency Control Program, to the FNP TS Section 5, Administrative Controls. The changes are consistent with NRC approved Industry/TSTF STS change TSTF-425, Revision 3, (ADAMS Accession No. ML080280275). The Federal Register notice published on July 6, 2009 announced the availability of this TS improvement.

2.0 Assessment

2.1 Applicability of Published Safety Evaluation

Southern Nuclear Operating Company (SNC) has reviewed the safety evaluation dated July 6, 2009 as part of the consolidated line item improvement process (CLIIP). This review included a review of the NRC staff's evaluation, TSTF-425, Revision 3, and the requirements specified in NEI 04-10, Rev. 1, (ADAMS Accession No. ML071360456). SNC has concluded that the justifications presented in the TSTF and the Safety Evaluation, prepared by the NRC staff, are applicable to Units 1 and 2 of FNP and justify this amendment for the incorporation of changes to the TS for Units 1 and 2 of FNP.

Enclosure 2 includes SNC documentation with regard to PRA technical adequacy consistent with the requirements of Regulatory Guide 1.200, Revision 2 (ADAMS Accession No. ML070240001), Section 4.2, and describes any PRA models without NRC-endorsed standards, including documentation of the quality characteristics of those models in accordance with Regulatory Guide 1.200.

2.2 Optional Changes and Variations

The proposed amendment is consistent with the Standard TS changes described in TSTF-425, Revision 3; however, SNC proposes the following variations or deviations from TSTF-425:

- NRC letter dated April 14, 2010 provides a change to an optional insert (INSERT #2) to the existing TS Bases to facilitate adoption of the Traveler while retaining the existing NUREG TS surveillance frequency (SF) Bases considerations for licensees not choosing to adopt TSTF-425. The TSTF-425 TS Bases insert states as follows:

The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

Recently several licensees submitting license amendment requests (LARs) for adoption of TSTF-425 have identified a need to deviate from this statement because it only applies to frequencies that have been changed in accordance with the Surveillance Frequency Control Program (SFCP) and does not apply to frequencies that are relocated but not changed.

The NRC staff agreed that the TSTF-425 TS Bases insert applies to SFs that are relocated and subsequently evaluated and changed, in accordance with the SFCP in NRC letter dated April 14, 2010. The TSTF-425 TS Bases does not apply to SFs relocated to the SFCP but not changed. Therefore, for SFs relocated to the SFCP but not changed, the existing TS Bases description remains a valid description of the TS SF Bases for the unchanged SF.

To resolve this issue with existing LARs and to avoid future problems, the NRC staff supported the following recommended changes to clarify the applicability of the TS SF Bases, maintain consistency with TSTF-425 TS SFCP requirements, and allow retention of existing TS SF Bases for licensees who choose not to adopt TSTF-425 (April 28, 2010 discussion between the TSTF and the NRC):

1. The existing Bases information describing the basis for the Surveillance Frequency will be relocated to the licensee-controlled Surveillance Frequency Control Program.

2. The TSTF-425 TS Bases, INSERT #2, should be added to the end of the existing TS Bases and changed to read as follows:

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

SNC has incorporated these recommended changes into this License Amendment Request.

- Enclosure 6 provides a cross-reference between the NUREG-1431 Surveillance Requirements (SRs) included in TSTF-425 versus the FNP TS. This Enclosure includes a summary description of the referenced TSTF-425/FNP TS SRs which is being provided for information purposes only and is not intended to be a verbatim description of the TS SRs. This cross-reference highlights the following:

1. SRs included in TSTF-425 and corresponding FNP SRs with identical SR numbers;

2. SRs included in TSTF-425 and corresponding FNP SRs with differing SR numbers;

3. SRs included in TSTF-425 that are not contained in the FNP TS; and

4. FNP plant-specific SRs that are not contained in the TSTF-425 mark-ups.

Concerning the above, FNP SRs that have SR numbers identical to the corresponding TSTF-425 SRs are not deviations from TSTF-425. FNP SRs with SR numbers that differ from the corresponding TSTF-425 SRs are administrative deviations from TSTF-425 with no impact on the NRC's model safety evaluation dated July 6, 2009 (74 FR 31996).

For TSTF-425 SRs that are not contained in the FNP TS, the corresponding mark-ups included in TSTF-425 for these SRs are not applicable to FNP. This is an administrative deviation from TSTF-425 with no impact on the NRC's model safety evaluation dated July 6, 2009 (74 FR 31996).

For FNP plant-specific SRs that are not contained in the mark-ups provided in TSTF-425, SNC has determined that the relocation of the Frequencies for these FNP plant-specific SRs is consistent with the intent of TSTF-425, Revision 3, and with the NRC's model safety evaluation dated July 6, 2009 (74 FR 31996), including the scope exclusions identified in Section 1.0, "Introduction," of the model safety evaluation, because the subject plant-specific SRs involve fixed periodic Frequencies. In accordance with TSTF-425, changes to the Frequencies for these SRs would be controlled under the Surveillance Frequency Control Program. The Surveillance Frequency Control Program provides the necessary administrative controls to require that SRs related to testing, calibration and inspection are conducted at a frequency to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met. Changes to Frequencies in the Surveillance Frequency Control Program would be evaluated using the NRC approved methodology and probabilistic risk guidelines contained in NEI 04-10, Revision 1.

3.0 Regulatory Analysis

3.1 No Significant Hazards Consideration

SNC has reviewed the proposed no significant hazards consideration determination (NSHCD) published in the Federal Register dated July 6, 2009 (74 FR 31996) as part of the CLIIP. SNC has concluded that the proposed NSHCD presented in the Federal Register notice is applicable to Units 1 and 2 of FNP and the evaluation is hereby incorporated by reference to satisfy the requirements of 10 CFR 50.91(a) for this application.

4.0 Environmental Evaluation

SNC has reviewed the environmental evaluation included in the model safety evaluation dated July 6, 2009 (74 FR 31996) as part of the CLIIP. SNC has concluded that the staff's findings presented in the published evaluation are applicable to Units 1 and 2 of FNP and the evaluation is hereby incorporated by reference for this application.

Joseph M. Farley Nuclear Plant
License Amendment Request for Adoption of TSTF-425-A, Revision 3, Risk-Informed Justification for the Relocation of Specific Surveillance Frequency Requirements to a Licensee Controlled Program Using the Consolidated Line Item Improvement Process

Enclosure 2

Documentation of PRA Technical Adequacy

Enclosure 2

Documentation of PRA Technical Adequacy

Table of Contents

Documentation of PRA Technical Adequacy

1.0 Introduction

SNC employs a multi-faceted approach to establishing and maintaining the technical adequacy and plant fidelity of the PRA models for all operating SNC nuclear generation sites. This approach includes both a proceduralized PRA maintenance and an update process, and the use of self-assessments and independent peer reviews. The following information describes this approach as it applies to the FNP PRA.

2.0 Technical Adequacy of FNP PRA Model

2.1 PRA Model for As-Built As-Operated FNP

2.1.1 PRA Maintenance and Update

The SNC risk management process ensures that the applicable PRA model remains an accurate reflection of the as-built and as-operated units. The SNC risk management process also delineates the responsibilities and guidelines for updating the full power internal events PRA models at all operating SNC nuclear generation sites. The overall SNC risk management program defines the process for implementing regularly scheduled and interim PRA model updates, for tracking issues identified as potentially affecting the PRA models (e.g., due to changes in the plant, errors or limitations identified in the model, industry operational experience), and for controlling the model and associated computer files. To ensure that the current PRA model remains an accurate reflection of the as-built, as-operated plant, the FNP PRA model has been updated according to the requirements defined in the SNC risk management process:

- Pertinent modifications to the physical plant (i.e. those potentially affecting the Base Line PRA (BL-PRA) models, calculated core damage frequencies (CDFs), or large early release frequencies (LERFs) to a significant degree) shall be reviewed to determine the scope and necessity of a revision to the baseline model within six months following either a periodic refueling outage on Unit 1 or a specific major plant modification occurring outside a refueling outage. The BL-PRAs should be updated as necessary in accordance with a schedule approved by the PRA Manager following the scoping review. Upon completion of the lead Unit's BL-PRA, the other Unit's BL-PRA will be regenerated by modification of the updated BL-PRAs to account for Unit differences which significantly impact the results.

- Pertinent modifications to plant procedures and Technical Specifications shall be reviewed annually for changes which are of statistical significance to the results of the BL-PRA and those changes documented. Reliability data, failure data, initiating events frequency data, human reliability data, and other such PRA inputs shall be reviewed approximately every three years for statistical significance to the results of the BL-PRAs. Following the tri-annual review, the BL-PRAs shall be updated to account for the significant changes to these two categories of PRA inputs in accordance with an approved schedule.

- BL-PRAs shall be updated to reflect germane changes in methodology, phenomenology, and regulation as judged to be prudent by the PRA custodian or as required by regulation.

In addition to these activities, SNC risk management procedures provide the guidance for particular risk management and PRA quality and maintenance activities. This guidance includes:

- Documentation of the PRA model, PRA products, and bases documents.

- The approach for controlling electronic storage of Risk Management (RM) products including PRA update information, PRA models, and PRA applications.

- Guidelines for updating the full power, internal events PRA models for SNC nuclear generation sites.

- Guidance for use of quantitative and qualitative risk models in support of the On-Line Work Control Process Program for risk evaluations for maintenance tasks (corrective maintenance, preventive maintenance, minor maintenance, surveillance tests and modifications) on systems, structures, and components (SSCs) within the scope of the Maintenance Rule (10 CFR 50.65 (a)(4)).

In accordance with this guidance, regularly scheduled PRA model updates nominally occur on an approximate three year cycle; however, longer intervals may be justified if it can be shown that the PRA continues to adequately represent the as-built, as-operated plant. Table 1 shows the brief history of the major FNP PRA model updates.

2.1.2 Plant Changes Not Yet Incorporated into the PRA Model

As part of the PRA evaluation for each Surveillance Test Interval (STI), based on a Surveillance Frequency change request, an evaluation will be performed by the PRA Department, to assess the impact, if any, of any plants changes which are not incorporated into the FNP PRA model which is used for providing risk information/insights prior to presenting the results of the risk analysis to the Integrated Decision-making Panel (IDP). If non-trivial impact is expected, then this may include the performance of additional sensitivity studies or PRA model changes to confirm the impact on the risk analysis.

Table 1 - CDF and LERF by Revision for Unit 1 (Unit 2)

Revision	Unit 1 (Unit 2) CDF per reactor year	Unit 1 (Unit 2) LERF per reactor year	Major changes from previous revision
0 (IPE)	1.30E-04	4.47E-07	N/A
1 (12/1997)	7.63E-05 (7.49E-05)	6.29E-07 (6.29E-07)	• Conversion of model from large event tree to linked fault tree using CAFTA • Developed unit-specific models for Unit 1 and Unit 2 to support EOOS • Incorporated plant design changes completed since the IPE
2 (05/1998)	8.72E-05 (8.65E-05)	5.50E-07 (5.50E-07)	• Revised RCP seal LOCA modeling • Revised SBO modeling • Revised ATWS modeling to ensure proper application of UET • Changed mission time for AFW to 24 hours for general transient initiating events • Refined modeling of swing components to ensure all failure modes are addressed where train re-alignment is credited • Revised LERF modeling to use LERF definition developed by the WOG Risk Based Technologies Working Group • Incorporated plant design changes completed since previous revision

Table 1 - CDF and LERF by Revision for Unit 1 (Unit 2)

Revision	Unit 1 (Unit 2) CDF per reactor year	Unit 1 (Unit 2) LERF per reactor year	Major changes from previous revision
3 (08/1999)	6.52E-05 (6.45E-05)	4.50E-07 (4.50E-07)	• Updated component reliability data to include plant experience through 12/31/97 • Updated initiating event frequencies using NUREG/CR-5750 generic data and plant experience through 12/31/97 • Incorporated design changes for the instrument air system • Expanded modeling of the service water intake structure and turbine building DC systems to include alternate battery chargers and battery banks to support EOOS assessments • Revised SBO modeling to include SBO sequences in the fault tree rather than adding offsite power recovery during post-processing • Revised the ATWT modeling to ensure the proper success criteria for AFW are applied to the various cases • Added Very Small LOCA event tree

Table 1 - CDF and LERF by Revision for Unit 1 (Unit 2)			
Revision	**Unit 1 (Unit 2) CDF per reactor year**	**Unit 1 (Unit 2) LERF per reactor year**	**Major changes from previous revision**
4 (05/2000)	5.57E-05 (6.91E-05)	4.47E-07 (4.53E-07)	• Revised HRA for events where procedures had changed • Updated flooding analysis for the Service Water Intake Structure and CCW pump/HX rooms • Added System Model for emergency air compressors for atmospheric relief valves and AFW pumps • Added Unit 2 SW lube and cooling booster pumps • Incorporated plant design changes completed since previous revision
5 (11/2001)	3.86E-05 (5.81E-05)	4.19E-07 (4.26E-07)	• Revised model to address WOG Peer Review comments • Incorporated plant design changes completed since previous revision
6 (03/2005)	3.79E-05 (3.32E-05)	4.94E-07 (4.92E-07)	• Incorporated plant design changes through December 2004 • Revised SGTR Event Tree • Updated CCF Analysis • Updated HRA • Updated component reliability, unavailability and initiating event data with plant experience through December 2001

Table 1 - CDF and LERF by Revision for Unit 1 (Unit 2)			
Revision	**Unit 1 (Unit 2) CDF per reactor year**	**Unit 1 (Unit 2) LERF per reactor year**	**Major changes from previous revision**
7 (06/2006)	2.35E-05 (2.03E-05)	5.11E-07 (5.06E-07)	• Revised SW success criteria for diesel generator support • Revised LERF model to incorporate induced SGTR • Revised modeling of maintenance on CCW and Charging pumps to incorporate current plant practice of minimizing at-power train maintenance outages utilizing swing pumps • Revised pipe rupture frequencies for internal flooding per EPRI TR-1013141 • Revised modeling of SW Pump 2D to reflect design changes completed following Revision 6 • Revised event tree for Secondary Side Break initiating events

Table 1 - CDF and LERF by Revision for Unit 1 (Unit 2)			
Revision	**Unit 1 (Unit 2) CDF per reactor year**	**Unit 1 (Unit 2) LERF per reactor year**	**Major changes from previous revision**
8 (06/2008)	1.87E-05(1.54E-05)	5.05E-07(5.00E-07)	• Incorporates removal of final Unit 2 SW Booster Pump • Revised requirements for Unit 2 SW Pumps such that cyclone separator is no longer required • Revised operating alignment in which RCP Seal Injection and RCP Thermal Barrier Cooling are supplied by opposite trains (This eliminates a single train CCW, SW, or Electrical Bus initiating event for causing a total loss of RCP Seal cooling) • 20% CDF reduction for Unit 1 and 24% CDF reduction for Unit 2
9 (10/2010)	2.28E-5	1.40E-07	• Upgrade per RG 1.200 Revision 2 • Incorporated RCP Shutdown Seals • Added Internal Flooding • Restructured Event Trees

2.2 Consistency with Applicable ASME PRA Standard Requirements

2.2.1 Previous peer review and Self Assessment for FNP PRA Model

Several assessments of technical capability have been made for the FNP PRA models. These assessments are as follows and further discussed in the paragraphs below:

- An independent PRA peer review was conducted under the auspices of the Westinghouse Owners Group (WOG) in 2001 (Reference 1), following the Industry PRA Peer Review process (Reference 2). This peer review included an assessment of the PRA model maintenance and update process.
- In 2005, a gap analysis (Reference 3) was performed against the available version of the ASME PRA Standard (Reference 4) and Regulatory Guide 1.200.

2.2.2. RG 1.200 PRA Peer Review for FNP PRA Model against ASME PRA Standard Requirements

A complete Peer Review of the FNP Probabilistic Risk Assessment (PRA) against the requirements of Section 2 of the ASME/American Nuclear Society (ANS) Combined PRA standard (Reference 5) and the requirements of Regulatory Guide (RG) 1.200, Revision 2 (Reference 6) was completed in March 2010. This peer review was performed using the process defined in Nuclear Energy Institute (NEI) 05-04 (Reference 7).

1. The ASME PRA Standard (Reference 5) contains a total of 326 numbered supporting requirements in 14 technical elements and the configuration control element. Of the 326 SRs, eight were determined to be not applicable to the FNP PRA. There were eight not applicable requirements for the FNP review: AS-B4, SY-A9, HR-C3, HR-D5, DA-C5, DA-C8, DA-C15, and DA-D2.
2. Among 318 applicable SRs, 92% of SRs met Capability Category II or higher as follows:

Capability Category Met	No. of SRs	% of total applicable SRs
CC-I/II/III (or SR Met)	213	65%
CC I	9	3%
CC II	30	9%
CC III	12	4%
CC I/II	13	4%
CC II/III	24	7%
SR Not Met	17	5%
SR Not Applicable	8	3%
Total	326	100%

2.2.3 Resolution of Findings from RG 1.200 PRA Peer Review

The final report has been issued. Table 2 provides a summary of the resolution of the FNP Peer Review not-met CAT II SRs.

Table 2 Resolution of the FNP PRA Peer Review F&Os for Not-Met CAT II SRs				
Review Element	**F&O #**	**Finding**	**Resolution**	**The Status of Resolution by SNC**
IE-A5 (SR CCI) met CCI	IE-A5-01	The system notebooks look at the impact of the identified initiators on that system. However, a system by system review might identify additional plant specific initiators, particularly associated with transformers, buses, etc.	• Add a systematic review of the safety and non-safety systems that could cause a plant scram to verify that no additional initiators are needed	A systematic review of the FNP safety and non-safety systems was performed that resulted in the development of a Table C-1 "Farley Initiating Event Identification Analysis" which is documented as part of the FNP Initiating Event Notebook. This table lists each FNP system ordered by a system group identifier, system ID, system description, impact of system loss and treatment of system loss in FNP PRA. The treatment of system loss in FNP PRA column addressed specifically whether the loss of a system would result in a initiating event and how the initiating event was grouped. This finding is considered closed pending incorporation into Initiating Events notebook.
IE-A9 (SR CCI) met CCI	IE-A9-01	A plant-specific review of potential precursor events, such as intake structure clogging and others, has not been performed FNP.	• Review significant non-scram events at the plant to determine if any precursors exist	A search was performed on the Condition Reports database. A comparison of the search for significant non-scram events to FNP's initiating events list revealed no new initiating event precursors to plant trips. This finding is considered closed pending incorporation into Initiating Events notebook.

Table 2
Resolution of the FNP PRA Peer Review F&Os for Not-Met CAT II SRs

Review Element	F&O #	Finding	Resolution	The Status of Resolution by SNC
IE-B3 (SR CCI) met CCI	IE-B1-01	Several cases were noted where grouping in the IE document is unclear or incorrect. Therefore, additional documentation is needed to verify that the event grouping is clear and can be easily traced to the plant impact.	• Include the impact of the initiator on the PSA systems in the model	Table C-1 "Farley Initiating Event Identification Analysis" was created which is documented in the FNP Initiating Event Notebook. This table lists each FNP system ordered by a system group identifier, system ID, system description, impact of system loss and treatment of system loss in FNP PRA. The treatment of system loss in FNP PRA column addressed specifically whether the loss of a system would result in a initiating event and how the initiating event was grouped. This finding is considered closed pending incorporation into Initiating Events notebook.
IE-C5 (SR CC-I/II) not met	IE-C5-01	FNP did not weigh the initiating event frequencies by the fraction of time the plant is at power.	• Modify the initiating event frequency to address plant availability	The adjustment has been done as part of the quantification. This finding is considered closed pending incorporation into Initiating Events notebook.

Table 2
Resolution of the FNP PRA Peer Review F&Os for Not-Met CAT II SRs

Review Element	F&O #	Finding	Resolution	The Status of Resolution by SNC
AS-C2 (SR CC-I/II/III) not met	AS-C2-02	The FNP AS notebook provides discussions of the examples indicated in the SR. Improve the level of documentation.	• Add initiating events %LOSPF and %LOSPG to Table 2.6-1 • Correct the descriptions of initiating events %LOSSACF and %LOSSACG in Table 2.6-4	The Accident Sequence notebook was revised to correctly reference the loss of bus initiating events. The descriptions of the %LOSSACF and %LOSSACG events in Table 2.6-4 were not changed because they are correct. Instead, the descriptions for those events were corrected in Table 2.6-1 and events %LOSPF and %LOSPG were added to Table 2.6-1. The documentation was revised. This finding is considered closed.
SY-A6 (SR CC-I/II/III) not met	SY-A9-01	The system boundary as defined in the system notebook does not match up to the fault tree. For example, room cooling is defined in the notebook as system dependency but in the model room cooling is included as part of the system designation.	• Review the component boundary definitions to ensure that they are sufficiently detailed to identify exactly what is included within each component and that are consistent from the model to the system notebooks	The system notebooks were reviewed and modified as needed to reflect the boundary of the system as shown in the model. The support system sections were reviewed and corrected as needed to reflect the support systems as modeled. This finding is considered closed pending final updates to the System notebooks.

Table 2
Resolution of the FNP PRA Peer Review F&Os for Not-Met CAT II SRs

Review Element	F&O #	Finding	Resolution	The Status of Resolution by SNC
SY-C1 (SR CC-I/II/III) not met	SY-C1-01	The system notebooks documentation on test and maintenance for several systems is incorrect and references old or incorrect documents.	• Correct the System notebook's references for test and maintenance information	This is a documentation issue. The references were corrected. This finding is considered closed pending final updates to the System notebooks.
HR-D2 (SR CCI) met CCI	HR-D2-01 HR-D2-02	Detailed HFE assessments are used for events that are not shown to be directly applicable to the analysis performed. Also, the screening values used for pre-HRAs are significantly lower than the ASEP values without justification of the values used.	• Perform detailed analysis on all events to verify the applicability used or use screening values for those events not explicitly analyzed with a detailed analysis	A revision to Table 8-2 of the HRA notebook has been prepared providing a more detailed explanation of the approach used. The pre-initiator approach relies on detailed THERP assessments that are mapped to similar HFEs. HR-D2 does not preclude using detailed THERP analyses for all HFEs. These findings are considered closed pending update of the HRA notebook.
HR-G1 (SR CCI) met CCI	HR-G1-01	In general, detailed analysis is done for most post HRA events. However, the most important HRAs showing up in the cutset have not been performed on a detailed analysis.	• Develop HRAs for the referenced 2 events and include in the HRA calculation	The events were included in the HRA calculator file using the values found in NUREG CR5500 and WCAP-15831. The finding is considered closed pending update of the HRA notebook.

Table 2 Resolution of the FNP PRA Peer Review F&Os for Not-Met CAT II SRs				
Review Element	**F&O #**	**Finding**	**Resolution**	**The Status of Resolution by SNC**
HR-G7 QU-A5 QU-C2 (SR CCI/II/II) not met	HR-G7-01 HR-G7-02	The multiple human action analysis described in Appendix C does not appear to be used in the quantification. Attachment C to the HRA notebook performs the dependency assessment, but the dependency factors are based upon 2004 HRA values. The multiplication factors in the rule file are to be based upon current HRA. The top HRA cutset combinations in the QU notebook are not addressed in the HRA dependency analysis.	• Explicitly evaluate the top HRA combinations in the dependency analysis. Update the HRA dependence evaluation to be consistent with industry practices	An HRA Dependency Analysis was conducted and incorporated into the Revision 9 model quantification. This analysis will be incorporated into the HRA notebook as Appendix C. The finding is considered closed pending update of the HRA notebook.
HR-I3 (SR CCI/II/II) not met	HR-I3-01	Sources of uncertainty are not included in the HRA calculation similar to other FNP documentation.	• Include a source of uncertainty in the HRA calculation	A document was created to address HRA Uncertainty for the FNP model. It can be found as Attachment F in the HRA notebook. The finding is considered closed pending update of the HRA notebook.

Table 2
Resolution of the FNP PRA Peer Review F&Os for Not-Met CAT II SRs

Review Element	F&O #	Finding	Resolution	The Status of Resolution by SNC
IFEV-B3 IFSO-B3 IFPP-B3 (SR CCI/II/II) not met	IFEV-B3-01	The FNP PRA flooding analysis indicates that sources of uncertainty were not documented because of the low contribution to CDF and LERF from flooding. Although this is true, the SR requires that a discussion of uncertainty be provided.	• Include a discussion of uncertainty and assumptions related to internal flooding issues including partitioning, initiating events, and flood sources	New text concerning uncertainty and assumptions has been incorporated into the appropriate sections of the Flooding notebook. The finding is considered closed pending update of the Flooding notebook.
IFPP-B2 (SR CCI/II/II) not met	IFPP-B2-02 IFPP-B2-03	Internal flooding notebook provides the process and selection result of flood areas partitioning. However, there is no description about the reason for eliminating areas from further analysis, except containment.	• Add information about the screened/eliminated areas and buildings in terms of internal flooding analysis	New text concerning screened/eliminated areas and buildings has been incorporated into the appropriate sections of the Flooding notebook. The finding is considered closed pending update of the HRA notebook.
IFQU-A7 (SR CCI/II/II) not met	IFQU-A7-01	Quantification of flooding event does not perform uncertainty analysis and dependency analysis.	• Perform and provide uncertainty analysis and dependency analysis, even though the flood risk is not significant	An HRA Dependency Analysis was conducted and incorporated into the Revision 9 model quantification. This analysis will be incorporated into the HRA notebook as Appendix C. The finding is considered closed pending update of the HRA notebook.

Table 2
Resolution of the FNP PRA Peer Review F&Os for Not-Met CAT II SRs

Review Element	F&O #	Finding	Resolution	The Status of Resolution by SNC
IFSN-A4 (SR CCI/II/II) not met	IFSN-A4-01	In the IF Notebook, there was extensive discussion with respect to treatment of drains and explicit evidence that drains were considered as propagation paths for several flood scenarios. However, no explicit estimation of drain capacities could be found.	• Add a table that explicitly includes drain capacities	New text has been incorporated into the appropriate sections of the Flooding notebook. The finding is considered closed pending update of the HRA notebook.
IFSN-B3 (SR CCI/II/II) not met	IFSN-B3-01	There is no description about uncertainty.	• Include a section in the IF Notebook to discuss the IF assumptions and sources of uncertainty	New text concerning uncertainty and assumptions has been incorporated into the appropriate sections of the Flooding notebook. The finding is considered closed pending update of the HRA notebook.
QU-F1 (SR CCI/II/II) not met	QU-F1-01	The mutually exclusive logic was generated by the procedure FNP-0-ACP-52.1 but was not documented in the quantification notebook.	• Update the documentation to reflect the actual references	The documentation reference has been updated. The finding is considered closed pending update of the Quantification notebook.

Table 2
Resolution of the FNP PRA Peer Review F&Os for Not-Met CAT II SRs

Review Element	F&O #	Finding	Resolution	The Status of Resolution by SNC
MU-B4 (SR CCI/II/II) not met	MU-B4-01	There is no reference to a peer review for upgrades. A section which addressed upgrades (not updates) to the PRA specific change in software used was not found.	• Revise either NL-PRA-001 or NL-PRA-002 to explicitly require a peer review for PRA upgrades	These procedures are under revision.

There were no LE findings. The following SRs were Category I.

Review Element	Summary of Assessment
LE-C2 (SR CCI) met CCI	The FNP PRA LERF model relies largely on human error probabilities taken from the WCAP-16341-P. Because the WCAP HEPs are generic rather than plant-specific, they were derived as conservative estimates.
LE-C9 (SR CCI) met CCI	No credit is taken for either equipment operation or human actions in adverse environments.
LE-C11 (SR CCI) met CCI	No credit was taken in the FNP PRA for equipment or operator actions impacted by containment failure. The WCAP-16341-P methodology conservatively does not credit containment sprays for fission product scrubbing or pressure suppression for the containment failure.
LE-C12 (SR CCI) met CCI	The LERF frequency calculated in the FNP PRA is so low that no review was performed to reduce LERF based on engineering analysis to support equipment operation or operator action after containment failure.

2.3 Identification of Key Assumptions

The overall initiative 5B process is a risk-informed process with the PRA model results providing one of the inputs to the Independent Decision-making Panel (IDP) to determine if a Surveillance Test Interval (STI) change is warranted. The methodology recognizes that a key area of uncertainty for this application is the standby failure rate utilized in the determination of the STI extension impact.

The FNP PRA model does not use the standby failure rate approach, but the demand failure approach. In the demand failure approach, demand failure probabilities were evaluated by Bayesian update using plant specific failure data (total number of demands and total number of failures) and generic data. Therefore, there is no specific assumption utilized in the FNP PRA model for standby failure rate.

For evaluating the impact of a STI change for 5B application, the following assumption will be used:

$$Qd = \tfrac{1}{2} \lambda T$$

Where Qd: Demand failure probability,
λ: Standby failure rate, and
T: a STI

Therefore, if a STI increased from T0 to T1 by a surveillance frequency change, the demand failure probability will be assumed to increase from Qd to Qd*(T1/T0).

It is also noted that key assumptions may differ based on the system being considered for a STI change. Therefore, for each application of the PRA model, assumptions will be reviewed, key assumptions for a particular application will be identified, and impact of these key assumptions on the risk insights will be assessed.

3.0 External Event Considerations

The NEI-04-10 methodology allows for STI change evaluations to be performed in the absence of quantifiable PRA models for all external hazards. For those cases where the STI cannot be modeled in the plant PRA (or where a particular PRA model does not exist for a given hazard group), a qualitative or bounding analysis is performed to provide justification for the acceptability of the proposed test interval change.

External hazards were evaluated in the FNP Individual Plant Examination of External Events (IPEEE) submitted in response to the NRC IPEEE program (Generic Letter 88-20, Supplement 4) (Reference 8). The IPEEE program was a one-time review of external hazard risk and was limited in its purpose to the identification of potential plant vulnerabilities and the understanding of associated severe accident risks. The results of the FNP IPEEE study are documented in the FNP IPEEE main report. The primary areas of external event evaluation at FNP were internal fire and seismic.

The internal fire events were addressed by a scenario-based PRA approach that meets the requirements of NUREG-1407 (Reference 9) to systematically and successively evaluate fire and smoke hazards and their associated risk impact to FNP. The IPEEE Fire PRA study provided estimates of CDF and LERF. However, the original IPEEE Fire PRA has not been updated. Currently, a state-of-the-art FNP Fire PRA model, which will meet all Capability Category II (CC-II) requirements in the ASME PRA standard is being developed. When, and if, the IPEEE Fire PRA model is used, consistent with NEI-04-10, the fire risk insights will be complemented by conservative qualitative potential impact of the fire hazard.

In the FNP IPEEE, the seismic risk evaluation was performed in accordance with EPRI Seismic Margins Analysis (SMA) methodology. Since the SMA approach was used, there are no comprehensive CDF and LERF values available from the seismic analysis in the FNP IPEEE to support the STI risk evaluations.

In addition to internal fires and seismic events, the FNP IPEEE analysis of high winds, floods, and other external hazards was accomplished by using a progressive screening approach described in NUREG-1407. The FNP IPEEE concluded that in all reviewed areas no potential vulnerabilities were identified.

As stated earlier, the NEI 04-10 methodology allows for STI change evaluations to be performed in the absence of quantifiable PRA models for all external hazards. Therefore, for fire risk assessment, until a new FNP fire PRA model which meets all CC-II requirements in the ASME PRA standard is built, the impacts on fire risk of an STI change will be assessed using a qualitative or a bounding approach supplemented with insights from IPEEE fire PRA and from the FNP internal events PRA model. In performing the assessment for the other external events, a qualitative or a bounding approach will also be utilized in most cases.

4.0 General Conclusion Regarding PRA Capability

The FNP PRA maintenance and update processes and technical capability evaluations described above provide a robust basis for concluding that the PRA is suitable for use in risk-informed licensing actions. As specific risk-informed PRA applications are performed, remaining gaps to specific requirements in the PRA standard will be reviewed to determine application specific additional analysis, i.e., sensitivity studies, which may be required on an as needed basis

5.0 References

1. "Westinghouse Owners Group Peer Review Final Report," Westinghouse, 2002.

2. "Probabilistic Risk Assessment (PRA) Peer Review Process Guidance," NEI-00-02, Rev. A3, 2000.

3. "Gap Analysis of the Farley PRA", ERIN, 2005.

4. American Society of Mechanical Engineers, Standard for Probabilistic Risk Assessment for Nuclear Power Plant Applications, ASME RA-S-2002, 2002 and Addenda to Standard for Probabilistic Risk Assessment for Nuclear Power Plant Applications, ASME RA-Sa-2003, 2003.

5. ASME/ ANS RA-Sa-2009, "Addenda to ASME/ ANS RA-S-2008 Standard for Level 1/ Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications", American Society of Mechanical Engineers, 2009.

6. U.S. Nuclear Regulatory Commission, An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities, Regulatory Guide 1.200, Revision 2, 2008.

7. "Process for Performing Internal Events PRA Peer Reviews Using the ASME/ ANS PRA Standard", NEI 05-04, Revision 2, 2008.

8. "Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities - 10 CFR 50.54(f), Supplement 4," NRC Generic Letter 88-20, June 1991.

9. "Procedural and Submittal Guidance for the Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities," NUREG-1407, US NRC, June 1991.

Joseph M. Farley Nuclear Plant
License Amendment Request for Adoption of TSTF-425-A, Revision 3,
Risk-Informed Justification for the Relocation of Specific Surveillance
Frequency Requirements to a Licensee Controlled Program
Using the Consolidated Line Item Improvement Process

Enclosure 3

Markup for FNP Proposed TS Changes

Markups for FNP Proposed TS Changes

Insert 1

In accordance with the Surveillance Frequency Control Program

Insert 2

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

Insert 3

5.5.19 Surveillance Frequency Control Program

This program provides controls for Surveillance Frequencies. The program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at interval sufficient to assure the associated Limiting Conditions for Operation are met.

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program.

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk Informed Method for Control of Surveillance Frequencies," Revision 1.

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program

1.1 Definitions

SHUTDOWN MARGIN (SDM) (continued)	b. In MODES 1 and 2, the fuel and moderator temperatures are changed to the hot zero power temperatures.
SLAVE RELAY TEST	A SLAVE RELAY TEST shall consist of energizing each slave relay and verifying the OPERABILITY of each slave relay. The SLAVE RELAY TEST shall include, as a minimum, a continuity check of associated testable actuation devices.
~~STAGGERED TEST BASIS~~	~~A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems, channels, or other designated components during the interval specified by the Surveillance Frequency, so that all systems, subsystems, channels, or other designated components are tested during *n* Surveillance Frequency intervals, where *n* is the total number of systems, subsystems, channels, or other designated components in the associated function.~~
THERMAL POWER	THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.
TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT)	A TADOT shall consist of operating the trip actuating device and verifying the OPERABILITY of required alarm, interlock, and trip functions. The TADOT shall include adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the required accuracy.

3.1 REACTIVITY CONTROL SYSTEMS

3.1.1 SHUTDOWN MARGIN (SDM)

LCO 3.1.1 SDM shall be within the limits provided in the COLR.

APPLICABILITY: MODE 2 with k_{eff} < 1.0,
MODES 3, 4, and 5.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SDM not within limit.	A.1 Initiate boration to restore SDM to within limit.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.1.1	Verify SDM to be within limits.	~~24 hours~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.2.1	-----NOTE----- The predicted reactivity values may be adjusted (normalized) to correspond to the measured core reactivity prior to exceeding a fuel burnup of 60 effective full power days (EFPD) after each fuel loading. ----- Verify measured core reactivity is within ± 1% Δk/k of predicted values.	Once prior to entering MODE 1 after each refueling AND -----NOTE----- Only required after 60 EFPD ----- ~~31 EFPD thereafter~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. More than one rod not within alignment limit.	D.1.1	Verify SDM to be within the limits provided in the COLR.	1 hour
	OR		
	D.1.2	Initiate boration to restore required SDM to within limit.	1 hour
	AND		
	D.2	Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.4.1	Verify individual rod positions within alignment limit.	~~12 hours~~
SR 3.1.4.2	Verify rod freedom of movement (trippability) by moving each rod not fully inserted in the core $\geq$ 10 steps in either direction.	~~92 days~~
SR 3.1.4.3	Verify rod drop time of each rod, from the fully withdrawn position, is $\leq$ 2.7 seconds from the beginning of decay of stationary gripper coil voltage to dashpot entry, with: a. $T_{avg} \geq 541°F$; and b. All reactor coolant pumps operating.	Prior to reactor criticality after each removal of the reactor head

Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.1.5.1	Verify each shutdown bank is within the limits specified in the COLR.	~~12 hours~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.6.2	Verify each control bank insertion is within the limits specified in the COLR.	~~12 hours~~
SR 3.1.6.3	Verify sequence and overlap limits specified in the COLR are met for control banks not fully withdrawn from the core.	~~12 hours~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. RCS lowest loop average temperature not within limit.	C.1 Restore RCS lowest loop average temperature to within limit.	15 minutes
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3.	15 minutes

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.1.8.1	Perform a CHANNEL OPERATION TEST on power range and intermediate range channels per SR 3.3.1.7, SR 3.3.1.8, and Table 3.3.1-1.	Prior to initiation of PHYSICS TESTS
SR 3.1.8.2	Verify the RCS lowest loop average temperature is ≥ 531°F.	~~30 minutes~~
SR 3.1.8.3	Verify THERMAL POWER is ≤ 5% RTP.	~~1 hour~~
SR 3.1.8.4	Verify SDM to be within the limits provided in the COLR.	~~24 hours~~

Insert 1

SURVEILLANCE REQUIREMENTS

-----NOTE-----
During power escalation at the beginning of each cycle, THERMAL POWER may be increased until an equilibrium power level has been achieved, at which a power distribution map is obtained

---

SURVEILLANCE		FREQUENCY
SR 3.2.1.1	Verify $F_Q(Z)$ is within steady state limit. Insert 1	Once after each refueling prior to THERMAL POWER exceeding 75% RTP <u>AND</u> Once after achieving equilibrium conditions after exceeding, by ≥ 20% RTP, the THERMAL POWER at which $F_Q(Z)$ was last verified <u>AND</u> ~~31 EFPD thereafter~~

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.1.2 (continued)	Once after achieving equilibrium conditions after exceeding, by ≥ 20% RTP, the THERMAL POWER at which $F_Q(Z)$ was last verified AND ~~31 EFPD thereafter~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.2.1	Verify $F^N_{\Delta H}$ is within limits specified in the COLR.	Once after each refueling prior to THERMAL POWER exceeding 75% RTP AND ~~31 EFPD thereafter~~

Insert 1

3.2 POWER DISTRIBUTION LIMITS

3.2.3 AXIAL FLUX DIFFERENCE (AFD)

LCO 3.2.3 The AFD in % flux difference units shall be maintained within the limits specified in the COLR.

--NOTE--
The AFD shall be considered outside limits when two or more OPERABLE excore channels indicate AFD to be outside limits.

APPLICABILITY: MODE 1 with THERMAL POWER ≥ 50% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. AFD not within limits.	A.1 Reduce THERMAL POWER to < 50% RTP.	30 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.3.1	Verify AFD within limits for each OPERABLE excore channel.	~~7 days~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.4.1	-----NOTES----- 1. With input from one Power Range Neutron Flux channel inoperable and THERMAL POWER ≤ 75% RTP, the remaining three power range channels can be used for calculating QPTR. 2. SR 3.2.4.2 may be performed in lieu of this Surveillance. ---------- Verify QPTR is within limit by calculation.	~~7 days~~
SR 3.2.4.2	-----NOTE----- Not required to be performed until 12 hours after input from one or more Power Range Neutron Flux channels are inoperable with THERMAL POWER > 75% RTP. ---------- Confirm that the normalized symmetric power distribution is consistent with QPTR.	~~12 hours~~

Insert 1

SURVEILLANCE REQUIREMENTS

-----NOTE-----
Refer to Table 3.3.1-1 to determine which SRs apply for each RTS Function.

SURVEILLANCE		FREQUENCY
SR 3.3.1.1	-----NOTE----- Not required to be performed for source range instrumentation until 1 hour after THERMAL POWER is < P-6. ----- Perform CHANNEL CHECK.	~~12 hours~~
SR 3.3.1.2	-----NOTES----- 1. Adjust NIS channel if calorimetric calculated power exceeds NIS indicated power by more than +2% RTP. 2. Not required to be performed until 24 hours after THERMAL POWER is ≥ 15% RTP. ----- Compare results of calorimetric heat balance calculation to Nuclear Instrumentation System (NIS) channel output.	~~24 hours~~
SR 3.3.1.3	-----NOTES----- 1. Adjust NIS channel if absolute difference is ≥ 3%. 2. Not required to be performed until 7 days after THERMAL POWER is ≥ 50% RTP. 3. Performance of SR 3.3.1.9 satisfies this SR. ----- Compare results of the incore detector measurements to NIS AFD.	~~31 effective full power days (EFPD)~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.1.4	------------------------------NOTE------------------------------ This Surveillance must be performed on the reactor trip bypass breaker prior to placing the bypass breaker in service. -- Perform TADOT.	~~62 days on a STAGGERED TEST BASIS~~
SR 3.3.1.5	Perform ACTUATION LOGIC TEST.	~~92 days on a STAGGERED TEST BASIS~~
SR 3.3.1.6	Perform TADOT.	~~184 days~~
SR 3.3.1.7	------------------------------NOTE------------------------------ Not required to be performed for source range instrumentation prior to entering MODE 3 from MODE 2 until 4 hours after entry into MODE 3. -- Perform COT.	~~184 days~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.1.8	------------------------------NOTE------------------------------ This Surveillance shall include verification that interlocks P-6 and P-10 are in their required state for existing unit conditions. -- Perform COT. Insert 1	--------NOTE-------- Only required when not performed ~~within previous 184 days~~ ------------------------ Prior to reactor startup AND Four hours after reducing power below P-6 for source range instrumentation AND Twelve hours after reducing power below P-10 for power range and intermediate range instrumentation AND ~~Every 184 days thereafter~~

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.1.9	---NOTES--- 1. Neutron detectors are excluded from the calibration. 2. Not required to be performed until 7 days after THERMAL POWER is ≥ 50% RTP. --- Calibrate excore channels to agree with incore detector measurements.	~~18 months~~
SR 3.3.1.10	---NOTES--- 1. Neutron detectors are excluded from CHANNEL CALIBRATION. 2. This Surveillance shall include verification that the time constants are adjusted to the prescribed values. --- Perform CHANNEL CALIBRATION.	~~18 months~~
SR 3.3.1.11	Perform COT.	~~18 months~~ AND ---NOTE--- Only required when not performed ~~within~~ ~~previous 184 days~~. --- Prior to reactor startup

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.1.12	-----NOTE----- Verification of setpoint is not required. ---------- Perform TADOT.	~~18 months~~
SR 3.3.1.13	-----NOTE----- Verification of setpoint is not required. ---------- Perform TADOT.	Prior to exceeding the P-9 interlock whenever the unit has been in MODE 3, if not performed within the previous 31 days
SR 3.3.1.14	-----NOTE----- Neutron detectors are excluded from response time testing. ---------- Verify RTS RESPONSE TIME is within limits.	~~18 months on a STAGGERED TEST BASIS~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
L. (continued) Insert 1	L.2	------------NOTE----------- One train may be bypassed for up to 4 hours for Surveillance testing, provided the other train is OPERABLE. ------------------------------ Restore train to OPERABLE status.	24 hours
	<u>OR</u>		
	L.3.1	Be in MODE 3.	30 hours
	<u>AND</u>		
	L.3.2	Be in MODE 5	60 hours

SURVEILLANCE REQUIREMENTS

---NOTE---
Refer to Table 3.3.2-1 to determine which SRs apply for each ESFAS Function.

SURVEILLANCE		FREQUENCY
SR 3.3.2.1	Perform CHANNEL CHECK.	~~12 hours~~
SR 3.3.2.2	Perform ACTUATION LOGIC TEST.	~~92 days on a STAGGERED TEST BASIS~~
SR 3.3.2.3	Perform MASTER RELAY TEST.	~~92 days on a STAGGERED TEST BASIS~~
SR 3.3.2.4	Perform COT.	~~184 days~~
SR 3.3.2.5	Perform TADOT.	~~184 days~~

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.2.6	------------------------------NOTE------------------------------ Verification of setpoint not required. -- Perform TADOT.	~~18 months~~
SR 3.3.2.7 Insert 1	------------------------------NOTE------------------------------ This Surveillance shall include verification that the ~~time constants~~ are adjusted to the prescribed values. -- Perform CHANNEL CALIBRATION.	~~18 months~~
SR 3.3.2.8	Perform SLAVE RELAY TEST	~~18 months~~
SR 3.3.2.9	------------------------------NOTE------------------------------ Not required to be performed for the turbine driven AFW pump until 24 hours after SG pressure is ≥ 1005 psig. -- Verify ESFAS RESPONSE TIMES are within limit.	~~18 months on a STAGGERED TEST BASIS~~
SR 3.3.2.10	------------------------------NOTE------------------------------ Verification of setpoint not required. -- Perform TADOT.	------------NOTE---------- Only required when not performed within previous 92 days. ------------------------------ Prior to reactor startup

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Required Action and associated Completion Time of Condition C not met.	D.1	Enter the Condition referenced in Table 3.3.3-1 for the channel.	Immediately
E. As required by Required Action D.1 and referenced in Table 3.3.3-1.	E.1	Be in MODE 3.	6 hours
	AND		
	E.2	Be in MODE 4.	12 hours
F. As required by Required Action D.1 and referenced in Table 3.3.3-1.	F.1	Initiate action in accordance with Specification 5.6.8.	Immediately

SURVEILLANCE REQUIREMENTS

NOTE

SR 3.3.3.1 and SR 3.3.3.2 apply to each PAM instrumentation Function in Table 3.3.3-1.

SURVEILLANCE		FREQUENCY
SR 3.3.3.1	Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	~~31 days~~
SR 3.3.3.2	Perform CHANNEL CALIBRATION.	~~18 months~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time not met for Source Range Neutron Flux function.	C.1 Submit a report to the NRC outlining the preplanned alternate method of ensuring the reactor remains shutdown in the event of a control room evacuation, the cause of the inoperability, and the plans and schedule for restoring the Source Range Neutron Flux monitor to OPERABLE status.	14 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.4.1	Perform CHANNEL CHECK for each required monitoring instrumentation channel that is normally energized.	~~31 days~~
SR 3.3.4.2	Verify each required control circuit and transfer switch is capable of performing the intended function.	~~18 months~~
SR 3.3.4.3	-----NOTE----- Neutron detectors are excluded from CHANNEL CALIBRATION. ----- Perform CHANNEL CALIBRATION for each required monitoring instrumentation channel.	~~18 months~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. ----------NOTE----------- Only applicable to Function 3. ---------------------------- One Alarm Function channel inoperable on one or more trains.	D.1	Verify voltage on associated bus is ≥ 3850 volts.	Once per 4 hours
E. Required Action and associated Completion Time of Condition D not met.	E.1	Restore bus voltage to ≥ 3850 volts.	1 hour
F. Required Action and associated Completion Time of Condition E not met.	F.1	Be in MODE 3.	6 hours
	AND		
	F.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.5.1	--------------------------NOTES------------------------------ 1. TADOT shall exclude actuation of the final trip actuation relay for LOP Functions 1 and 2. 2. Setpoint verification not required. -- Perform TADOT.	~~31 days~~

Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.5.2	-------------------------------NOTE----------------------------- CHANNEL CALIBRATION shall exclude actuation of the final trip actuation relay for Functions 1 and 2. -- Perform CHANNEL CALIBRATION.	~~18 months~~
SR 3.3.5.3	-------------------------------Note------------------------------- Response time testing shall include actuation of the final trip actuation relay. -- Verify ESF RESPONSE TIME within limit.	~~18 months on a STAGGERED TEST BASIS~~

Insert 1

SURVEILLANCE REQUIREMENTS

------------------------------------NOTE------------------------------------
Refer to Table 3.3.6-1 to determine which SRs apply for each Containment Purge and Exhaust Isolation Function.

	SURVEILLANCE	FREQUENCY
SR 3.3.6.1	Perform CHANNEL CHECK.	~~12 hours~~
SR 3.3.6.2	Perform ACTUATION LOGIC TEST.	~~92 days on a STAGGERED TEST BASIS~~
SR 3.3.6.3	Perform MASTER RELAY TEST.	~~92 days on a STAGGERED TEST BASIS~~
SR 3.3.6.4	Perform COT.	~~92 days~~
SR 3.3.6.5	Perform SLAVE RELAY TEST.	~~18 months~~
SR 3.3.6.6	---------------NOTE--------------- Verification of setpoint is not required. ------------------------------ Perform TADOT.	~~18 months~~
SR 3.3.6.7	Perform CHANNEL CALIBRATION.	~~18 months~~
SR 3.3.6.8	Verify ESF RESPONSE TIME within limit.	~~18 months on a STAGGERED TEST BASIS~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.2	Place both CREFS trains in emergency recirculation mode.	Immediately
C. Required Action and associated Completion Time for Condition A or B not met in MODE 1, 2, 3, or 4.	C.1	Be in MODE 3.	6 hours
	AND		
	C.2	Be in MODE 5.	36 hours
D. Required Action and associated Completion Time for Condition A or B not met during movement of irradiated fuel assemblies or during CORE ALTERATIONS.	D.1	Suspend CORE ALTERATIONS.	Immediately
	AND		
	D.2	Suspend movement of irradiated fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

-----NOTE-----
Refer to Table 3.3.7-1 to determine which SRs apply for each CREFS Actuation Function.

SURVEILLANCE		FREQUENCY
SR 3.3.7.1	Perform CHANNEL CHECK.	~~12 hours~~
SR 3.3.7.2	Perform COT.	~~92 days~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.7.3	Perform ACTUATION LOGIC TEST.	~~92 days on a STAGGERED TEST BASIS~~
SR 3.3.7.4	Perform MASTER RELAY TEST.	~~92 days on a STAGGERED TEST BASIS~~
SR 3.3.7.5	Perform SLAVE RELAY TEST.	~~18 months~~
SR 3.3.7.6	---------------------------NOTE-------------------------------- Verification of setpoint is not required. -- Perform TADOT.	~~18 months~~
SR 3.3.7.7	Perform CHANNEL CALIBRATION.	~~18 months~~

Insert 1

SURVEILLANCE REQUIREMENTS

---NOTE---
Refer to Table 3.3.8-1 to determine which SRs apply for each PRF Actuation Function.

	SURVEILLANCE	FREQUENCY
SR 3.3.8.1	Perform CHANNEL CHECK.	~~12 hours~~
SR 3.3.8.2	Perform COT.	~~92 days~~
SR 3.3.8.3	Perform ACTUATION LOGIC TEST.	~~92 days on a STAGGERED TEST BASIS~~
SR 3.3.8.4	Perform MASTER RELAY TEST.	~~92 days on a STAGGERED TEST BASIS~~
SR 3.3.8.5	Perform SLAVE RELAY TEST.	~~18 months~~
SR 3.3.8.6	----------------------------NOTE---------------------------- Verification of setpoint is not required. -- Perform TADOT.	~~18 months~~
SR 3.3.8.7	Perform CHANNEL CALIBRATION.	~~18 months~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.1.1	Verify pressurizer pressure is within the limit specified in the COLR.	~~12 hours~~
SR 3.4.1.2	Verify RCS average temperature is within the limit specified in the COLR.	~~12 hours~~
SR 3.4.1.3	Verify RCS total flow rate is within the limits.	~~12 hours~~
SR 3.4.1.4	-------------------------------NOTE------------------------------- Not required to be performed until 7 days after ≥ 90% RTP. -- Verify by measurement that RCS total flow rate is within the limits.	~~18 months~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. ------------NOTE------------- Required Action C.2 shall be completed whenever this Condition is entered. --------------------------------	C.1	Initiate action to restore parameter(s) to within limits.	Immediately
	AND		
Requirements of LCO not met any time in other than MODE 1, 2, 3, or 4.	C.2	Determine RCS is acceptable for continued operation.	Prior to entering MODE 4

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.3.1	-----------------------------NOTE------------------------------- Only required to be performed during RCS heatup and cooldown operations and RCS inservice leak and hydrostatic testing. ---	
	Verify RCS pressure, RCS temperature, and RCS heatup and cooldown rates are within the limits specified in the PTLR.	~~1 hour~~

Insert 1

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.4 RCS Loops — MODES 1 and 2

LCO 3.4.4 Three RCS loops shall be OPERABLE and in operation.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of LCO not met.	A.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.4.1	Verify each RCS loop is in operation.	~~12 hours~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One required RCS loop not in operation, and reactor trip breakers closed and Rod Control System capable of rod withdrawal.	C.1	Restore required RCS loop to operation.	1 hour
	OR		
	C.2	De-energize all control rod drive mechanisms (CRDMs).	1 hour
D. Two required RCS loops inoperable. OR No RCS loop in operation.	D.1	De-energize all CRDMs.	Immediately
	AND		
	D.2	Suspend all operations involving a reduction of RCS boron concentration.	Immediately
	AND		
	D.3	Initiate action to restore one RCS loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.5.1	Verify required RCS loops are in operation.	~~12 hours~~
SR 3.4.5.2	Verify steam generator secondary side water levels are ≥ 30% (narrow range) for required RCS loops.	~~12 hours~~
SR 3.4.5.3	Verify correct breaker alignment and indicated power are available to the required pump that is not in operation.	~~7 days~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One required RHR loop inoperable. AND Two required RCS loops inoperable.	B.1 Be in MODE 5.	24 hours
C. Required RCS or RHR loops inoperable. OR No RCS or RHR loop in operation.	C.1 Suspend all operations involving a reduction of RCS boron concentration. AND C.2 Initiate action to restore one loop to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.6.1	Verify one RHR or RCS loop is in operation.	~~12 hours~~
SR 3.4.6.2	Verify SG secondary side water levels are ≥ 75% (wide range) for required RCS loops.	~~12 hours~~
SR 3.4.6.3	Verify correct breaker alignment and indicated power are available to the required pump that is not in operation.	~~7 days~~

Insert 1

APPLICABILITY: MODE 5 with RCS loops filled.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RHR loop inoperable. AND Required SGs secondary side water levels not within limits.	A.1 Initiate action to restore a second RHR loop to OPERABLE status. OR A.2 Initiate action to restore required SG secondary side water levels to within limits.	Immediately Immediately
B. Required RHR loops inoperable. OR No RHR loop in operation.	B.1 Suspend all operations involving a reduction of RCS boron concentration. AND B.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	Verify one RHR loop is in operation.	~~12 hours~~
SR 3.4.7.2	Verify SG secondary side water level is ≥ 75% (wide range) in required SGs.	~~12 hours~~

Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.7.3	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	~~7 days~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Required RHR loops inoperable. OR No RHR loop in operation.	B.1	Suspend all operations involving reduction in RCS boron concentration.	Immediately
	AND		
	B.2	Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify one RHR loop is in operation.	~~12 hours~~
SR 3.4.8.2	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	~~7 days~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	Verify pressurizer water level is ≤ 63.5% indicated.	~~12 hours~~
SR 3.4.9.2	Verify capacity of each required group of pressurizer heaters is ≥ 125 kW.	~~92 days~~
SR 3.4.9.3	Verify required pressurizer heaters are capable of being powered from an emergency power supply.	~~18 months~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
F. More than one block valve inoperable.	F.1	Place associated PORVs in manual control.	1 hour
	AND		
	F.2	Restore one block valve to OPERABLE status.	2 hours
	AND		
	F.3	Restore remaining block valve to OPERABLE status.	72 hours
G. Required Action and associated Completion Time of Condition F not met.	G.1	Be in MODE 3.	6 hours
	AND		
	G.2	Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.11.1	-------------------------------NOTES----------------------------- 1. Not required to be met with block valve closed in accordance with the Required Action of Condition B or E. 2. Not required to be performed prior to entry into MODE 3. 3. Not required to be performed for Unit 2 for the remainder of operating cycle 16 for block valve Q2B31MOV8000B. --- Perform a complete cycle of each block valve.	~~92 days~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.11.2	---------------------------NOTE--------------------------- Not required to be performed prior to entry into MODE 3. --- Perform a complete cycle of each PORV during MODE 3 or 4.	~~18 months~~
SR 3.4.11.3	Perform a complete cycle of each PORV using the backup PORV control system.	~~18 months~~
SR 3.4.11.4	---------------------------NOTE--------------------------- Required to be performed only for Unit 2 for the remainder of operating cycle 16. --- Check power available to the Unit Two PORV block valve Q2B31MOV8000B.	~~24 hours~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One required RHR relief valve inoperable.	D.1 Reduce pressurizer level to $\leq$ 30% (cold calibrated).	24 hours
	AND	
	D.2 Assign a dedicated operator for RCS pressure monitoring and control.	24 hours
	AND	
	D.3 Restore required RHR relief valve to OPERABLE status.	7 days
E. Two required RHR relief valves inoperable. OR Required Action and associated Completion Time of Condition A, C, or D not met. OR LTOP System inoperable for any reason other than Condition A, B, C, or D.	E.1 Depressurize RCS and establish RCS vent of $\geq$ 2.85 square inches. Insert 1	8 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.12.1	Verify a maximum of one charging pump is capable of injecting into the RCS.	~~12 hours~~

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.12.2	Verify each accumulator is isolated.	~~12 hours~~
SR 3.4.12.3	Verify RHR suction isolation valves are open for each required RHR suction relief valve.	~~72 hours~~
SR 3.4.12.4	------NOTE------ Only required to be performed when complying with LCO 3.4.12.b. ------------ Verify RCS vent ≥ 2.85 square inches open. Insert 1	~~12 hours for unlocked, unsealed, or unsecured open vent valve(s)~~ ~~AND~~ ~~31 days for locked, sealed, or otherwise secured open vent valve(s)~~
SR 3.4.12.5	Verify each required RHR suction relief valve setpoint.	In accordance with the Inservice Testing Program AND ~~Every 18 months on a STAGGERED TEST BASIS~~

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.13.1	---------------------------NOTES--------------------------- 1. Not required to be performed in MODE 3 or 4 until 12 hours of steady state operation. 2. Not applicable to primary to secondary LEAKAGE. -- Verify RCS operational LEAKAGE is within limits by performance of RCS water inventory balance.	-------NOTE-------- Only required to be performed during steady state operation ---------------------- ~~72 hours~~
SR 3.4.13.2	---------------------------NOTE--------------------------- Not required to be performed until 12 hours after establishment of steady state operation. -- Verify primary to secondary LEAKAGE is ≤ 150 gallons per day through any one SG.	~~72 hours~~

Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.14.1	---------------------------NOTES--------------------------- 1. Not required to be performed in MODES 3 and 4. 2. Not required to be performed on the RCS PIVs located in the RHR flow path when in the shutdown cooling mode of operation. 3. RCS PIVs actuated during the performance of this Surveillance are not required to be tested more than once if a repetitive testing loop cannot be avoided. -- Verify leakage from each RCS PIV is equivalent to ≤ 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm at an RCS pressure ≥ 2215 psig and ≤ 2255 psig. Insert 1	18 months, prior to entering MODE 2 <u>AND</u> Following valve actuation due to automatic or manual action or flow through the valve (except for RCS PIVs located in the RHR flow path)
SR 3.4.14.2	------------------------------NOTE------------------------------ Not required to be met when the RHR System valves are required open in accordance with SR 3.4.12.3. -- Verify RHR System autoclosure interlock causes the valves to close automatically with a simulated or actual RCS pressure signal ≥ 700 psig and ≤ 750 psig.	~~18 months~~

SURVEILLANCE REQUIREMENTS

SR 3.4.14.3	------------------------- NOTE -------------------------------- Not required to be met when the RHR System valves valves are required open in accordance with SR 3.4.12.3. --- Verify RHR System open permissive interlock prevents the valves from being opened with a simulated or actual RCS pressure signal ≥ 295 psig and ≤ 415 psig.	~~18 months~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.15.1	Perform CHANNEL CHECK of the required containment atmosphere radioactivity monitor.	~~12 hours~~
SR 3.4.15.2	Perform COT of the required containment atmosphere radioactivity monitor.	~~92 days~~
SR 3.4.15.3	Perform CHANNEL CALIBRATION of the required containment atmosphere radioactivity monitor.	~~18 months~~
SR 3.4.15.4	Perform CHANNEL CALIBRATION of the required containment air cooler condensate level monitor.	~~18 months~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Required Action and associated Completion Time of Condition A not met. OR DOSE EQUIVALENT I-131 in the unacceptable region of Figure 3.4.16-1.	C.1	Be in MODE 3 with $T_{avg} < 500°F$.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.16.1	Verify reactor coolant gross specific activity $\leq 100/\bar{E}$ μCi/gm.	~~7 days~~
SR 3.4.16.2	-------------------------------NOTE------------------------------- Only required to be performed in MODE 1. --- Verify reactor coolant DOSE EQUIVALENT I-131 specific activity ≤ 0.5 μCi/gm. Insert 1	~~14 days~~ AND Between 2 and 6 hours after a THERMAL POWER change of ≥ 15% RTP within a 1 hour period

SURVIELLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.16.3	-----------------------------NOTE----------------------------- Not required to be performed until 31 days after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours. -- Determine $\bar{E}$ from a sample taken in MODE 1 after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours.	~~184 days~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify each accumulator isolation valve is fully open.	~~12 hours~~
SR 3.5.1.2	Verify borated water volume in each accumulator is ≥ 7555 gallons (31.4%) and ≤ 7780 gallons (58.4%).	~~12 hours~~
SR 3.5.1.3	Verify nitrogen cover pressure in each accumulator is ≥ 601 psig and ≤ 649 psig.	~~12 hours~~
SR 3.5.1.4	Verify boron concentration in each accumulator is ≥ 2200 ppm and ≤ 2500 ppm. Insert 1	~~31 days~~ AND -------NOTE------- Only required to be performed for affected accumulators --------------------- Once within 6 hours after each solution volume increase of ≥ 12% level, indicated, that is not the result of addition from the refueling water storage tank
SR 3.5.1.5	Verify power is removed from each accumulator isolation valve operator when RCS pressure is ≥ 2000 psig.	~~31 days~~

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.2.1	-----NOTE----- Only required to be performed for valves 8132A and 8132B when Centrifugal Charging Pump A is inoperable. ---------- Verify the following valves are in the listed position with power to the valve operator removed. Number / Position / Function 8884, 8886 / Closed / Centrifugal Charging Pump to RCS Hot Leg 8132A, 8132B / Open / Centrifugal Charging Pump discharge isolation 8889 / Closed / RHR to RCS Hot Leg Injection	~~12 hours~~
SR 3.5.2.2	Verify each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31 days~~
SR 3.5.2.3	Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.5.2.4	Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	~~18 months~~

Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.5.2.5	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	~~18 months~~
SR 3.5.2.6	Verify, for each ECCS throttle valve listed below, each position stop is in the correct position. <u>Valve Number</u> CVC-V-8991 A/B/C CVC-V-8989 A/B/C CVC-V-8996 A/B/C CVC-V-8994 A/B/C RHR-HV 603 A/B	~~18 months~~
SR 3.5.2.7	Verify, by visual inspection, each ECCS train containment sump suction inlet is not restricted by debris and the suction inlet trash racks, screens, and inner cages are properly installed and show no evidence of structural distress or abnormal corrosion.	~~18 months~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE				FREQUENCY
SR 3.5.3.2	Verify the following valves are in the listed position with power to the valve operator removed.			~~31 days~~
	Number	Position	Function	
	8706A, 8706B	Closed	RHR pump discharge to centrifugal charging pump suction	
	8884, 8886	Closed	Centrifugal charging pump discharge to RCS hot legs	

Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.5.4.1	----------------------------NOTE---------------------------- Only required to be performed when ambient air temperature is < 35°F. -- Verify RWST borated water temperature is ≥ 35°F.	~~24 hours~~
SR 3.5.4.2	Verify RWST borated water volume is ≥ 471,000 gallons.	~~7 days~~
SR 3.5.4.3	Verify RWST boron concentration is ≥ 2300 ppm and ≤ 2500 ppm.	~~7 days~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.5.1	---NOTE--- Not required to be performed until 4 hours after the Reactor Coolant System pressure stabilizes at $\geq$ 2215 psig and $\leq$ 2255 psig.	
	Verify manual seal injection throttle valves are adjusted to give a flow within the limits of Figure 3.5.5-1 with the seal water injection flow control valve full open.	~~31 days~~

Insert 1

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.6 ECCS Recirculation Fluid pH Control System

LCO 3.5.6 The ECCS Recirculation Fluid pH Control System shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. ECCS Recirculation Fluid pH Control System inoperable.	A.1	Restore system to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 5.	84 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.6.1	Perform a visual inspection of the ECCS Recirculation Fluid pH Control System and verify the following: a. Three (3) storage baskets are in place, and b. Have maintained their integrity, and c. Each basket is filled with trisodium phosphate compound such that the level is between the indicated fill marks on the baskets.	~~18 months~~

Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.2.1	---NOTES--- 1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. 2. Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1. --- Perform required air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program.	In accordance with the Containment Leakage Rate Testing Program
SR 3.6.2.2	Verify only one door in the air lock can be opened at a time.	~~24 months~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition A, B, C, or D not met.	E.1 Be in MODE 3. AND E.2 Be in MODE 5.	6 hours 36 hours
F. One or more penetration flow paths containing containment purge valves, with penetration leakage not within the penetration limits.	F.1 Reduce leakage to within limit. Insert 1	Prior to entering MODE 4 from MODE 5 if the existing leakage is determined during quarterly testing per SR 3.6.3.5 OR Prior to entering MODE 4 if excess leakage is determined during MODE 5 per SR 3.6.3.5

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.3.1	Verify each 48 inch purge valve is sealed closed, except for one purge valve in a penetration flow path while in Condition D of this LCO.	~~31 days~~
SR 3.6.3.2	---------------------------NOTE--------------------------- Valves and blind flanges in high radiation areas may be verified by use of administrative controls. -- Verify each containment isolation manual valve and blind flange that is located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	~~31 days~~

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.3.3	--------------------------NOTES------------------------------ 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. The blind flange on the fuel transfer canal flange is only required to be verified closed after each draining of the canal. -- Verify each containment isolation manual valve and blind flange that is located inside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days
SR 3.6.3.4	Verify the isolation time of each power operated or automatic containment isolation valve in the IST Program is within limits.	In accordance with the Inservice Testing Program
SR 3.6.3.5	Perform leakage rate testing for containment penetrations containing containment purge valves with resilient seals. Insert 1	~~184 days~~ AND Within 92 days after opening the valve
SR 3.6.3.6	Verify each automatic containment isolation valve that is not locked, sealed or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal.	~~18 months~~

3.6 CONTAINMENT SYSTEMS

3.6.4 Containment Pressure

LCO 3.6.4 Containment pressure shall be ≥ -1.5 psig and ≤ +3.0 psig.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment pressure not within limits.	A.1 Restore containment pressure to within limits.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.1	Verify containment pressure is within limits.	~~12 hours~~

Insert 1

3.6 CONTAINMENT SYSTEMS

3.6.5 Containment Air Temperature

LCO 3.6.5 Containment average air temperature shall be ≤ 120°F.

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Containment average air temperature not within limit.	A.1	Restore containment average air temperature to within limit.	8 hours
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.5.1	Verify containment average air temperature is within limit.	~~24 hours~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Two containment cooling trains inoperable.	D.1	Restore one containment cooling train to OPERABLE status.	72 hours
E. Required Action and associated Completion Time of Condition C or D not met.	E.1 AND E.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours
F. Two containment spray trains inoperable. OR Any combination of three or more trains inoperable.	F.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.6.1	Verify each containment spray manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	~~31 days~~
SR 3.6.6.2	Operate each required containment cooling train fan unit for $\geq$ 15 minutes.	~~31 days~~
SR 3.6.6.3	Verify each containment cooling train cooling water flow rate is $\geq$ 1600 gpm.	~~31 days~~

Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.6.4	Verify each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.6.6.5	Verify each automatic containment spray valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	~~18 months~~
SR 3.6.6.6	Verify each containment spray pump starts automatically on an actual or simulated actuation signal.	~~18 months~~
SR 3.6.6.7	Verify each containment cooling train starts automatically on an actual or simulated actuation signal.	~~18 months~~
SR 3.6.6.8	Verify each spray nozzle is unobstructed.	~~10 years~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.8.1	Operate each HMS train for ≥ 15 minutes.	~~92 days~~
SR 3.6.8.2	Verify each HMS fan speed is ≥ 1320 rpm.	~~18 months~~
SR 3.6.8.3	Verify each HMS train starts on an actual or simulated actuation signal.	~~18 months~~

Insert 1

3.6 CONTAINMENT SYSTEMS

3.6.9 Reactor Cavity Hydrogen Dilution System

LCO 3.6.9 Two Reactor Cavity Hydrogen Dilution trains shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Reactor Cavity Hydrogen Dilution train inoperable.	A.1 Restore the train to OPERABLE status.	30 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.9.1	Operate each Reactor Cavity Hydrogen Dilution train for ≥ 15 minutes.	~~92 days~~
SR 3.6.9.2	Verify each Reactor Cavity Hydrogen Dilution train starts on an actual or simulated actuation signal.	~~18 months~~

Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.4.1	Verify one complete cycle of each ARV.	~~18 months~~
SR 3.7.4.2	Verify one complete cycle of at least one manual isolation valve in each ARV Line.	~~18 months~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Three AFW trains inoperable.	D.1 --------------NOTE--------------- LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. ------------------------------------	
	Initiate action to restore one AFW train to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.5.1	------------------------------NOTE------------------------------ Not required to be performed for the AFW flow control valves when ≤ 10% RTP or when the AFW system is not in automatic control. ---	
	Verify each AFW manual, power operated, and automatic valve in each water flow path, and in both steam supply flow paths to the steam turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31 days~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.5.2	-----NOTE----- Not required to be performed for the turbine driven AFW pump until 24 hours after ≥ 1005 psig in the steam generator. ----- Verify the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program.
SR 3.7.5.3	Verify each AFW automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	~~18 months~~
SR 3.7.5.4	-----NOTE----- Not required to be performed for the turbine driven AFW pump until 24 hours after ≥ 1005 psig in the steam generator. ----- Verify each AFW pump starts automatically on an actual or simulated actuation signal.	~~18 months~~
SR 3.7.5.5	Verify the turbine driven AFW pump steam admission valves open when air is supplied from their respective air accumulators.	~~18 months~~

Insert 1

3.7 PLANT SYSTEMS

3.7.6 Condensate Storage Tank (CST)

LCO 3.7.6 The CST shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CST inoperable.	A.1 Verify by administrative means OPERABILITY of backup water supply.	4 hours AND Once per 12 hours thereafter
	AND	
	A.2 Restore CST to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	AND	
	B.2 Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.6.1 Verify the CST level is ≥ 150,000 gal.	$\boxed{\cancel{12\ \text{hours}}}$

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.7.1	------------------------------NOTE------------------------------ Isolation of CCW flow to individual components does not render the CCW System inoperable. --- Verify each accessible CCW manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31 days~~
SR 3.7.7.2	Verify each CCW automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	~~18 months~~
SR 3.7.7.3	Verify each CCW pump starts automatically on an actual or simulated actuation signal.	~~18 months~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met.	C.1	Be in MODE 3.	6 hours
	AND		
	C.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.8.1	-----------------------------NOTE------------------------------ Isolation of SWS flow to individual components does not render the SWS inoperable. --- Verify each accessible SWS manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31 days~~
SR 3.7.8.2	Verify each SWS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	~~18 months~~
SR 3.7.8.3	Verify each SWS pump starts automatically on an actual or simulated actuation signal.	~~18 months~~
SR 3.7.8.4	Verify the integrity of the SWS buried piping by visual inspection of the ground area.	~~18 months~~

Insert 1

3.7 PLANT SYSTEMS

3.7.9 Ultimate Heat Sink (UHS)

LCO 3.7.9 The UHS (Service Water Pond) shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. UHS water level or temperature not within the required limit(s).	A.1 Be in MODE 4. AND A.2 Be in MODE 5.	48 hours 60 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.9.1	Verify water level of UHS is ≥ 184 ft mean sea level.	~~24 hours~~
SR 3.7.9.2	Verify water temperature of ≤ 95°F at the discharge of the Service Water Pumps	~~24 hours~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition B not met during movement of irradiated fuel assemblies or during CORE ALTERATIONS. OR Two CREFS trains inoperable during movement of irradiated fuel assemblies or during CORE ALTERATIONS.	E.1 Suspend CORE ALTERATIONS. AND E.2 Suspend movement of irradiated fuel assemblies.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.10.1	Operate each CREFS Pressurization train with the heaters operating and each CREFS Recirculation and Filtration train for ≥ 15 minutes.	~~31 days~~
SR 3.7.10.2	Perform required CREFS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with VFTP
SR 3.7.10.3	---------------------------NOTE--------------------------- Not required to be performed in MODES 5 and 6. --- Verify each CREFS train actuates on an actual or simulated actuation signal.	~~18 months~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Two CRACS trains inoperable during movement of irradiated fuel assemblies or during CORE ALTERATIONS.	D.1	Suspend CORE ALTERATIONS.	Immediately
	AND		
	D.2	Suspend movement of irradiated fuel assemblies.	Immediately
E. Two CRACS trains inoperable in MODE 1, 2, 3, or 4.	E.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.11.1	Verify each CRACS train has the capability to remove the assumed heat load.	~~18 months~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
E. Two PRF trains inoperable during movement of irradiated fuel assemblies in the SFPR.	E.1	Suspend movement of irradiated fuel assemblies in the SFPR.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.12.1	----------NOTE---------- Only required to be performed during movement of irradiated fuel assemblies in the SFPR. -------------------- Verify two PRF trains aligned to the SFPR.	~~24 hours~~
SR 3.7.12.2	Operate each PRF train for ≥ 15 minutes in the applicable mode of operation (post LOCA and/or refueling accident).	~~31 days~~
SR 3.7.12.3	Perform required PRF filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.12.4	Verify each PRF train actuates and the normal spent fuel pool room ventilation system isolates on an actual or simulated actuation signal.	~~18 months~~
SR 3.7.12.5	Verify one PRF train can maintain a pressure ≤ -0.125 inches water gauge with respect to adjacent areas during the post LOCA mode of operation at a flow rate ≤ 5500 cfm.	~~18 months on a STAGGERED TEST BASIS~~
SR 3.7.12.6	Verify one PRF train can maintain a slightly negative pressure with respect to adjacent areas during the fuel handling accident mode of operation at a flow rate ≤ 5500 cfm.	~~18 months on a STAGGERED TEST BASIS~~

Insert 1

3.7 PLANT SYSTEMS

3.7.13 Fuel Storage Pool Water Level

LCO 3.7.13 The fuel storage pool water level shall be ≥ 23 ft over the top of irradiated fuel assemblies seated in the storage racks.

APPLICABILITY: During movement of irradiated fuel assemblies in the fuel storage pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Fuel storage pool water level not within limit.	A.1 -------------NOTE------------- LCO 3.0.3 is not applicable. --------------------------------- Suspend movement of irradiated fuel assemblies in the fuel storage pool.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.13.1	Verify the fuel storage pool water level is ≥ 23 ft above the top of the irradiated fuel assemblies seated in the storage racks.	~~7 days~~

Insert 1

3.7 PLANT SYSTEMS

3.7.14 Fuel Storage Pool Boron Concentration

LCO 3.7.14 The fuel storage pool boron concentration shall be ≥ 2000 ppm.

APPLICABILITY: When fuel assemblies are stored in the fuel storage pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Fuel storage pool boron concentration not within limit. Insert 1	-------------------NOTE------------------- LCO 3.0.3 is not applicable. --- A.1 Suspend movement of fuel assemblies in the fuel storage pool. AND A.2 Initiate action to restore fuel storage pool boron concentration to within limit.	 Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.14.1	Verify the fuel storage pool boron concentration is within limit.	~~7 days~~

3.7 PLANT SYSTEMS

3.7.16 Secondary Specific Activity

LCO 3.7.16 The specific activity of the secondary coolant shall be ≤ 0.10 μCi/gm DOSE EQUIVALENT I-131.

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.	6 hours
	AND		
	A.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.16.1	Verify the specific activity of the secondary coolant is ≤ 0.10 μCi/gm DOSE EQUIVALENT I-131.	~~31 days~~

Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.17.1	Verify the cask storage area boron concentration is within limit.	Once within 4 hours prior to entering the Applicability of this LCO. AND ~~Every 48 hours thereafter.~~

Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.19.1	Verify each ESF Room Cooler system manual valve servicing safety-related equipment that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31 days~~
SR 3.7.19.2	Verify each ESF Room Cooler fan starts automatically on an actual or simulated actuation signal.	~~18 months~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each required offsite circuit.	~~7 days~~
SR 3.8.1.2	-----NOTES----- 1. Performance of SR 3.8.1.6 satisfies this SR. 2. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 3. 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 3.8.1.6 must be met. ---------- Verify each DG starts from standby conditions and achieves steady state voltage ≥ 3740 V and ≤ 4580 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	~~31 days~~

Insert 1

SURVEILLANCE REQUREMENTS

SURVEILLANCE		FREQUENCY
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 3.8.1.6. -------------- Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 2700 kW and ≤ 2850 kW for the 2850 kW DG and ≥ 3875 kW and ≤ 4075 kW for the 4075 kW DGs.	~~31 days~~
SR 3.8.1.4	Verify each day tank contains ≥ 900 gal of fuel oil for the 4075 kW DGs and 700 gal of fuel oil for the 2850 kW DG.	~~31 days~~
SR 3.8.1.5	Verify the fuel oil transfer system operates to transfer fuel oil from storage tank to the day tank.	~~31 days~~
SR 3.8.1.6	-------NOTE------- All DG starts may be preceded by an engine prelube period. -------------- Verify each DG starts from standby condition and achieves in ≤ 12 seconds, voltage ≥ 3952 V and frequency ≥ 60 Hz.	~~184 days~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.7	-----------------------------NOTE----------------------------- This Surveillance shall not be performed in MODE 1 or 2. --- Verify manual transfer of AC power sources from the normal offsite circuit to the alternate required offsite circuit.	~~18 months~~
SR 3.8.1.8	Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and: a. Following load rejection, the speed is ≤ 75% of the difference between nominal speed and the overspeed trip setpoint; and b. Following load rejection, the voltage is ≥ 3740 V and ≤ 4580 V.	~~18 months~~

Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.1.9	-----NOTES----- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. ----- Verify on an actual or simulated loss of offsite power signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 12 seconds, 2. energizes auto-connected shutdown loads through automatic load sequencer, 3. maintains steady state voltage ≥ 3740 V and ≤ 4580 V, 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.	~~18 months~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.10	-----NOTE----- All DG starts may be preceded by prelube period. ----- Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and: a. In ≤ 12 seconds after auto-start and during tests, achieves voltage ≥ 3952 V; b. In ≤ 12 seconds after auto-start and during tests, achieves frequency ≥ 60 Hz; c. Operates for ≥ 5 minutes and maintains a steady state generator voltage and frequency of ≥ 3740 V and ≤ 4580 V and ≥ 58.8 Hz and ≤ 61.2 Hz; -----NOTE----- SR 3.8.1.10.d and e shall not be performed in MODE 1 or 2. ----- d. Permanently connected loads remain energized from the offsite power system; and e. Emergency loads are energized from the offsite power system.	~~18 months~~

Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.1.11	Verify each DG's automatic trips are bypassed on actual or simulated loss of voltage signal on the emergency bus and/or an actual or simulated ESF actuation signal except: a. Engine overspeed; b. Generator differential current; and c. Low lube oil pressure.	~~18 months~~
SR 3.8.1.12	------------------------------NOTE------------------------------ Momentary transients below the minimum load specified do not invalidate this test. --- Verify each DG operates for ≥ 24 hours: a. For ≥ 2 hours loaded ≥ 4353 for the 4075 kW DGs and ≥ 3100 kW for the 2850 kW DG; and b. For the remaining hours of the test loaded ≥ 4075 kW for the 4075 kW DGs and ≥ 2850 kW for the 2850 kW DG.	~~18 months~~

Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.1.13	-------------------------------NOTES------------------------------ 1. This Surveillance shall be performed within 10 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 4075 kW for the 4075 kW DGs and ≥ 2850 kW for the 2850 kW DG. Momentary transients below the minimum load specified do not invalidate this test. 2. All DG starts may be preceded by an engine prelube period. --- Verify each DG starts and achieves, in ≤ 12 seconds, voltage ≥ 3952 V and frequency ≥ 60 Hz.	~~18 months~~
SR 3.8.1.14	-------------------------------NOTE------------------------------ This Surveillance shall not be performed in MODE 1, 2, 3, or 4. --- 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~~

Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.1.15	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 returning DG to ready-to-load operation.	~~18 months~~
SR 3.8.1.16	Verify interval between each sequenced load block is within ± 10% of design interval or 0.5 seconds, whichever is greater, for each emergency load sequencer.	~~18 months~~
SR 3.8.1.17	-----NOTES----- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. ---------- 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; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 12 seconds,	~~18 months~~ (continued)

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.17 (continued)	2. energizes auto-connected emergency loads through load sequencer, 3. achieves steady state voltage ≥ 3740 V and ≤ 4580 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.	
SR 3.8.1.18	------------------------------NOTE------------------------------ Testing of the shared Emergency Diesel Generator (EDG) set (EDG 1-2A or EDG 1C) on either unit may be used to satisfy this surveillance requirement for these EDGs for both units. --- Verify each DG does not trip and voltage is maintained ≤ 4990 V and ≥ 3330 V during and following a load rejection of ≥ 1200 kW and ≤ 2400 kW.	~~6 years~~
SR 3.8.1.19	------------------------------NOTE------------------------------ All DG starts may be preceded by an engine prelube period. --- Verify when started simultaneously from standby condition, each DG achieves, in ≤ 12 seconds, voltage ≥ 3952 V and frequency ≥ 60 Hz.	~~10 years~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
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
E. One or more DGs with the required starting air receiver pressure < 350 psig and ≥ 150 psig (for DG 1-2A, 1B, and 2B), or < 200 psig and ≥ 90 psig (for DG 1C).	E.1	Restore at least one starting air receiver pressure per affected DG to ≥ 350 psig (for DG 1-2A, 1B, and 2B) or ≥ 200 psig (for DG 1C).	48 hours
F. Required Action and associated Completion Time not met. <u>OR</u> One or more DGs 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
SR 3.8.3.1	Verify each fuel oil storage tank contains ≥ 25,000 gal of useable fuel.	~~31 days~~

Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.3.2	Verify lubricating oil inventory is ≥ 238 gal (for DG 1-2A, 1B, and 2B) or ≥ 167 gal (for DG 1C).	~~31 days~~
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
SR 3.8.3.4	Verify each DG has at least one air start receiver with a pressure ≥ 350 psig (for DG 1-2A, 1B, and 2B) and ≥ 200 psig (for DG 1C).	~~31 days~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.4.1	Verify battery terminal voltage is ≥ 127.8 V on float charge.	~~7 days~~
SR 3.8.4.2	Verify no visible corrosion at battery terminals and connectors. OR Verify post-to-post battery connection resistance of each cell-to-cell and terminal connection is ≤ 150 microhms for the Auxiliary Building batteries and ≤ 1500 microhms for the SWIS batteries.	~~92 days~~
SR 3.8.4.3	Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration.	~~18 months~~
SR 3.8.4.4	Remove visible terminal corrosion, verify battery cell- to-cell and terminal connections are coated with anti-corrosion material.	~~18 months~~
SR 3.8.4.5	Verify post-to-post battery connection resistance of each cell-to-cell and terminal connection is ≤ 150 microhms for the Auxiliary Building batteries and ≤ 1500 microhms for the SWIS batteries.	~~18 months~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.4.6	-----NOTE----- This Surveillance may be performed in MODE 1, 2, 3, 4, 5, or 6 provided spare or redundant charger(s) placed in service are within surveillance frequency to maintain DC subsystem(s) OPERABLE. ---------- Verify each required Auxiliary Building battery charger supplies ≥ 536 amps at ≥ 125 V for ≥ 4 hours and each required SWIS battery charger supplies ≥ 3 amps at ≥ 125 V for ≥ 4 hours.	~~18 months~~
SR 3.8.4.7	-----NOTES----- 1. The performance discharge test in SR 3.8.4.8 may be performed in lieu of the service test in SR 3.8.4.7 once per 60 months. 2. The modified performance discharge test in SR 3.8.4.8 may be performed in lieu of the service test at any time. 3. This Surveillance shall not be performed for the Auxiliary Building batteries in MODE 1, 2, 3, or 4. ---------- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design load profile described in the Final Safety Analysis Report, Section 8.3.2, by subjecting the battery to a service test.	~~18 months~~

Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.4.8	------------------------------NOTE------------------------------ This Surveillance shall not be performed for the Auxiliary Building batteries in MODE 1, 2, 3, or 4. -- Verify battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	~~60 months~~ AND 18 months when battery shows degradation or has reached 85% of expected life or 17 years, whichever comes first

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met. <u>OR</u> One or more required batteries with average electrolyte temperature of the representative cells < 60°F for the Auxiliary Building batteries or < 35°F for the SWIS batteries. <u>OR</u> One or more required batteries with one or more battery cell parameters not within Category C values. <u>OR</u> -------------NOTE-------------- Battery terminal voltage of 127.8 volts as measured by SR 3.8.4.1 is equivalent to average cell float voltage of 2.13 volts per cell. ---------------------------------- One or more required batteries with the average cell float voltage ≤ 2.13 volts.	B.1 Declare associated battery inoperable. Insert 1	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.6.1	Verify battery cell parameters meet Table 3.8.6-1 Category A limits.	~~7 days~~

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.6.2	Verify battery cell parameters meet Table 3.8.6-1 Category B limits. Insert 1	~~92 days~~ AND Once within 7 days after a battery discharge < 110 V AND Once within 7 days after a battery overcharge > 150 V
SR 3.8.6.3	Verify average electrolyte temperature of representative cells is ≥ 60°F for the Auxiliary Building batteries and ≥ 35°F for the SWIS batteries.	~~92 days~~

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.7.1	Verify correct inverter voltage, frequency, and alignment to required AC vital buses.	~~7 days~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.4 Initiate action to restore required inverters to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.8.1	Verify correct inverter voltage, frequency, and alignments to required AC vital buses.	~~7 days~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1	Be in MODE 3.	6 hours
	AND		
	D.2	Be in MODE 5.	36 hours
E. One Service Water Intake Structure (SWIS) DC electrical power distribution subsystem inoperable.	E.1	Declare the associated Service Water train inoperable.	Immediately
F. Two trains with inoperable distribution subsystems that result in a loss of safety function.	F.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.9.1	Verify correct breaker alignments and voltage to required AC, DC, and AC vital bus electrical power distribution subsystems.	~~7 days~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.2.4	Initiate actions to restore required AC, DC, and AC vital bus electrical power distribution subsystems to OPERABLE status.	Immediately
	AND		
	A.2.5	Declare associated required residual heat removal subsystem(s) inoperable and not in operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.10.1	Verify correct breaker alignments and voltage to required AC, DC, and AC vital bus electrical power distribution subsystems.	~~7 days~~

Insert 1

3.9 REFUELING OPERATIONS

3.9.1 Boron Concentration

LCO 3.9.1 Boron concentrations of the Reactor Coolant System, the refueling canal, and the refueling cavity shall be maintained within the limit specified in the COLR.

APPLICABILITY: MODE 6.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Boron concentration not within limit. Insert 1	A.1	Suspend CORE ALTERATIONS.	Immediately
	AND		
	A.2	Suspend positive reactivity additions.	Immediately
	AND		
	A.3	Initiate action to restore boron concentration to within limit.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.1.1	Verify boron concentration is within the limit specified in COLR.	~~72 hours~~

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.9.2.1	Perform CHANNEL CHECK.	~~12 hours~~
SR 3.9.2.2	-----------------------------NOTE----------------------------- Neutron detectors are excluded from CHANNEL CALIBRATION. -- Perform CHANNEL CALIBRATION.	~~18 months~~

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.3.1	Verify each required containment penetration is in the required status.	~~7 days~~
SR 3.9.3.2	Verify each required containment purge and exhaust valve actuates to the isolation position on an actual or simulated actuation signal.	~~18 months~~
SR 3.9.3.3	-----NOTE----- Only required for an open equipment hatch. ----- Verify the capability to install the equipment hatch.	~~7 days~~

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.4	Close equipment hatch and secure with four bolts.	4 hours
	AND		
	A.5	Close one door in each air lock.	4 hours
	AND		
	A.6.1	Close each penetration providing direct access from the containment atmosphere to the outside atmosphere with a manual or automatic isolation valve, blind flange, or equivalent.	4 hours
	OR		
	A.6.2	Verify each penetration is capable of being closed by an OPERABLE Containment Purge and exhaust Isolation System.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.4.1	Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ 3000 gpm.	~~12 hours~~

Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.9.5.1	Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ 3000 gpm.	~~12 hours~~
SR 3.9.5.2	Verify correct breaker alignment and indicated power available to the required RHR pump that is not in operation.	~~7 days~~

Insert 1

3.9 REFUELING OPERATIONS

3.9.6 Refueling Cavity Water Level

LCO 3.9.6 Refueling cavity water level shall be maintained ≥ 23 ft above the top of reactor vessel flange.

APPLICABILITY: During CORE ALTERATIONS, except during latching and unlatching of control rod drive shafts,
During movement of irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Refueling cavity water level not within limit.	A.1 Suspend CORE ALTERATIONS. AND A.2 Suspend movement of irradiated fuel assemblies within containment.	Immediately Immediately

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.6.1	Verify refueling cavity water level is ≥ 23 ft above the top of reactor vessel flange.	~~24 hours~~

5.5 Programs and Manuals

5.5.18 Control Room Integrity Program (CRIP) (continued)

A CRIP shall be established to implement the following:

a. Demonstrate, using Regulatory Guide (RG) 1.197 and ASTM E741, that CRE inleakage is less than the below values. The values listed below do not include 10 cfm assumed in accident analysis for ingress / egress.

   i) 43 cfm when the control room ventilation systems are aligned in the emergency recirculation mode of operation,

   ii) 600 cfm when the control room ventilation systems are aligned in the isolation mode of operation, and

   iii) 2,340 cfm when the control room ventilation systems are aligned in the normal mode of operation;

b. Demonstrate that the leakage characteristics of the CRE will not result in simultaneous loss of reactor control capability from the control room and the hot shutdown panels;

c. Maintain a CRE configuration control and a design and licensing bases control program and a preventative maintenance program. As a minimum, the CRE configuration control program will determine whether the i) CRE differential pressure relative to adjacent areas and ii) the control room ventilation system flow rates, as determined in accordance with ASME N510-1989 or ASTM E2029-99, are consistent with the values measured at the time the ASTM E741 test was performed. If item i or ii has changed, determine how this change has affected the inleakage characteristics of the CRE. If there has been degradation in the inleakage characteristics of the CRE since the E741 test, then a determination should be made whether the licensing basis analyses remain valid. If the licensing basis analyses remain valid, the CRE remains OPERABLE.

d. Test the CRE in accordance with the testing methods and at the frequencies specified in RG 1.197, Revision 0, May 2003.

The provisions of SR 3.0.2 are applicable to the control room inleakage testing frequencies.

Insert 3

Joseph M. Farley Nuclear Plant
License Amendment Request for Adoption of TSTF-425-A, Revision 3,
Risk-Informed Justification for the Relocation of Specific Surveillance
Frequency Requirements to a Licensee Controlled Program
Using the Consolidated Line Item Improvement Process

Enclosure 4

Clean Typed Pages for FNP Proposed TS Changes

3.1 REACTIVITY CONTROL SYSTEMS

3.1.1 SHUTDOWN MARGIN (SDM)

LCO 3.1.1 SDM shall be within the limits provided in the COLR.

APPLICABILITY: MODE 2 with $k_{eff} < 1.0$,
MODES 3, 4, and 5.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SDM not within limit.	A.1 Initiate boration to restore SDM to within limit.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.1.1	Verify SDM to be within limits.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.2.1	------------------------------NOTE------------------------------ The predicted reactivity values may be adjusted (normalized) to correspond to the measured core reactivity prior to exceeding a fuel burnup of 60 effective full power days (EFPD) after each fuel loading. -- Verify measured core reactivity is within ± 1% Δk/k of predicted values.	Once prior to entering MODE 1 after each refueling <u>AND</u> --------NOTE-------- Only required after 60 EFPD ----------------------- In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. More than one rod not within alignment limit.	D.1.1	Verify SDM to be within the limits provided in the COLR.	1 hour
	<u>OR</u>		
	D.1.2	Initiate boration to restore required SDM to within limit.	1 hour
	<u>AND</u>		
	D.2	Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.4.1	Verify individual rod positions within alignment limit.	In accordance with the Surveillance Frequency Control Program
SR 3.1.4.2	Verify rod freedom of movement (trippability) by moving each rod not fully inserted in the core $\geq$ 10 steps in either direction.	In accordance with the Surveillance Frequency Control Program
SR 3.1.4.3	Verify rod drop time of each rod, from the fully withdrawn position, is $\leq$ 2.7 seconds from the beginning of decay of stationary gripper coil voltage to dashpot entry, with: a. $T_{avg} \geq 541°F$; and b. All reactor coolant pumps operating.	Prior to reactor criticality after each removal of the reactor head

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.5.1	Verify each shutdown bank is within the limits specified in the COLR.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.6.2	Verify each control bank insertion is within the limits specified in the COLR.	In accordance with the Surveillance Frequency Control Program
SR 3.1.6.3	Verify sequence and overlap limits specified in the COLR are met for control banks not fully withdrawn from the core.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. RCS lowest loop average temperature not within limit.	C.1 Restore RCS lowest loop average temperature to within limit.	15 minutes
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3.	15 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.8.1	Perform a CHANNEL OPERATION TEST on power range and intermediate range channels per SR 3.3.1.7, SR 3.3.1.8, and Table 3.3.1-1.	Prior to initiation of PHYSICS TESTS
SR 3.1.8.2	Verify the RCS lowest loop average temperature is ≥ 531°F.	In accordance with the Surveillance Frequency Control Program
SR 3.1.8.3	Verify THERMAL POWER is ≤ 5% RTP.	In accordance with the Surveillance Frequency Control Program
SR 3.1.8.4	Verify SDM to be within the limits provided in the COLR.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

-------------------------------------NOTE-------------------------------------
During power escalation at the beginning of each cycle, THERMAL POWER may be increased until an equilibrium power level has been achieved, at which a power distribution map is obtained
----

SURVEILLANCE		FREQUENCY
SR 3.2.1.1	Verify $F_Q(Z)$ is within steady state limit.	Once after each refueling prior to THERMAL POWER exceeding 75% RTP <u>AND</u> Once after achieving equilibrium conditions after exceeding, by ≥ 20% RTP, the THERMAL POWER at which $F_Q(Z)$ was last verified <u>AND</u> In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.1.2 (continued)	Once after achieving equilibrium conditions after exceeding, by ≥ 20% RTP, the THERMAL POWER at which $F_Q(Z)$ was last verified AND In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.2.1	Verify $F^N_{\Delta H}$ is within limits specified in the COLR.	Once after each refueling prior to THERMAL POWER exceeding 75% RTP <u>AND</u> In accordance with the Surveillance Frequency Control Program

3.2 POWER DISTRIBUTION LIMITS

3.2.3 AXIAL FLUX DIFFERENCE (AFD)

LCO 3.2.3 The AFD in % flux difference units shall be maintained within the limits specified in the COLR.

---NOTE--
The AFD shall be considered outside limits when two or more OPERABLE excore channels indicate AFD to be outside limits.

APPLICABILITY: MODE 1 with THERMAL POWER ≥ 50% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. AFD not within limits.	A.1 Reduce THERMAL POWER to < 50% RTP.	30 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.3.1	Verify AFD within limits for each OPERABLE excore channel.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.4.1	------------------------------NOTES------------------------------ 1. With input from one Power Range Neutron Flux channel inoperable and THERMAL POWER ≤ 75% RTP, the remaining three power range channels can be used for calculating QPTR. 2. SR 3.2.4.2 may be performed in lieu of this Surveillance. -- Verify QPTR is within limit by calculation.	In accordance with the Surveillance Frequency Control Program
SR 3.2.4.2	------------------------------NOTE------------------------------ Not required to be performed until 12 hours after input from one or more Power Range Neutron Flux channels are inoperable with THERMAL POWER > 75% RTP. -- Confirm that the normalized symmetric power distribution is consistent with QPTR.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

-----NOTE-----
Refer to Table 3.3.1-1 to determine which SRs apply for each RTS Function.

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1	-----NOTE----- Not required to be performed for source range instrumentation until 1 hour after THERMAL POWER is < P-6. ---------- Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.2	-----NOTES----- 1. Adjust NIS channel if calorimetric calculated power exceeds NIS indicated power by more than +2% RTP. 2. Not required to be performed until 24 hours after THERMAL POWER is ≥ 15% RTP. ---------- Compare results of calorimetric heat balance calculation to Nuclear Instrumentation System (NIS) channel output.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.3	-----NOTES----- 1. Adjust NIS channel if absolute difference is ≥ 3%. 2. Not required to be performed until 7 days after THERMAL POWER is ≥ 50% RTP. 3. Performance of SR 3.3.1.9 satisfies this SR. ---------- Compare results of the incore detector measurements to NIS AFD.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.1.4	-----------------------------NOTE------------------------------- This Surveillance must be performed on the reactor trip bypass breaker prior to placing the bypass breaker in service. --- Perform TADOT.	 In accordance with the Surveillance Frequency Control Program
SR 3.3.1.5	Perform ACTUATION LOGIC TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.6	Perform TADOT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.7	----------------------------NOTE----------------------------- Not required to be performed for source range instrumentation prior to entering MODE 3 from MODE 2 until 4 hours after entry into MODE 3. --- Perform COT.	 In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.1.8	---------------------------NOTE-------------------------------- This Surveillance shall include verification that interlocks P-6 and P-10 are in their required state for existing unit conditions. --- Perform COT.	--------NOTE-------- Only required when not performed in accordance with the Surveillance Frequency Control Program ------------------------ Prior to reactor startup <u>AND</u> Four hours after reducing power below P-6 for source range instrumentation <u>AND</u> Twelve hours after reducing power below P-10 for power range and intermediate range instrumentation <u>AND</u> In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.1.9	-----NOTES----- 1. Neutron detectors are excluded from the calibration. 2. Not required to be performed until 7 days after THERMAL POWER is ≥ 50% RTP. ---------- Calibrate excore channels to agree with incore detector measurements.	 In accordance with the Surveillance Frequency Control Program
SR 3.3.1.10	-----NOTES----- 1. Neutron detectors are excluded from CHANNEL CALIBRATION. 2. This Surveillance shall include verification that the time constants are adjusted to the prescribed values. ---------- Perform CHANNEL CALIBRATION.	 In accordance with the Surveillance Frequency Control Program
SR 3.3.1.11	Perform COT.	In accordance with the Surveillance Frequency Control Program <u>AND</u> -------NOTE--------- Only required when not performed in accordance with the Surveillance Frequency Control Program. ---------- (continued)

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.1.11	(continued)	Prior to reactor startup
SR 3.3.1.12	-----NOTE----- Verification of setpoint is not required. ----- Perform TADOT.	 In accordance with the Surveillance Frequency Control Program
SR 3.3.1.13	-----NOTE----- Verification of setpoint is not required. ----- Perform TADOT.	 Prior to exceeding the P-9 interlock whenever the unit has been in MODE 3, if not performed within the previous 31 days
SR 3.3.1.14	-----NOTE----- Neutron detectors are excluded from response time testing. ----- Verify RTS RESPONSE TIME is within limits.	 In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
L. (continued)	L.2	------------NOTE----------- One train may be bypassed for up to 4 hours for Surveillance testing, provided the other train is OPERABLE. ------------------------------	
		Restore train to OPERABLE status.	24 hours
	OR		
	L.3.1	Be in MODE 3.	30 hours
	AND		
	L.3.2	Be in MODE 5	60 hours

SURVEILLANCE REQUIREMENTS

---NOTE---
Refer to Table 3.3.2-1 to determine which SRs apply for each ESFAS Function.

SURVEILLANCE		FREQUENCY
SR 3.3.2.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.2	Perform ACTUATION LOGIC TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.3	Perform MASTER RELAY TEST.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.2.4	Perform COT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.5	Perform TADOT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.6	------------------------------NOTE------------------------------ Verification of setpoint not required. -- Perform TADOT.	 In accordance with the Surveillance Frequency Control Program
SR 3.3.2.7	------------------------------NOTE------------------------------ This Surveillance shall include verification that the time constants are adjusted to the prescribed values. -- Perform CHANNEL CALIBRATION.	 In accordance with the Surveillance Frequency Control Program
SR 3.3.2.8	Perform SLAVE RELAY TEST	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.9	------------------------------NOTE------------------------------ Not required to be performed for the turbine driven AFW pump until 24 hours after SG pressure is ≥ 1005 psig. -- Verify ESFAS RESPONSE TIMES are within limit.	 In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SR 3.3.2.10	-------------------------------NOTE------------------------------- Verification of setpoint not required. --- Perform TADOT.	------------NOTE---------- Only required when not performed within previous 92 days. ------------------------------ Prior to reactor startup

Table 3.3.2-1 (page 1 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT
1. Safety Injection						
a. Manual Initiation	1,2,3,4	2	B	SR 3.3.2.6	NA	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.8	NA	NA
c. Containment Pressure — High 1	1,2,3	3	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7 SR 3.3.2.9	≤ 4.5 psig	≤ 4.0 psig
d. Pressurizer Pressure — Low	1,2,3[(a)]	3	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7 SR 3.3.2.9	≥ 1847 psig	≥ 1850 psig
e. Steam Line Pressure						
(1) Low	1,2,3[(b)]	1 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7 SR 3.3.2.9	≥ 575[(c)] psig	≥ 585[(c)] psig
(2) High Differential Pressure Between Steam Lines	1,2,3	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7 SR 3.3.2.9	≤ 112 psig	≤ 100 psig

(a) Above the P-11 (Pressurizer Pressure) interlock.

(b) Above the P-12 (T_{avg} - Low Low) interlock.

(c) Time constants used in the lead/lag controller are $t_1 \geq 50$ seconds and $t_2 \leq 5$ seconds.

Table 3.3.2-1 (page 2 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT
2. Containment Spray						
a. Manual Initiation	1,2,3,4	2	B	SR 3.3.2.6	NA	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.8	NA	NA
c. Containment Pressure High - 3	1,2,3	4	E	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7 SR 3.3.2.9	≤ 28.3 psig	≤ 27 psig
3. Containment Isolation						
a. Phase A Isolation						
(1) Manual Initiation	1,2,3,4	2	B	SR 3.3.2.6	NA	NA
(2) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.8	NA	NA
(3) Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
b. Phase B Isolation						
(1) Manual Initiation	1,2,3,4	2	B	SR 3.3.2.6	NA	NA
(2) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.8	NA	NA
(3) Containment Pressure High - 3	1,2,3	4	E	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7 SR 3.3.2.9	≤ 28.3 psig	≤ 27 psig

Table 3.3.2-1 (page 3 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT
4. Steam Line Isolation						
a. Manual Initiation	1,2[(d)],3[(d)]	1 per steam line	F	SR 3.3.2.6	NA	NA
b. Automatic Actuation Logic and Actuation Relays	1,2[(d)],3[(d)]	2 trains	G	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.8	NA	NA
c. Containment Pressure - High 2	1,2[(d)], 3[(d)]	3	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7 SR 3.3.2.9	≤ 17.5 psig	≤ 16.2 psig
d. Steam Line Pressure Low	1,2[(d)],3[(b)(d)]	1 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7 SR 3.3.2.9	≥ 575[(c)] psig	≥ 585[(c)] psig
e. High Steam Flow in Two Steam Lines	1,2[(d)],3[(d)]	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7	(e)	(f)
Coincident with T_{avg} - Low Low	1,2[(d)],3[(d)]	1 per loop	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7	≥ 542.6°F	≥ 543°F

(b) Above the P-12 (T_{avg} - Low Low) interlock.

(c) Time constants used in the lead/lag controller are $t_1 \geq 50$ seconds and $t_2 \leq 5$ seconds.

(d) Except when one MSIV is closed in each steam line.

(e) Less than or equal to a function defined as ΔP corresponding to 40.3% full steam flow below 20% load, ΔP increasing linearly from 40.3% full steam flow at 20% load to 110.3% full steam flow at 100% load.

(f) Less than or equal to a function defined as ΔP corresponding to 40% full steam flow between 0% and 20% load and then a ΔP increasing linearly from 40% steam flow at 20% load to 110% full steam flow at 100% load.

Table 3.3.2-1 (page 4 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT
5. Turbine Trip and Feedwater Isolation						
a. Automatic Actuation Logic and Actuation Relays	1,2	2 trains	H	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.8	NA	NA
b. SG Water Level - High High (P-14)	1,2	3 per SG	I	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7 SR 3.3.2.9	≤ 82.4%	≤ 82%
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
6. Auxiliary Feedwater						
a. Automatic Actuation Logic and Actuation Relays	1,2,3	2 trains	G	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.8	NA	NA
b. SG Water Level - Low Low	1,2,3	3 per SG	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7 SR 3.3.2.9(g)	≥ 27.6%	≥ 28%
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
d. Undervoltage Reactor Coolant Pump	1,2	3	I	SR 3.3.2.5 SR 3.3.2.7 SR 3.3.2.9	≥ 2640 volts	≥ 2680 volts
e. Trip of all Main Feedwater Pumps	1	2 per pump	J	SR 3.3.2.10	NA	NA
7. ESFAS Interlocks						
a. Automatic Actuation Logic and Actuation Relays	1,2,3	2 trains	L	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.8	NA	NA
b. Reactor Trip, P-4	1,2,3	1 per train, 2 trains	C	SR 3.3.2.6	NA	NA
c. Pressurizer Pressure, P-11	1,2,3	3	K	SR 3.3.2.4 SR 3.3.2.7	≤ 2003 psig	≤ 2000 psig
d. T_{avg} - Low Low, P-12 (Decreasing) (Increasing)	1,2,3	1 per loop	K	SR 3.3.2.4 SR 3.3.2.7	≥ 542.6°F ≤ 545.4°F	≥ 543°F ≤ 545°F

(g) Applicable to MDAFW pumps only.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition C not met.	D.1 Enter the Condition referenced in Table 3.3.3-1 for the channel.	Immediately
E. As required by Required Action D.1 and referenced in Table 3.3.3-1.	E.1 Be in MODE 3. AND E.2 Be in MODE 4.	6 hours 12 hours
F. As required by Required Action D.1 and referenced in Table 3.3.3-1.	F.1 Initiate action in accordance with Specification 5.6.8.	Immediately

SURVEILLANCE REQUIREMENTS

---NOTE---
SR 3.3.3.1 and SR 3.3.3.2 apply to each PAM instrumentation Function in Table 3.3.3-1.

SURVEILLANCE		FREQUENCY
SR 3.3.3.1	Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	In accordance with the Surveillance Frequency Control Program
SR 3.3.3.2	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time not met for Source Range Neutron Flux function.	C.1 Submit a report to the NRC outlining the preplanned alternate method of ensuring the reactor remains shutdown in the event of a control room evacuation, the cause of the inoperability, and the plans and schedule for restoring the Source Range Neutron Flux monitor to OPERABLE status.	14 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.4.1	Perform CHANNEL CHECK for each required monitoring instrumentation channel that is normally energized.	In accordance with the Surveillance Frequency Control Program
SR 3.3.4.2	Verify each required control circuit and transfer switch is capable of performing the intended function.	In accordance with the Surveillance Frequency Control Program
SR 3.3.4.3	-----------------------------NOTE----------------------------- Neutron detectors are excluded from CHANNEL CALIBRATION. -- Perform CHANNEL CALIBRATION for each required monitoring instrumentation channel.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. ----------NOTE----------- Only applicable to Function 3. ----------------------------- One Alarm Function channel inoperable on one or more trains.	D.1 Verify voltage on associated bus is ≥ 3850 volts.	Once per 4 hours
E. Required Action and associated Completion Time of Condition D not met.	E.1 Restore bus voltage to ≥ 3850 volts.	1 hour
F. Required Action and associated Completion Time of Condition E not met.	F.1 Be in MODE 3.	6 hours
	AND	
	F.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.5.1	--------------------------NOTES------------------------------- 1. TADOT shall exclude actuation of the final trip actuation relay for LOP Functions 1 and 2. 2. Setpoint verification not required. --- Perform TADOT.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.5.2	------------------------------NOTE------------------------------ CHANNEL CALIBRATION shall exclude actuation of the final trip actuation relay for Functions 1 and 2. -- Perform CHANNEL CALIBRATION.	 In accordance with the Surveillance Frequency Control Program
SR 3.3.5.3	------------------------------Note------------------------------ Response time testing shall include actuation of the final trip actuation relay. -- Verify ESF RESPONSE TIME within limit.	 In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

-----------------------------------NOTE-----------------------------------
Refer to Table 3.3.6-1 to determine which SRs apply for each Containment Purge and Exhaust Isolation Function.

SURVEILLANCE		FREQUENCY
SR 3.3.6.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.2	Perform ACTUATION LOGIC TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.3	Perform MASTER RELAY TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.4	Perform COT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.5	Perform SLAVE RELAY TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.6	------------------NOTE------------------ Verification of setpoint is not required. -- Perform TADOT.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SR 3.3.6.7	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.8	Verify ESF RESPONSE TIME within limit.	In accordance with the Surveillance Frequency Control Program

Table 3.3.6-1 (page 1 of 1)
Containment Purge and Exhaust Isolation Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	TRIP SETPOINT
1.	Manual Initiation	1,2,3,4, (a), (b)	2	SR 3.3.6.6	NA
2.	Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	SR 3.3.6.2 SR 3.3.6.3 SR 3.3.6.5 SR 3.3.6.8	NA
3.	Containment Radiation Gaseous (R-24A, B)	1,2,3,4 (a), (b)	1 2	SR 3.3.6.1 SR 3.3.6.4 SR 3.3.6.7	$\leq 2.27 \times 10^{-2}$ μCi/cc (c)(d) $\leq 4.54 \times 10^{-3}$ μCi/cc (c)(e) $\leq 2.27 \times 10^{-3}$ μCi/cc (c)(f)
4.	Containment Isolation - Phase A	Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 3.a., for all initiation functions and requirements.			

(a) During CORE ALTERATIONS.
(b) During movement of irradiated fuel assemblies within containment.
(c) Above background with no flow.
(d) With mini-purge in operation.
(e) With slow speed main purge in operation.
(f) With fast speed main purge in operation.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2 Place both CREFS trains in emergency recirculation mode.	Immediately
C. Required Action and associated Completion Time for Condition A or B not met in MODE 1, 2, 3, or 4.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours
D. Required Action and associated Completion Time for Condition A or B not met during movement of irradiated fuel assemblies or during CORE ALTERATIONS.	D.1 Suspend CORE ALTERATIONS. AND D.2 Suspend movement of irradiated fuel assemblies.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

-----NOTE-----
Refer to Table 3.3.7-1 to determine which SRs apply for each CREFS Actuation Function.

SURVEILLANCE		FREQUENCY
SR 3.3.7.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.7.2	Perform COT.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.7.3	Perform ACTUATION LOGIC TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.7.4	Perform MASTER RELAY TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.7.5	Perform SLAVE RELAY TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.7.6	--------------------------NOTE-------------------------------- Verification of setpoint is not required. -- Perform TADOT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.7.7	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

--NOTE--
Refer to Table 3.3.8-1 to determine which SRs apply for each PRF Actuation Function.

SURVEILLANCE		FREQUENCY
SR 3.3.8.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.8.2	Perform COT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.8.3	Perform ACTUATION LOGIC TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.8.4	Perform MASTER RELAY TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.8.5	Perform SLAVE RELAY TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.8.6	----------------------------NOTE------------------------------ Verification of setpoint is not required. --- Perform TADOT.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.8.7	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program

Table 3.3.8-1 (page 1 of 1)
PRF Actuation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	TRIP SETPOINT
1. Manual Initiation	1,2,3,4, (a)	2 trains	SR 3.3.8.6	NA
2. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	SR 3.3.8.3 SR 3.3.8.4 SR 3.3.8.5	NA
3. Spent Fuel Pool Room Radiation Gaseous (R-25A, B)	(a)	2	SR 3.3.8.1 SR 3.3.8.2 SR 3.3.8.7	$\leq 8.73 \times 10^{-3}$ μCi/cc (b)
4. Spent Fuel Pool Room Ventilation Differential Pressure (PDSL-3989A and B)	(a)	2	SR 3.3.8.6 SR 3.3.8.7	NA
5. Containment Isolation - Phase B	Refer to LCO 3.3.2, "ESFAS Instrumentation" Function 3.b, for all initiation Functions and requirements.			

(a) During movement of irradiated fuel assemblies in the spent fuel pool room.
(b) Above background with no flow.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.1.1	Verify pressurizer pressure is within the limit specified in the COLR.	In accordance with the Surveillance Frequency Control Program
SR 3.4.1.2	Verify RCS average temperature is within the limit specified in the COLR.	In accordance with the Surveillance Frequency Control Program
SR 3.4.1.3	Verify RCS total flow rate is within the limits.	In accordance with the Surveillance Frequency Control Program
SR 3.4.1.4	------------------------------NOTE------------------------ Not required to be performed until 7 days after ≥ 90% RTP. -- Verify by measurement that RCS total flow rate is within the limits.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. ------------NOTE------------ Required Action C.2 shall be completed whenever this Condition is entered. --------------------------------	C.1	Initiate action to restore parameter(s) to within limits.	Immediately
	<u>AND</u>		
Requirements of LCO not met any time in other than MODE 1, 2, 3, or 4.	C.2	Determine RCS is acceptable for continued operation.	Prior to entering MODE 4

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.3.1	----------------------------NOTE------------------------------ Only required to be performed during RCS heatup and cooldown operations and RCS inservice leak and hydrostatic testing. --	
	Verify RCS pressure, RCS temperature, and RCS heatup and cooldown rates are within the limits specified in the PTLR.	In accordance with the Surveillance Frequency Control Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.4 RCS Loops — MODES 1 and 2

LCO 3.4.4 Three RCS loops shall be OPERABLE and in operation.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of LCO not met.	A.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.4.1	Verify each RCS loop is in operation.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One required RCS loop not in operation, and reactor trip breakers closed and Rod Control System capable of rod withdrawal.	C.1	Restore required RCS loop to operation.	1 hour
	<u>OR</u>		
	C.2	De-energize all control rod drive mechanisms (CRDMs).	1 hour
D. Two required RCS loops inoperable. <u>OR</u> No RCS loop in operation.	D.1	De-energize all CRDMs.	Immediately
	<u>AND</u>		
	D.2	Suspend all operations involving a reduction of RCS boron concentration.	Immediately
	<u>AND</u>		
	D.3	Initiate action to restore one RCS loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.5.1	Verify required RCS loops are in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.5.2	Verify steam generator secondary side water levels are ≥ 30% (narrow range) for required RCS loops.	In accordance with the Surveillance Frequency Control Program
SR 3.4.5.3	Verify correct breaker alignment and indicated power are available to the required pump that is not in operation.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One required RHR loop inoperable. AND Two required RCS loops inoperable.	B.1 Be in MODE 5.	24 hours
C. Required RCS or RHR loops inoperable. OR No RCS or RHR loop in operation.	C.1 Suspend all operations involving a reduction of RCS boron concentration. AND C.2 Initiate action to restore one loop to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.6.1	Verify one RHR or RCS loop is in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.6.2	Verify SG secondary side water levels are ≥ 75% (wide range) for required RCS loops.	In accordance with the Surveillance Frequency Control Program
SR 3.4.6.3	Verify correct breaker alignment and indicated power are available to the required pump that is not in operation.	In accordance with the Surveillance Frequency Control Program

APPLICABILITY: MODE 5 with RCS loops filled.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RHR loop inoperable. AND Required SGs secondary side water levels not within limits.	A.1 Initiate action to restore a second RHR loop to OPERABLE status. OR A.2 Initiate action to restore required SG secondary side water levels to within limits.	Immediately Immediately
B. Required RHR loops inoperable. OR No RHR loop in operation.	B.1 Suspend all operations involving a reduction of RCS boron concentration. AND B.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	Verify one RHR loop is in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.2	Verify SG secondary side water level is ≥ 75% (wide range) in required SGs.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.3	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Required RHR loops inoperable. OR No RHR loop in operation.	B.1	Suspend all operations involving reduction in RCS boron concentration.	Immediately
	AND		
	B.2	Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify one RHR loop is in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.8.2	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	Verify pressurizer water level is ≤ 63.5% indicated.	In accordance with the Surveillance Frequency Control Program
SR 3.4.9.2	Verify capacity of each required group of pressurizer heaters is ≥ 125 kW.	In accordance with the Surveillance Frequency Control Program
SR 3.4.9.3	Verify required pressurizer heaters are capable of being powered from an emergency power supply.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. More than one block valve inoperable.	F.1 Place associated PORVs in manual control.	1 hour
	AND	
	F.2 Restore one block valve to OPERABLE status.	2 hours
	AND	
	F.3 Restore remaining block valve to OPERABLE status.	72 hours
G. Required Action and associated Completion Time of Condition F not met.	G.1 Be in MODE 3.	6 hours
	AND	
	G.2 Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.11.1	-------------------------------NOTES---------------------------- 1. Not required to be met with block valve closed in accordance with the Required Action of Condition B or E. 2. Not required to be performed prior to entry into MODE 3. 3. Not required to be performed for Unit 2 for the remainder of operating cycle 16 for block valve Q2B31MOV8000B. ---	
	Perform a complete cycle of each block valve.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.11.2	---------------------------NOTE-------------------------------- Not required to be performed prior to entry into MODE 3. --- Perform a complete cycle of each PORV during MODE 3 or 4.	In accordance with the Surveillance Frequency Control Program
SR 3.4.11.3	Perform a complete cycle of each PORV using the backup PORV control system.	In accordance with the Surveillance Frequency Control Program
SR 3.4.11.4	---------------------------NOTE-------------------------------- Required to be performed only for Unit 2 for the remainder of operating cycle 16. --- Check power available to the Unit Two PORV block valve Q2B31MOV8000B.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. One required RHR relief valve inoperable.	D.1	Reduce pressurizer level to ≤ 30% (cold calibrated).	24 hours
	AND		
	D.2	Assign a dedicated operator for RCS pressure monitoring and control.	24 hours
	AND		
	D.3	Restore required RHR relief valve to OPERABLE status.	7 days
E. Two required RHR relief valves inoperable. OR Required Action and associated Completion Time of Condition A, C, or D not met. OR LTOP System inoperable for any reason other than Condition A, B, C, or D.	E.1	Depressurize RCS and establish RCS vent of ≥ 2.85 square inches.	8 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.12.1	Verify a maximum of one charging pump is capable of injecting into the RCS.	In accordance with the Surveillance Frequency Control Program
SR 3.4.12.2	Verify each accumulator is isolated.	In accordance with the Surveillance Frequency Control Program
SR 3.4.12.3	Verify RHR suction isolation valves are open for each required RHR suction relief valve.	In accordance with the Surveillance Frequency Control Program
SR 3.4.12.4	---------------------------NOTE------------------------------ Only required to be performed when complying with LCO 3.4.12.b. -- Verify RCS vent ≥ 2.85 square inches open.	In accordance with the Surveillance Frequency Control Program
SR 3.4.12.5	Verify each required RHR suction relief valve setpoint.	In accordance with the Inservice Testing Program <u>AND</u> In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.13.1	---------------------------NOTES------------------------------ 1. Not required to be performed in MODE 3 or 4 until 12 hours of steady state operation. 2. Not applicable to primary to secondary LEAKAGE. --- Verify RCS operational LEAKAGE is within limits by performance of RCS water inventory balance.	-------NOTE-------- Only required to be performed during steady state operation ---------------------- In accordance with the Surveillance Frequency Control Program
SR 3.4.13.2	---------------------------NOTE------------------------------ Not required to be performed until 12 hours after establishment of steady state operation. --- Verify primary to secondary LEAKAGE is ≤ 150 gallons per day through any one SG.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.14.1	------------------------------NOTES------------------------------ 1. Not required to be performed in MODES 3 and 4. 2. Not required to be performed on the RCS PIVs located in the RHR flow path when in the shutdown cooling mode of operation. 3. RCS PIVs actuated during the performance of this Surveillance are not required to be tested more than once if a repetitive testing loop cannot be avoided. -- Verify leakage from each RCS PIV is equivalent to ≤ 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm at an RCS pressure ≥ 2215 psig and ≤ 2255 psig.	18 months, prior to entering MODE 2 <u>AND</u> Following valve actuation due to automatic or manual action or flow through the valve (except for RCS PIVs located in the RHR flow path)
SR 3.4.14.2	------------------------------NOTE------------------------------ Not required to be met when the RHR System valves are required open in accordance with SR 3.4.12.3. -- Verify RHR System autoclosure interlock causes the valves to close automatically with a simulated or actual RCS pressure signal ≥ 700 psig and ≤ 750 psig.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SR 3.4.14.3	-------------------------- NOTE ---------------------------------- Not required to be met when the RHR System valves valves are required open in accordance with SR 3.4.12.3. --- Verify RHR System open permissive interlock prevents the valves from being opened with a simulated or actual RCS pressure signal ≥ 295 psig and ≤ 415 psig.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.15.1	Perform CHANNEL CHECK of the required containment atmosphere radioactivity monitor.	In accordance with the Surveillance Frequency Control Program
SR 3.4.15.2	Perform COT of the required containment atmosphere radioactivity monitor.	In accordance with the Surveillance Frequency Control Program
SR 3.4.15.3	Perform CHANNEL CALIBRATION of the required containment atmosphere radioactivity monitor.	In accordance with the Surveillance Frequency Control Program
SR 3.4.15.4	Perform CHANNEL CALIBRATION of the required containment air cooler condensate level monitor.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A not met. OR DOSE EQUIVALENT I-131 in the unacceptable region of Figure 3.4.16-1.	C.1 Be in MODE 3 with $T_{avg} < 500°F$.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.16.1	Verify reactor coolant gross specific activity ≤ 100/Ē μCi/gm.	In accordance with the Surveillance Frequency Control Program
SR 3.4.16.2	-----NOTE----- Only required to be performed in MODE 1. ---------- Verify reactor coolant DOSE EQUIVALENT I-131 specific activity ≤ 0.5 μCi/gm.	In accordance with the Surveillance Frequency Control Program AND Between 2 and 6 hours after a THERMAL POWER change of ≥ 15% RTP within a 1 hour period

SURVIELLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.16.3	-------------------------------NOTE--------------------------- Not required to be performed until 31 days after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours. --	
	Determine $\bar{E}$ from a sample taken in MODE 1 after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify each accumulator isolation valve is fully open.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.2	Verify borated water volume in each accumulator is ≥ 7555 gallons (31.4%) and ≤ 7780 gallons (58.4%).	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.3	Verify nitrogen cover pressure in each accumulator is ≥ 601 psig and ≤ 649 psig.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.4	Verify boron concentration in each accumulator is ≥ 2200 ppm and ≤ 2500 ppm.	In accordance with the Surveillance Frequency Control Program AND -------NOTE------- Only required to be performed for affected accumulators --------------------- Once within 6 hours after each solution volume increase of ≥ 12% level, indicated, that is not the result of addition from the refueling water storage tank
SR 3.5.1.5	Verify power is removed from each accumulator isolation valve operator when RCS pressure is ≥ 2000 psig.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.2.1	---------------------------NOTE--------------------------- Only required to be performed for valves 8132A and 8132B when Centrifugal Charging Pump A is inoperable. -- Verify the following valves are in the listed position with power to the valve operator removed. Number / Position / Function 8884, 8886 / Closed / Centrifugal Charging Pump to RCS Hot Leg 8132A, 8132B / Open / Centrifugal Charging Pump discharge isolation 8889 / Closed / RHR to RCS Hot Leg Injection	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.2	Verify each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.3	Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.5.2.4	Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.5.2.5	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.6	Verify, for each ECCS throttle valve listed below, each position stop is in the correct position. <u>Valve Number</u> CVC-V-8991 A/B/C CVC-V-8989 A/B/C CVC-V-8996 A/B/C CVC-V-8994 A/B/C RHR-HV 603 A/B	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.7	Verify, by visual inspection, each ECCS train containment sump suction inlet is not restricted by debris and the suction inlet trash racks, screens, and inner cages are properly installed and show no evidence of structural distress or abnormal corrosion.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE				FREQUENCY
SR 3.5.3.2	Verify the following valves are in the listed position with power to the valve operator removed.			In accordance with the Surveillance Frequency Control Program
	Number	Position	Function	
	8706A, 8706B	Closed	RHR pump discharge to centrifugal charging pump suction	
	8884, 8886	Closed	Centrifugal charging pump discharge to RCS hot legs	

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.4.1	------------------------------NOTE------------------------------ Only required to be performed when ambient air temperature is < 35°F. -- Verify RWST borated water temperature is ≥ 35°F.	In accordance with the Surveillance Frequency Control Program
SR 3.5.4.2	Verify RWST borated water volume is ≥ 471,000 gallons.	In accordance with the Surveillance Frequency Control Program
SR 3.5.4.3	Verify RWST boron concentration is ≥ 2300 ppm and ≤ 2500 ppm.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.5.1	-------------------------------NOTE---------------------------- Not required to be performed until 4 hours after the Reactor Coolant System pressure stabilizes at ≥ 2215 psig and ≤ 2255 psig. ---	
	Verify manual seal injection throttle valves are adjusted to give a flow within the limits of Figure 3.5.5-1 with the seal water injection flow control valve full open.	In accordance with the Surveillance Frequency Control Program

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.6 ECCS Recirculation Fluid pH Control System

LCO 3.5.6 The ECCS Recirculation Fluid pH Control System shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ECCS Recirculation Fluid pH Control System inoperable.	A.1 Restore system to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	AND	
	B.2 Be in MODE 5.	84 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.6.1	Perform a visual inspection of the ECCS Recirculation Fluid pH Control System and verify the following: a. Three (3) storage baskets are in place, and b. Have maintained their integrity, and c. Each basket is filled with trisodium phosphate compound such that the level is between the indicated fill marks on the baskets.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.2.1	---------------------------NOTES--------------------------- 1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. 2. Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1. --- Perform required air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program.	In accordance with the Containment Leakage Rate Testing Program
SR 3.6.2.2	Verify only one door in the air lock can be opened at a time.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition A, B, C, or D not met.	E.1 Be in MODE 3. AND E.2 Be in MODE 5.	6 hours 36 hours
F. One or more penetration flow paths containing containment purge valves, with penetration leakage not within the penetration limits.	F.1 Reduce leakage to within limit.	Prior to entering MODE 4 from MODE 5 if the existing leakage is determined during quarterly testing per SR 3.6.3.5 OR Prior to entering MODE 4 if excess leakage is determined during MODE 5 per SR 3.6.3.5

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.3.1	Verify each 48 inch purge valve is sealed closed, except for one purge valve in a penetration flow path while in Condition D of this LCO.	In accordance with the Surveillance Frequency Control Program
SR 3.6.3.2	---------------------------NOTE--------------------------- Valves and blind flanges in high radiation areas may be verified by use of administrative controls. -- Verify each containment isolation manual valve and blind flange that is located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.3.3	-----NOTES----- 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. The blind flange on the fuel transfer canal flange is only required to be verified closed after each draining of the canal. ---------- Verify each containment isolation manual valve and blind flange that is located inside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days
SR 3.6.3.4	Verify the isolation time of each power operated or automatic containment isolation valve in the IST Program is within limits.	In accordance with the Inservice Testing Program
SR 3.6.3.5	Perform leakage rate testing for containment penetrations containing containment purge valves with resilient seals.	In accordance with the Surveillance Frequency Control Program AND Within 92 days after opening the valve
SR 3.6.3.6	Verify each automatic containment isolation valve that is not locked, sealed or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.4 Containment Pressure

LCO 3.6.4 Containment pressure shall be ≥ -1.5 psig and ≤ +3.0 psig.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment pressure not within limits.	A.1 Restore containment pressure to within limits.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.1	Verify containment pressure is within limits.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.5 Containment Air Temperature

LCO 3.6.5 Containment average air temperature shall be ≤ 120°F.

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Containment average air temperature not within limit.	A.1	Restore containment average air temperature to within limit.	8 hours
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.5.1	Verify containment average air temperature is within limit.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Two containment cooling trains inoperable.	D.1 Restore one containment cooling train to OPERABLE status.	72 hours
E. Required Action and associated Completion Time of Condition C or D not met.	E.1 Be in MODE 3. AND E.2 Be in MODE 5.	6 hours 36 hours
F. Two containment spray trains inoperable. OR Any combination of three or more trains inoperable.	F.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.6.1	Verify each containment spray manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.2	Operate each required containment cooling train fan unit for ≥ 15 minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.3	Verify each containment cooling train cooling water flow rate is ≥ 1600 gpm.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.6.4	Verify each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.6.6.5	Verify each automatic containment spray valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.6	Verify each containment spray pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.7	Verify each containment cooling train starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.8	Verify each spray nozzle is unobstructed.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.8.1	Operate each HMS train for ≥ 15 minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.6.8.2	Verify each HMS fan speed is ≥ 1320 rpm.	In accordance with the Surveillance Frequency Control Program
SR 3.6.8.3	Verify each HMS train starts on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.9 Reactor Cavity Hydrogen Dilution System

LCO 3.6.9 Two Reactor Cavity Hydrogen Dilution trains shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Reactor Cavity Hydrogen Dilution train inoperable.	A.1 Restore the train to OPERABLE status.	30 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.9.1	Operate each Reactor Cavity Hydrogen Dilution train for $\geq$ 15 minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.6.9.2	Verify each Reactor Cavity Hydrogen Dilution train starts on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Verify one complete cycle of each ARV.	In accordance with the Surveillance Frequency Control Program
SR 3.7.4.2	Verify one complete cycle of at least one manual isolation valve in each ARV Line.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Three AFW trains inoperable.	D.1 --------------NOTE--------------- LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. ------------------------------------- Initiate action to restore one AFW train to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.5.1	------------------------------NOTE------------------------------ Not required to be performed for the AFW flow control valves when ≤ 10% RTP or when the AFW system is not in automatic control. -- Verify each AFW manual, power operated, and automatic valve in each water flow path, and in both steam supply flow paths to the steam turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.5.2	-----------------------------NOTE------------------------------ Not required to be performed for the turbine driven AFW pump until 24 hours after ≥ 1005 psig in the steam generator. --- Verify the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program.
SR 3.7.5.3	Verify each AFW automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.7.5.4	-----------------------------NOTE------------------------------ Not required to be performed for the turbine driven AFW pump until 24 hours after ≥ 1005 psig in the steam generator. --- Verify each AFW pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.7.5.5	Verify the turbine driven AFW pump steam admission valves open when air is supplied from their respective air accumulators.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.6 Condensate Storage Tank (CST)

LCO 3.7.6 The CST shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CST inoperable.	A.1 Verify by administrative means OPERABILITY of backup water supply.	4 hours AND Once per 12 hours thereafter
	AND	
	A.2 Restore CST to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	AND	
	B.2 Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.6.1	Verify the CST level is ≥ 150,000 gal.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.7.1	-----------------------------NOTE------------------------------ Isolation of CCW flow to individual components does not render the CCW System inoperable. --- Verify each accessible CCW manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.7.7.2	Verify each CCW automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.7.7.3	Verify each CCW pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.8.1	-----------------------------NOTE------------------------------ Isolation of SWS flow to individual components does not render the SWS inoperable. --- Verify each accessible SWS manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.7.8.2	Verify each SWS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.7.8.3	Verify each SWS pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.7.8.4	Verify the integrity of the SWS buried piping by visual inspection of the ground area.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.9 Ultimate Heat Sink (UHS)

LCO 3.7.9 The UHS (Service Water Pond) shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. UHS water level or temperature not within the required limit(s).	A.1 Be in MODE 4. AND A.2 Be in MODE 5.	48 hours 60 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.9.1	Verify water level of UHS is $\geq$ 184 ft mean sea level.	In accordance with the Surveillance Frequency Control Program
SR 3.7.9.2	Verify water temperature of $\leq$ 95°F at the discharge of the Service Water Pumps	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition B not met during movement of irradiated fuel assemblies or during CORE ALTERATIONS. <u>OR</u> Two CREFS trains inoperable during movement of irradiated fuel assemblies or during CORE ALTERATIONS.	E.1 Suspend CORE ALTERATIONS. <u>AND</u> E.2 Suspend movement of irradiated fuel assemblies.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.10.1	Operate each CREFS Pressurization train with the heaters operating and each CREFS Recirculation and Filtration train for ≥ 15 minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.7.10.2	Perform required CREFS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with VFTP
SR 3.7.10.3	---------------------------NOTE-------------------------------- Not required to be performed in MODES 5 and 6. --- Verify each CREFS train actuates on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Two CRACS trains inoperable during movement of irradiated fuel assemblies or during CORE ALTERATIONS.	D.1	Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>		
	D.2	Suspend movement of irradiated fuel assemblies.	Immediately
E. Two CRACS trains inoperable in MODE 1, 2, 3, or 4.	E.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.11.1	Verify each CRACS train has the capability to remove the assumed heat load.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Two PRF trains inoperable during movement of irradiated fuel assemblies in the SFPR.	E.1 Suspend movement of irradiated fuel assemblies in the SFPR.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.12.1	-----------------------------NOTE----------------------------- Only required to be performed during movement of irradiated fuel assemblies in the SFPR. --- Verify two PRF trains aligned to the SFPR.	In accordance with the Surveillance Frequency Control Program
SR 3.7.12.2	Operate each PRF train for ≥ 15 minutes in the applicable mode of operation (post LOCA and/or refueling accident).	In accordance with the Surveillance Frequency Control Program
SR 3.7.12.3	Perform required PRF filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.12.4	Verify each PRF train actuates and the normal spent fuel pool room ventilation system isolates on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.7.12.5	Verify one PRF train can maintain a pressure ≤ -0.125 inches water gauge with respect to adjacent areas during the post LOCA mode of operation at a flow rate ≤ 5500 cfm.	In accordance with the Surveillance Frequency Control Program
SR 3.7.12.6	Verify one PRF train can maintain a slightly negative pressure with respect to adjacent areas during the fuel handling accident mode of operation at a flow rate ≤ 5500 cfm.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.13 Fuel Storage Pool Water Level

LCO 3.7.13 The fuel storage pool water level shall be ≥ 23 ft over the top of irradiated fuel assemblies seated in the storage racks.

APPLICABILITY: During movement of irradiated fuel assemblies in the fuel storage pool.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Fuel storage pool water level not within limit.	A.1	-------------NOTE------------- LCO 3.0.3 is not applicable. ----------------------------------	
		Suspend movement of irradiated fuel assemblies in the fuel storage pool.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.13.1	Verify the fuel storage pool water level is ≥ 23 ft above the top of the irradiated fuel assemblies seated in the storage racks.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.14 Fuel Storage Pool Boron Concentration

LCO 3.7.14 The fuel storage pool boron concentration shall be ≥ 2000 ppm.

APPLICABILITY: When fuel assemblies are stored in the fuel storage pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Fuel storage 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 pool.	Immediately
	AND	
	A.2 Initiate action to restore fuel storage pool boron concentration to within limit.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.14.1	Verify the fuel storage pool boron concentration is within limit.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.16 Secondary Specific Activity

LCO 3.7.16 The specific activity of the secondary coolant shall be ≤ 0.10 μCi/gm DOSE EQUIVALENT I-131.

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.16.1	Verify the specific activity of the secondary coolant is ≤ 0.10 μCi/gm DOSE EQUIVALENT I-131.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.17.1	Verify the cask storage area boron concentration is within limit.	Once within 4 hours prior to entering the Applicability of this LCO. AND In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.19.1	Verify each ESF Room Cooler system manual valve servicing safety-related equipment that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.7.19.2	Verify each ESF Room Cooler fan starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each required offsite circuit.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.2	-----NOTES----- 1. Performance of SR 3.8.1.6 satisfies this SR. 2. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 3. 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 3.8.1.6 must be met. ---------- Verify each DG starts from standby conditions and achieves steady state voltage ≥ 3740 V and ≤ 4580 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUREMENTS

	SURVEILLANCE	FREQUENCY
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 3.8.1.6. ---------- Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 2700 kW and ≤ 2850 kW for the 2850 kW DG and ≥ 3875 kW and ≤ 4075 kW for the 4075 kW DGs.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.4	Verify each day tank contains ≥ 900 gal of fuel oil for the 4075 kW DGs and 700 gal of fuel oil for the 2850 kW DG.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.5	Verify the fuel oil transfer system operates to transfer fuel oil from storage tank to the day tank.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.6	-----NOTE----- All DG starts may be preceded by an engine prelube period. ---------- Verify each DG starts from standby condition and achieves in ≤ 12 seconds, voltage ≥ 3952 V and frequency ≥ 60 Hz.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.1.7	------------------------------NOTE------------------------------ This Surveillance shall not be performed in MODE 1 or 2. -- Verify manual transfer of AC power sources from the normal offsite circuit to the alternate required offsite circuit.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.8	Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and: a. Following load rejection, the speed is ≤ 75% of the difference between nominal speed and the overspeed trip setpoint; and b. Following load rejection, the voltage is ≥ 3740 V and ≤ 4580 V.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.9	------------------------------NOTES------------------------------ 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. --	
	Verify on an actual or simulated loss of offsite power signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 12 seconds, 2. energizes auto-connected shutdown loads through automatic load sequencer, 3. maintains steady state voltage ≥ 3740 V and ≤ 4580 V, 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.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.10	------------------------------NOTE------------------------------ All DG starts may be preceded by prelube period. -- Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and: a. In ≤ 12 seconds after auto-start and during tests, achieves voltage ≥ 3952 V; b. In ≤ 12 seconds after auto-start and during tests, achieves frequency ≥ 60 Hz; c. Operates for ≥ 5 minutes and maintains a steady state generator voltage and frequency of ≥ 3740 V and ≤ 4580 V and ≥ 58.8 Hz and ≤ 61.2 Hz; ------------------------------NOTE------------------------------ SR 3.8.1.10.d and e shall not be performed in MODE 1 or 2. -- d. Permanently connected loads remain energized from the offsite power system; and e. Emergency loads are energized from the offsite power system.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.1.11	Verify each DG's automatic trips are bypassed on actual or simulated loss of voltage signal on the emergency bus and/or an actual or simulated ESF actuation signal except: a. Engine overspeed; b. Generator differential current; and c. Low lube oil pressure.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.12	------------------------------NOTE------------------------------ Momentary transients below the minimum load specified do not invalidate this test. --- Verify each DG operates for ≥ 24 hours: a. For ≥ 2 hours loaded ≥ 4353 for the 4075 kW DGs and ≥ 3100 kW for the 2850 kW DG; and b. For the remaining hours of the test loaded ≥ 4075 kW for the 4075 kW DGs and ≥ 2850 kW for the 2850 kW DG.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.1.13	-------------------------------NOTES---------------------------- 1. This Surveillance shall be performed within 10 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 4075 kW for the 4075 kW DGs and ≥ 2850 kW for the 2850 kW DG. Momentary transients below the minimum load specified do not invalidate this test. 2. All DG starts may be preceded by an engine prelube period. --- Verify each DG starts and achieves, in ≤ 12 seconds, voltage ≥ 3952 V and frequency ≥ 60 Hz.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.14	------------------------------NOTE---------------------------- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. --- 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.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.15	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 returning DG to ready-to-load operation.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.16	Verify interval between each sequenced load block is within ± 10% of design interval or 0.5 seconds, whichever is greater, for each emergency load sequencer.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.17	-------------------------------NOTES---------------------------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. -- 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; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 12 seconds,	In accordance with the Surveillance Frequency Control Program (continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.17 (continued)	2. energizes auto-connected emergency loads through load sequencer, 3. achieves steady state voltage ≥ 3740 V and ≤ 4580 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.	
SR 3.8.1.18	------------------------------NOTE---------------------------- Testing of the shared Emergency Diesel Generator (EDG) set (EDG 1-2A or EDG 1C) on either unit may be used to satisfy this surveillance requirement for these EDGs for both units. --- Verify each DG does not trip and voltage is maintained ≤ 4990 V and ≥ 3330 V during and following a load rejection of ≥ 1200 kW and ≤ 2400 kW.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.19	------------------------------NOTE---------------------------- All DG starts may be preceded by an engine prelube period. --- Verify when started simultaneously from standby condition, each DG achieves, in ≤ 12 seconds, voltage ≥ 3952 V and frequency ≥ 60 Hz.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
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
E. One or more DGs with the required starting air receiver pressure < 350 psig and ≥ 150 psig (for DG 1-2A, 1B, and 2B), or < 200 psig and ≥ 90 psig (for DG 1C).	E.1 Restore at least one starting air receiver pressure per affected DG to ≥ 350 psig (for DG 1-2A, 1B, and 2B) or ≥ 200 psig (for DG 1C).	48 hours
F. Required Action and associated Completion Time not met. <u>OR</u> One or more DGs 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
SR 3.8.3.1	Verify each fuel oil storage tank contains ≥ 25,000 gal of useable fuel.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.2	Verify lubricating oil inventory is ≥ 238 gal (for DG 1-2A, 1B, and 2B) or ≥ 167 gal (for DG 1C).	In accordance with the Surveillance Frequency Control Program
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
SR 3.8.3.4	Verify each DG has at least one air start receiver with a pressure ≥ 350 psig (for DG 1-2A, 1B, and 2B) and ≥ 200 psig (for DG 1C).	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.4.1	Verify battery terminal voltage is ≥ 127.8 V on float charge.	In accordance with the Surveillance Frequency Control Program
SR 3.8.4.2	Verify no visible corrosion at battery terminals and connectors. <u>OR</u> Verify post-to-post battery connection resistance of each cell-to-cell and terminal connection is ≤ 150 microhms for the Auxiliary Building batteries and ≤ 1500 microhms for the SWIS batteries.	In accordance with the Surveillance Frequency Control Program
SR 3.8.4.3	Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration.	In accordance with the Surveillance Frequency Control Program
SR 3.8.4.4	Remove visible terminal corrosion, verify battery cell- to-cell and terminal connections are coated with anti-corrosion material.	In accordance with the Surveillance Frequency Control Program
SR 3.8.4.5	Verify post-to-post battery connection resistance of each cell-to-cell and terminal connection is ≤ 150 microhms for the Auxiliary Building batteries and ≤ 1500 microhms for the SWIS batteries	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.4.6	------------------------------NOTE------------------------------ This Surveillance may be performed in MODE 1, 2, 3, 4, 5, or 6 provided spare or redundant charger(s) placed in service are within surveillance frequency to maintain DC subsystem(s) OPERABLE. -- Verify each required Auxiliary Building battery charger supplies ≥ 536 amps at ≥ 125 V for ≥ 4 hours and each required SWIS battery charger supplies ≥ 3 amps at ≥ 125 V for ≥ 4 hours.	In accordance with the Surveillance Frequency Control Program
SR 3.8.4.7	----------------------------NOTES------------------------------ 1. The performance discharge test in SR 3.8.4.8 may be performed in lieu of the service test in SR 3.8.4.7 once per 60 months. 2. The modified performance discharge test in SR 3.8.4.8 may be performed in lieu of the service test at any time. 3. This Surveillance shall not be performed for the Auxiliary Building batteries in MODE 1, 2, 3, or 4. -- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design load profile described in the Final Safety Analysis Report, Section 8.3.2, by subjecting the battery to a service test.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.4.8	------------------------------NOTE------------------------------ This Surveillance shall not be performed for the Auxiliary Building batteries in MODE 1, 2, 3, or 4. -- Verify battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	In accordance with the Surveillance Frequency Control Program <u>AND</u> 18 months when battery shows degradation or has reached 85% of expected life or 17 years, whichever comes first

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met. <u>OR</u> One or more required batteries with average electrolyte temperature of the representative cells < 60°F for the Auxiliary Building batteries or < 35°F for the SWIS batteries. <u>OR</u> One or more required batteries with one or more battery cell parameters not within Category C values. <u>OR</u> -------------NOTE------------- Battery terminal voltage of 127.8 volts as measured by SR 3.8.4.1 is equivalent to average cell float voltage of 2.13 volts per cell. ---------------------------------- One or more required batteries with the average cell float voltage ≤ 2.13 volts.	B.1 Declare associated battery inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.6.1	Verify battery cell parameters meet Table 3.8.6-1 Category A limits.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.6.2	Verify battery cell parameters meet Table 3.8.6-1 Category B limits.	In accordance with the Surveillance Frequency Control Program AND Once within 7 days after a battery discharge < 110 V AND Once within 7 days after a battery overcharge > 150 V
SR 3.8.6.3	Verify average electrolyte temperature of representative cells is ≥ 60°F for the Auxiliary Building batteries and ≥ 35°F for the SWIS batteries.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	AND	
	B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.7.1	Verify correct inverter voltage, frequency, and alignment to required AC vital buses.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.2.4	Initiate action to restore required inverters to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.8.1	Verify correct inverter voltage, frequency, and alignments to required AC vital buses.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 5.	6 hours 36 hours
E. One Service Water Intake Structure (SWIS) DC electrical power distribution subsystem inoperable.	E.1 Declare the associated Service Water train inoperable.	Immediately
F. Two trains with inoperable distribution subsystems that result in a loss of safety function.	F.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.9.1	Verify correct breaker alignments and voltage to required AC, DC, and AC vital bus electrical power distribution subsystems.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.4 Initiate actions to restore required AC, DC, and AC vital bus electrical power distribution subsystems to OPERABLE status.	Immediately
	AND	
	A.2.5 Declare associated required residual heat removal subsystem(s) inoperable and not in operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.10.1	Verify correct breaker alignments and voltage to required AC, DC, and AC vital bus electrical power distribution subsystems.	In accordance with the Surveillance Frequency Control Program

3.9 REFUELING OPERATIONS

3.9.1 Boron Concentration

LCO 3.9.1 Boron concentrations of the Reactor Coolant System, the refueling canal, and the refueling cavity shall be maintained within the limit specified in the COLR.

APPLICABILITY: MODE 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Boron concentration not within limit.	A.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2 Suspend positive reactivity additions.	Immediately
	AND	
	A.3 Initiate action to restore boron concentration to within limit.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.1.1	Verify boron concentration is within the limit specified in COLR.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.2.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.9.2.2	-----------------------------NOTE------------------------------ Neutron detectors are excluded from CHANNEL CALIBRATION. --- Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.3.1	Verify each required containment penetration is in the required status.	In accordance with the Surveillance Frequency Control Program
SR 3.9.3.2	Verify each required containment purge and exhaust valve actuates to the isolation position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.9.3.3	-------------------------------NOTE---------------------------- Only required for an open equipment hatch. --- Verify the capability to install the equipment hatch.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.4 Close equipment hatch and secure with four bolts.	4 hours
	AND	
	A.5 Close one door in each air lock.	4 hours
	AND	
	A.6.1 Close each penetration providing direct access from the containment atmosphere to the outside atmosphere with a manual or automatic isolation valve, blind flange, or equivalent.	4 hours
	OR	
	A.6.2 Verify each penetration is capable of being closed by an OPERABLE Containment Purge and exhaust Isolation System.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.4.1	Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ 3000 gpm.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.9.5.1	Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ 3000 gpm.	In accordance with the Surveillance Frequency Control Program
SR 3.9.5.2	Verify correct breaker alignment and indicated power available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program

3.9 REFUELING OPERATIONS

3.9.6 Refueling Cavity Water Level

LCO 3.9.6 Refueling cavity water level shall be maintained ≥ 23 ft above the top of reactor vessel flange.

APPLICABILITY: During CORE ALTERATIONS, except during latching and unlatching of control rod drive shafts,
During movement of irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Refueling cavity water level not within limit.	A.1	Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>		
	A.2	Suspend movement of irradiated fuel assemblies within containment.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.6.1	Verify refueling cavity water level is ≥ 23 ft above the top of reactor vessel flange.	In accordance with the Surveillance Frequency Control Program

5.5 Programs and Manuals

5.5.18 Control Room Integrity Program (CRIP) (continued)

A CRIP shall be established to implement the following:

a. Demonstrate, using Regulatory Guide (RG) 1.197 and ASTM E741, that CRE inleakage is less than the below values. The values listed below do not include 10 cfm assumed in accident analysis for ingress / egress.

   i) 43 cfm when the control room ventilation systems are aligned in the emergency recirculation mode of operation,

   ii) 600 cfm when the control room ventilation systems are aligned in the isolation mode of operation, and

   iii) 2,340 cfm when the control room ventilation systems are aligned in the normal mode of operation;

b. Demonstrate that the leakage characteristics of the CRE will not result in simultaneous loss of reactor control capability from the control room and the hot shutdown panels;

c. Maintain a CRE configuration control and a design and licensing bases control program and a preventative maintenance program. As a minimum, the CRE configuration control program will determine whether the i) CRE differential pressure relative to adjacent areas and ii) the control room ventilation system flow rates, as determined in accordance with ASME N510-1989 or ASTM E2029-99, are consistent with the values measured at the time the ASTM E741 test was performed. If item i or ii has changed, determine how this change has affected the inleakage characteristics of the CRE. If there has been degradation in the inleakage characteristics of the CRE since the E741 test, then a determination should be made whether the licensing basis analyses remain valid. If the licensing basis analyses remain valid, the CRE remains OPERABLE.

d. Test the CRE in accordance with the testing methods and at the frequencies specified in RG 1.197, Revision 0, May 2003.

The provisions of SR 3.0.2 are applicable to the control room inleakage testing frequencies.

5.5.19 Surveillance Frequency Control Program

This program provides controls for Surveillance Frequencies. The program shall ensure that Surveillance Requirements specified in the Technical Specifications

(continued)

5.5 Programs and Manuals

5.5.19 Surveillance Frequency Control Program (continued)

are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met.

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program.

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1.

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

Joseph M. Farley Nuclear Plant
License Amendment Request for Adoption of TSTF-425-A, Revision 3,
Risk-Informed Justification for the Relocation of Specific Surveillance
Frequency Requirements to a Licensee Controlled Program
Using the Consolidated Line Item Improvement Process

Enclosure 5

Markup for FNP Proposed TS Bases Changes

Markups for FNP Proposed TS Bases Changes

Insert 1

In accordance with the Surveillance Frequency Control Program

Insert 2

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

Insert 3

5.5.19 Surveillance Frequency Control Program

This program provides controls for Surveillance Frequencies. The program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at interval sufficient to assure the associated Limiting Conditions for Operation are met.

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program.

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk Informed Method for Control of Surveillance Frequencies," Revision 1.

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program

BASES

SURVEILLANCE REQUIREMENTS

SR 3.1.1.1 (continued)

e. Xenon concentration;

f. Samarium concentration; and

g. Isothermal temperature coefficient (ITC).

Using the ITC accounts for Doppler reactivity in this calculation because the reactor is subcritical, and the fuel temperature will be changing at the same rate as the RCS.

Insert 2

~~The Frequency of 24 hours is based on the generally slow change in required boron concentration and the low probability of an accident occurring without the required SDM. This allows time for the operator to collect the required data, which includes performing a boron concentration analysis, and complete the calculation.~~

REFERENCES

1. 10 CFR 50, Appendix A, GDC 26.

2. FSAR, Section 15.4.2.

3. FSAR, Section 15.2.4.

4. 10 CFR 100.

5. Letter from D.E. McKinnon to L.K. Mathews, “Operating Procedure for Mode 4/5 Boron Dilution,” 90 AP*-G-0041, July 6, 1990.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.1.2.1

Core reactivity is verified by periodic comparisons of measured and predicted RCS boron concentrations. The comparison is made, considering that other core conditions are fixed or stable, including control rod position, moderator temperature, fuel temperature, fuel depletion, xenon concentration, and samarium concentration. The Surveillance is performed prior to entering MODE 1 as an initial check on core conditions and design calculations at BOL. The SR is modified by a Note. The Note indicates that the normalization of predicted core reactivity to the measured value must take place within the first 60 effective full power days (EFPD) after each fuel loading. This allows sufficient time for core conditions to reach steady state, but prevents operation for a large fraction of the fuel cycle without establishing a benchmark for the design calculations. Insert 2 ~~The required subsequent Frequency of 31 EFPD, following the initial 60 EFPD after entering MODE 1, is acceptable, based on the slow rate of core changes due to fuel depletion and the presence of other indicators (QPTR, AFD, etc.) for prompt indication of an anomaly.~~

REFERENCES

1. 10 CFR 50, Appendix A, GDC 26, GDC 28, and GDC 29.
2. FSAR, Chapter 15.

BASES

ACTIONS

D.2 (continued)

accident analysis assumptions. Since automatic bank sequencing would continue to cause misalignment, the unit must be brought to a MODE or Condition in which the LCO requirements are not applicable. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours.

The allowed Completion Time is reasonable, based on operating experience, for reaching MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.1.4.1

~~Verification that individual rod positions are within alignment limits at a Frequency of 12 hours provides a history that allows the operator to detect a rod that is beginning to deviate from its expected position. The specified Frequency takes into account other rod position information that is continuously available to the operator in the control room, so that during actual rod motion, deviations can immediately be detected.~~

Insert 2

SR 3.1.4.2

Verifying each control rod is OPERABLE would require that each rod be tripped. However, in MODES 1 and 2, tripping each control rod would result in radial or axial power tilts, or oscillations. Exercising each individual control rod ~~every 92 days~~ provides increased confidence that all rods continue to be OPERABLE without exceeding the alignment limit, even if they are not regularly tripped. Moving each control rod by 10 steps will not cause radial or axial power tilts, or oscillations, to occur. ~~The 92 day Frequency takes into consideration other information available to the operator in the control room and SR 3.1.4.1, which is performed more frequently and adds to the determination of OPERABILITY of the rods.~~ Between required performances of SR 3.1.4.2 (determination of control rod OPERABILITY by movement), if a control rod(s) is discovered to be immovable, but remains trippable and aligned, the control rod(s) is considered to be OPERABLE. At any time, if a control rod(s) is immovable, a determination of the trippability (OPERABILITY) of the control rod(s) must be made, and appropriate action taken.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.1.5.1 (continued)

shut down the reactor, and the required SDM will be maintained following a reactor trip. This SR and Frequency ensure that the shutdown banks are withdrawn before the control banks are withdrawn during a unit startup.

Insert 2

~~Since the shutdown banks are positioned manually by the control room operator, a verification of shutdown bank position at a Frequency of 12 hours, after the reactor is taken critical, is adequate to ensure that they are within their insertion limits. Also, the 12 hour Frequency takes into account other information available in the control room for the purpose of monitoring the status of shutdown rods.~~

REFERENCES

1. 10 CFR 50, Appendix A, GDC 10, GDC 26, and GDC 28.
2. 10 CFR 50.46.
3. FSAR, Chapter 15.

BASES

ACTIONS

A.1.1, A.1.2, A.2, B.1.1, B.1.2, and B.2 (continued)

The allowed Completion Time of 2 hours for restoring the banks to within the insertion, sequence, and overlaps limits provides an acceptable time or evaluating and repairing minor problems without allowing the plant to remain in an unacceptable condition for an extended period of time.

C.1

If Required Actions A.1 and A.2, or B.1 and B.2 cannot be completed within the associated Completion Times, the plant must be brought to MODE 3, where the LCO is not applicable. The allowed Completion Time of 6 hours is reasonable, based on operating experience, for reaching the required MODE from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.1.6.1

This Surveillance is required to ensure that the reactor does not achieve criticality with the control banks below their insertion limits.

The estimated critical position (ECP) depends upon a number of factors, one of which is xenon concentration. If the ECP was calculated long before criticality, xenon concentration could change to make the ECP substantially in error. Conversely, determining the ECP immediately before criticality could be an unnecessary burden. There are a number of unit parameters requiring operator attention at that point. Performing the ECP calculation within 4 hours prior to criticality avoids a large error from changes in xenon concentration, but allows the operator some flexibility to schedule the ECP calculation with other startup activities.

Insert 2

SR 3.1.6.2

~~Verification of the control bank insertion limits at a Frequency of 12 hours is sufficient to detect control banks that may be approaching the insertion limits since, normally, very little rod motion occurs in 12 hours.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

Insert 2

SR 3.1.6.3

When control banks are maintained within their insertion limits as checked by SR 3.1.6.2 above, it is unlikely that their sequence and overlap will not be in accordance with requirements provided in the COLR. ~~A Frequency of 12 hours is consistent with the insertion limit check above in SR 3.1.6.2.~~

REFERENCES

1. 10 CFR 50, Appendix A, GDC 10, GDC 26, GDC 28.
2. 10 CFR 50.46,1988.
3. FSAR, Section 15.
4. FSAR, Section 4.3.2.6.
5. FSAR, Section 4.3.2.5.

BASES

ACTIONS

D.1 (continued)

brought to at least MODE 3 within an additional 15 minutes. The Completion Time of 15 additional minutes is reasonable, based on operating experience, for reaching MODE 3 in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.1.8.1

The power range and intermediate range neutron detectors must be verified to be OPERABLE in MODE 2 by LCO 3.3.1, "Reactor Trip System (RTS) Instrumentation." A CHANNEL OPERATIONAL TEST is performed on each power range and intermediate range channel prior to initiation of the PHYSICS TESTS. This will ensure that the RTS is properly aligned to provide the required degree of core protection during the performance of the PHYSICS TESTS.

SR 3.1.8.2

Verification that the RCS lowest loop T_{avg} is ≥ 531°F will ensure that the unit is not operating in a condition that could invalidate the safety analyses. ~~Verification of the RCS temperature at a Frequency of 30 minutes during the performance of the PHYSICS TESTS will ensure that the initial conditions of the safety analyses are not violated.~~

Insert 2

SR 3.1.8.3

Verification that the THERMAL POWER is ≤ 5% RTP will ensure that the plant is not operating in a condition that could invalidate the safety analyses. ~~Verification of the THERMAL POWER at a Frequency of 1 hour during the performance of the PHYSICS TESTS will ensure that the initial conditions of the safety analyses are not violated.~~

SR 3.1.8.4

The SDM is verified by performing a reactivity balance calculation, considering the following reactivity effects:

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.1.8.4 (continued)

a. RCS boron concentration;

b. Control bank position;

c. RCS average temperature;

d. Fuel burnup based on gross thermal energy generation;

e. Xenon concentration;

f. Samarium concentration; and

g. Isothermal temperature coefficient (ITC).

Using the ITC accounts for Doppler reactivity in this calculation because the reactor is relatively steady-state, and the fuel temperature will be changing at the same rate as the RCS.

Insert 2

~~The Frequency of 24 hours is based on the generally slow change in required boron concentration and on the low probability of an accident occurring without the required SDM.~~

REFERENCES

1. 10 CFR 50, Appendix B, Section XI.
2. 10 CFR 50.59.
3. Regulatory Guide 1.68, Revision 2, August, 1978.
4. ANSI/ANS-19.6.1-1985, December 13, 1985.
5. WCAP-9273-NP-A, "Westinghouse Reload Safety Evaluation Methodology Report," July 1985.
6. WCAP-11618, including Addendum 1, April 1989.
7. WCAP-13361-NP-A, "Westinghouse Dynamic Rod Worth Measurement Technique," January 1996.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.2.1.1 (continued)

If THERMAL POWER has been increased by ≥ 20% RTP since the last determination of $F_Q(Z)$, another evaluation of this factor is required after achieving equilibrium conditions at this higher power level (to ensure that $F_Q(Z)$ values are being reduced sufficiently with power increase to stay within the LCO limits).

Insert 2

~~The Frequency of 31 EFPD is adequate to monitor the change of power distribution with core burnup because such changes are slow and well controlled when the plant is operated in accordance with the Technical Specifications (TS).~~

SR 3.2.1.2

This surveillance is performed using the movable incore detectors to obtain a power distribution map at THERMAL POWER Levels greater than 5% RTP.

This surveillance determines if $F_Q(Z)$ (i.e. ($F_Q^M(Z)$) 1.0815, obtained from incore flux map results) will remain within its limit during a normal operational transient. If $F_Q(Z)$ is determined to exceed the transient limit, Action B.1 requires that the AFD limit be reduced 1% for each 1% $F_Q(Z)$ exceeds the transient limit. This will ensure that $F_Q(Z)$ will not exceed the transient limit during a normal operational transient within the reduced AFD limit.

For this surveillance, the $F_Q(Z)$ evaluations are not applicable for the following axial core regions, measured in percent of core height:

a. Lower core region, from 0 to 8% inclusive; and

b. Upper core region, from 92 to 100% inclusive.

The top and bottom 8% of the core are excluded from the evaluation because of the low probability that these regions would be more limiting in the safety analyses and because of the difficulty of making a precise measurement in these regions.

Demonstrating that $F_Q(Z)$ is within the transient limit or reducing the AFD limit if the transient $F_Q(Z)$ limit was initially exceeded, only

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.2.1.2 (continued)

Insert 2

~~The Surveillance Frequency of 31 EFPD is adequate to monitor the change of power distribution with burnup because such a change is sufficiently slow, when the plant is operated in accordance with the TS, to preclude adverse peaking factors between 31 day surveillances. Also, the result of this surveillance can result in more frequent surveillance of $F_Q(Z)$ if necessary.~~

REFERENCES

1. 10 CFR 50.46, 1988.
2. FSAR, Section 15.4.6.
3. 10 CFR 50, Appendix A, GDC 26.
4. WCAP-7308-L-P-A, "Evaluation of Nuclear Hot Channel Factor Uncertainties," June 1988.
5. WCAP-10216-P-A, Revision 1A, "Relaxation of Constant Axial Offset Control F_Q Surveillance Technical Specification," February 1994.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.2.2.1

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

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

Insert 2

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

REFERENCES

1. FSAR, Section 15.4.6.
2. 10 CFR 50, Appendix A, GDC 26.
3. 10 CFR 50.46, 1988.
4. FSAR, Section 4.4.1.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.2.3.1

This Surveillance verifies that the AFD, as indicated by the NIS excore channel, is within its specified ~~limits. The Surveillance Frequency of 7 days is adequate considering that the AFD is monitored by a computer and any deviation from requirements is alarmed.~~

Insert 2

REFERENCES

1. WCAP-8403 (nonproprietary), "Power Distribution Control and Load Following Procedures," Westinghouse Electric Corporation, September 1974.

2. R. W. Miller et al., "Relaxation of Constant Axial Offset Control: F_Q Surveillance Technical Specification," WCAP-10217-A, Rev. 1 (NP), February 1994.

BASES

ACTIONS

A.6 (continued)

surveillances performed at operating power levels, which can only be accomplished after the excore detectors are normalized to restore QPTR to within limits and the core returned to power.

B.1

If Required Actions A.1 through A.6 are not completed within their associated Completion Times, the unit must be brought to a MODE or condition in which the requirements do not apply. To achieve this status, THERMAL POWER must be reduced to < 50% RTP within 4 hours. The allowed Completion Time of 4 hours is reasonable, based on operating experience regarding the amount of time required to reach the reduced power level without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.2.4.1

SR 3.2.4.1 is modified by two Notes. Note 1 allows QPTR to be calculated with three power range channels if THERMAL POWER is ≤ 75% RTP and the input from one Power Range Neutron Flux channel is inoperable. Note 2 allows performance of SR 3.2.4.2 in lieu of SR 3.2.4.1.

Insert 2

This Surveillance verifies that the QPTR, as indicated by the Nuclear Instrumentation System (NIS) excore channels, is within its limits. ~~The Frequency of 7 days takes into account other information and alarms available to the operator in the control room.~~ For those causes of QPT that occur quickly (e.g., a dropped rod), there typically are other indications of abnormality that prompt a verification of core power tilt.

SR 3.2.4.2

This Surveillance is modified by a Note, which states that it is not required until 12 hours after the input from one or more Power Range Neutron Flux channels are inoperable and the THERMAL POWER is >75% RTP.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.2.4.2 (continued)

With an NIS power range channel inoperable, tilt monitoring for a portion of the reactor core becomes degraded. Large tilts are likely detected with the remaining channels, but the capability for detection of small power tilts in some quadrants ~~is decreased. Performing SR 3.2.4.2 at a Frequency of 12 hours provides an acceptable alternative means for confirming the accuracy of the QPTR measurement via excore detectors and ensuring that any tilt remains within its limits.~~

Insert 2

For purposes of monitoring the QPTR when one power range channel is inoperable, the moveable incore detectors are used to confirm that the normalized symmetric power distribution is consistent with the indicated QPTR and any previous data indicating a tilt. The incore detector monitoring is performed with a full incore flux map or two sets of four thimble locations with quarter core symmetry. The two sets of four symmetric thimbles is a set of eight unique detector locations. These locations are C-8, E-5, E-11, H-3, H-13, L-5, L-11, and N-8.

The power flux map can be used to generate power "tilt." This can be compared to a reference power tilt, from the most recent calibration flux map. Therefore, incore monitoring of QPTR can be used to confirm the accuracy of the QPTR as indicated by the excore detectors and that QPTR is within limits.

REFERENCES

1. 10 CFR 50.46, 1988.

2. FSAR, Section 15.4.6.

3. 10 CFR 50, Appendix A, GDC 26.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.1

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

Agreement criteria are based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

Insert 2

A Note modifies SR 3.3.1.1. The Note provides a clarification that the source range instrumentation surveillance is only required when reactor power is < P-6 and that 1 hour after power is reduced below P-6 is allowed for performing the surveillance for this instrumentation.

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

SR 3.3.1.2

SR 3.3.1.2 compares the calorimetric heat balance calculation to the NIS channel output every 24 hours. If the calorimetric calculated power exceeds the NIS channel indicated power by more than + 2% RTP, the NIS channel is not declared inoperable, but must be adjusted. If the NIS channel output cannot be properly adjusted, the channel is declared inoperable.

If the calorimetric is performed at part power (< 50% RTP), adjusting the NIS channel indication in the increasing power direction will assure a reactor trip below the safety analysis limit (≤ 118% RTP). Making no adjustment to the NIS channel indication in the decreasing power direction due to a part power calorimetric assures a reactor trip consistent with the safety analyses.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.2 (continued)

This allowance does not preclude making indicated power adjustments, if desired, when the calorimetric calculated power is less than the NIS channel indicated power. To provide close agreement between indicated power and calorimetric power and to preserve operating margin, the NIS channels are normally adjusted when operating at or near full power during steady-state conditions. However, discretion must be exercised if the NIS channel indicated power is adjusted in the decreasing power direction due to a part power calorimetric (< 50% RTP). This action could introduce a non-conservative bias at higher power levels which could result in an NIS reactor trip above the safety analysis limit (> 118% RTP). The cause of the non-conservative bias is the decreased accuracy of the calorimetric at reduced power conditions, as discussed in Westinghouse Technical Bulletin, ESBU-TB-92-14-R1, "Decalibration Effects of Calorimetric Power Level Measurements On The NIS High Power Reactor Trip At Power Levels Less Than 70% RTP," (Ref. 14). To assure a reactor trip below the safety analysis limit, the Power Range Neutron Flux — High bistables are set ≤ 85% RTP: 1) whenever the NIS channel indicated power is adjusted in the decreasing power direction due to a part power calorimetric below 50% RTP; and 2) for a post refueling startup. Before the Power Range Neutron Flux — High bistables are reset ≤ 109% RTP, the NIS channel calibration must be confirmed based on a calorimetric performed ≥ 50% RTP.

Two Notes modify SR 3.3.1.2. The first Note indicates that the NIS channel output shall be adjusted consistent with the calorimetric calculated power if the calorimetric calculated power exceeds the NIS channel output by more than + 2% RTP. The second Note clarifies that this Surveillance is required only if reactor power is ≥ 15% RTP and that 24 hours is allowed for performing the first Surveillance after reaching 15% RTP. A power level of 15% RTP is chosen based on plant stability, i.e., automatic rod control capability and turbine generator synchronized to the grid.

Insert 2

~~The Frequency of every 24 hours is adequate. It is based on unit operating experience, considering instrument reliability and power distribution changes. Together these factors demonstrate that a difference between the heat balance calculated power and the NIS channel indication of more than + 2% RTP is not expected in any 24 hour period.~~

~~In addition, control room operators periodically monitor redundant indications and alarms to detect deviations in channel outputs.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.3

SR 3.3.1.3 compares the incore system to the NIS channel output ~~every 31 EFPD.~~ . If the absolute difference is ≥ 3% the NIS channel is still OPERABLE, but it must be adjusted. When the channel is outside the 3% allowance assumed in the setpoint uncertainty calculation, the channel must be adjusted (i.e., normalized) based on incore surveillance data.

If the NIS channel cannot be properly adjusted, the channel is declared inoperable. This Surveillance is performed to periodically verify the f(ΔI) input to the overtemperature ΔT Function.

Three Notes modify SR 3.3.1.3. Note 1 indicates that the excore NIS channel shall be adjusted if the absolute difference between the incore and excore AFD is ≥ 3% . Note 2 clarifies that the Surveillance is required only if reactor power is ≥ 50% RTP and that 7 days are allowed for performing the Surveillance and channel adjustment, if necessary, after reaching 50% RTP. A power level of ≥ 50% RTP is consistent with the requirements of SR 3.3.1.9. Note 3 allows SR 3.3.1.9 to be performed in lieu of SR 3.3.1.3, since SR 3.3.1.9 calibrates (i.e., requires channel adjustment) the excore channels to the incore channels, it envelopes the performance of SR 3.3.1.3.

Insert 2

For each operating cycle, the initial channel normalization is performed under SR 3.3.1.9. ~~Subsequent verification at a frequency of every 31 EFPD is adequate. It is based on unit operating experience, considering instrument reliability, and the slow changes in neutron flux during the fuel cycle, which can be detected during this interval.~~

SR 3.3.1.4

SR 3.3.1.4 is the performance of a TADOT ~~every 62 days on a STAGGERED TEST BASIS.~~ . This test shall verify OPERABILITY by actuation of the end devices.

The RTB test shall include separate verification of the undervoltage trip via the Reactor Protection System and the local manual shunt trip mechanism. The bypass breaker test shall include a local manual shunt trip and local manual undervoltage trip. A Note has been added to indicate that this test must be performed on a bypass breaker prior to placing it in service. The independent test of undervoltage and shunt

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.4 (continued)

trip circuitry for the bypass breakers for the manual reactor trip function is included in SR 3.3.1.12. No capability is provided for performing such a test at power.

~~The Frequency of every 62 days on a STAGGERED TEST BASIS is justified in Reference 15.~~

SR 3.3.1.5

SR 3.3.1.5 is the performance of an ACTUATION LOGIC TEST. The SSPS is tested ~~every 92 days on a STAGGERED TEST BASIS,~~ using the semiautomatic tester. The train being tested is placed in the bypass condition, thus preventing inadvertent actuation. Through the semiautomatic tester, all possible logic combinations, with and without applicable permissives, are tested for each protection and permissive function. ~~The Frequency of every 92 days on a STAGGERED TEST BASIS is justified in Reference 15.~~

SR 3.3.1.6

.

SR 3.3.1.6 is the performance of a TADOT ~~and it is performed every 184 days, as justified in Reference 15.~~ The function is tested up to the SSPS logic circuit. Setpoints must be found within the Allowable Values specified in Table 3.3.1-1.

Insert 2

The test includes the undervoltage and underfrequency sensing devices that provide actuation signals directly to the SSPS. The test functionally demonstrates channel OPERABILITY including verification of the trip setpoint. If necessary, the undervoltage/underfrequency setpoint is restored to within calibration tolerance. ~~The frequency is based on instrument reliability and operating history. In addition, it is consistent with setpoint uncertainty calculation allowances for rack drift in Reference 7 and analysis modeled in Reference 15.~~

.

~~SR 3.3.1.7~~

SR 3.3.1.7 is the performance of a ~~COT~~ ~~every 184 days.~~

A COT is performed on each required channel to ensure the rack components will perform the intended Function.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.7 (continued)

Setpoints must be within the Allowable Values specified in Table 3.3.1-1.

The "as found" and "as left" data have been evaluated to ensure consistency with (i.e., bounded by) the drift allowance used in the setpoint methodology. The COT "as found" limits are based, in part, on expected performance of a healthy instrument channel. Appropriate corrective action is taken when the "as found" values exceed the prescribed values. The setpoint shall be left set consistent with the assumptions of the current unit specific setpoint methodology.

SR 3.3.1.7 is modified by a Note that provides a 4 hour delay in the requirement to perform this Surveillance for source range instrumentation when entering MODE 3 from MODE 2. This Note allows a normal shutdown to proceed without a delay for testing in MODE 2 and for a short time in MODE 3 until the RTBs are open and SR 3.3.1.7 is no longer required to be performed. If the unit is to be in MODE 3 with the RTBs closed for > 4 hours this Surveillance must be performed prior to 4 hours after entry into MODE 3.

Insert 2

~~The Frequency of 184 days is justified in Reference 15.~~

the Frequency specified in the Surveillance Frequency Control Program

SR 3.3.1.8

SR 3.3.1.8 is the performance of a COT as described in SR 3.3.1.7, except it is modified by a Note that this test shall include verification that the P-6 and P-10 interlocks are in their required state for the existing unit condition. The Frequency is modified by a Note that allows this surveillance to be satisfied if it has been performed within ~~184 days~~ of the Frequencies prior to reactor startup and four hours after reducing power below P-10 and P-6. The Frequency of "prior to startup" ensures this surveillance is performed prior to critical operations and applies to the source, intermediate and power range low instrument channels. The Frequency of "12 hours after reducing power below P-10" (applicable to the intermediate range and the power range low channels) and "4 hours after reducing power below P-6" (applicable to source range channels) allows a normal shutdown to be completed and the unit removed from the MODE of Applicability for this surveillance without a delay to perform the testing required by this surveillance. The Frequency ~~of every 184 days thereafter~~ applies if the plant remains in the MODE of Applicability after the initial performances of prior to reactor startup and twelve and four hours after reducing power below

specified in the Surveillance Frequency Control Program

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.8 (continued)

P-10 or P-6, respectively. The MODE of Applicability for this surveillance is < P-10 for the power range low and intermediate range channels and < P-6 for the source range channels. Once the unit is in MODE 3, this surveillance is no longer required. If power is to be maintained < P-10 for more than 12 hours or < P-6 for more than 4 hours, then the testing required by this surveillance must be performed prior to the expiration of the time limit. Twelve hours and four hours are reasonable times to complete the required testing or place the unit in a MODE where this surveillance is no longer required. This test ensures that the NIS source, intermediate, and power range low channels are OPERABLE prior to taking the reactor critical and after reducing power into the applicable MODE (< P-10 or < P-6) for periods > 12 and 4 hours, respectively. ~~The Frequency of 184 days is justified in Reference 15.~~

Insert 2

SR 3.3.1.9

SR 3.3.1.9 is a calibration of the excore channels to the incore channels based on analysis of a range of core flux distributions or a single core flux distribution coupled with core design information. If the measurements do not agree, the excore channels are not declared inoperable but must be adjusted (i.e., normalized) to agree with the incore detector measurements. If the excore channels cannot be adjusted, the channels are declared inoperable. This Surveillance is performed at BOL to normalize the excore f(ΔI) input to the overtemperature ΔT Function for a given operating cycle. The surveillance also normalizes the excore ΔI indications.

Two Notes modify SR 3.3.1.9. Note 1 states that neutron detectors are excluded from the calibration. Note 2 specifies that this Surveillance is required only if reactor power is ≥ 50% RTP and that 7 days are allowed for completing the surveillance after reaching 50% RTP. Based on operating experience, a time allowance of 7 days for test performance, data analysis, and channel adjustments is sufficient. A power level of ≥ 50% RTP corresponds to the power level for the AFD surveillance (SR 3.2.3.1), which requires calibrated excore ΔI indications.

Insert 2

~~The Frequency of 18 months is based on plant operating experience and has proven sufficient to establish the cycle-specific calibration of the excore ΔI indications and f(ΔI).~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.10

~~A CHANNEL CALIBRATION is performed every 18 months, or approximately at every refueling.~~ CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy.

CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the unit specific setpoint methodology. The "as found" and "as left" data have been evaluated to ensure consistency with (i.e., bounded by) the drift allowance used in the setpoint methodology.

Insert 2

~~The Frequency of 18 months is based on the assumption of an 18 month calibration interval in the determination of the magnitude of equipment drift in the setpoint methodology and the need to perform this surveillance under the conditions that apply during a plant outage. Operating experience has shown these components usually pass the surveillance when performed on the 18 month Frequency.~~

This SR is modified by two Notes. Note 1 states that neutron detectors are excluded from the CHANNEL CALIBRATION where applicable. The CHANNEL CALIBRATION for the power range neutron detectors consists of a normalization of the detector outputs based on an incore/excore cross-calibration (SR 3.3.1.9). In addition, the CHANNEL CALIBRATION for the power range neutron detector outputs includes normalization of the channel output based on a power calorimetric (SR 3.3.1.2) performed above 15% RTP. The CHANNEL CALIBRATION for the intermediate range neutron detector outputs includes normalization of the high flux bistable based on a power calorimetric. The CHANNEL CALIBRATION for the source range neutron detectors consists of obtaining new detector plateau and preamp discriminator curves after a detector is replaced. This Surveillance is not required for the NIS power range detectors for entry into MODE 2 or 1, and is not required for the NIS intermediate range detectors for entry into MODE 2, because the unit must be in at least MODE 2 to perform the test for the intermediate range detectors and MODE 1 for the power range detectors. Note 2 states that this test shall include verification that the time constants are adjusted to the prescribed values where applicable. The OTΔT, OPΔT, and the power range neutron flux rate functions contain required time constants.

(continued)

Frequency specified in the Surveillance Frequency Control Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.11

SR 3.3.1.11 is the performance of a COT of RTS interlocks ~~every 18 months.~~ This COT is also intended to verify the interlock prior to startup, if not performed in the ~~previous 184 days.~~

Insert 2

~~The 18 month Frequency is based on the known reliability of the interlocks and the multichannel redundancy available, and has been shown to be acceptable through operating experience. The 184-day Frequency for RTS Interlock COT performance prior to startup is consistent with the uncertainty allowances for rack drift in the setpoint calculations (Ref. 7) and the COT (SR 3.3.1.7 and SR 3.3.1.8) Surveillance Frequencies for the associated trip functions.~~ Performance of the RTS Interlock COTs in conjunction with periodic actuation logic tests (SR 3.3.1.5) provides assurance that the total interlock function is OPERABLE prior to reactor startup and power ascension.

SR 3.3.1.12

SR 3.3.1.12 is the performance of a TADOT of the Manual Reactor Trip, RCP Breaker Position, and the SI Input from ESFAS. ~~This TADOT is performed every 18 months.~~ The test shall independently verify the OPERABILITY of the undervoltage and shunt trip mechanisms for the Manual Reactor Trip Function for the Reactor Trip Breakers and Reactor Trip Bypass Breakers. The Reactor Trip Bypass Breaker test shall include testing of the automatic undervoltage trip.

Insert 2

~~The Frequency is based on the known reliability of the Functions and the multichannel redundancy available, and has been shown to be acceptable through operating experience.~~

The SR is modified by a Note that excludes verification of setpoints from the TADOT. The Functions affected have no setpoints associated with them.

SR 3.3.1.13

SR 3.3.1.13 is the performance of a TADOT of Turbine Trip Functions prior to exceeding P-9. This TADOT consists of verifying that each channel indicates a Turbine trip before Latching the turbine and indicates no turbine trip after the turbine is latched prior to exceeding the P-9 interlock whenever the unit has been in MODE 3. A Note states that this Surveillance is not required if it has been performed within the

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.14 (continued)

types must be demonstrated by test.

WCAP-14036-P-A, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," (Ref. 19) provides the basis and methodology for using allocated signal processing and actuation logic response times in the overall verification of the protection system channel response time. The allocations for the sensor, signal conditioning and actuation logic response times must be verified prior to placing the component in operational service and re-verified following maintenance that may adversely affect response time. In general, electric repair work does not impact response time provided the parts used for repair are of the same type and value. Specific components identified in the WCAP may be replaced without verification testing. One example where time response could be affected is replacing the sensing assembly of a transmitter.

Insert 2

~~As appropriate, each channel's response must be verified every 18 months on a STAGGERED TEST BASIS. Each verification shall include at least one Logic train such that both Logic trains are verified at least once per 36 months. Testing of the final actuation devices is included in the testing. Response times cannot be determined during unit operation because equipment operation is required to measure response times. Experience has shown that these components usually pass this surveillance when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~

SR 3.3.1.14 is modified by a Note stating that neutron detectors are excluded from RTS RESPONSE TIME testing. This Note is necessary because of the difficulty in generating an appropriate detector input signal. Excluding the detectors is acceptable because the principles of detector operation ensure a virtually instantaneous response.

REFERENCES

1. FSAR, Chapter 7.
2. FSAR, Chapter 6.
3. FSAR, Chapter 15.
4. Joseph M. Farley Nuclear Power Plant Unit 1 (2) Precautions, Limitations and Setpoints U–266647 (U–280912).

(continued)

BASES

SURVEILLANCE REQUIREMENTS

The SRs for each ESFAS Function are identified by the SRs column of Table 3.3.2-1.

A Note has been added to the SR Table to clarify that Table 3.3.2-1 determines which SRs apply to which ESFAS Functions.

Note that each channel of process protection supplies both trains of the ESFAS. When testing channel I, train A and train B must be examined. Similarly, train A and train B must be examined when testing channel II, channel III, and channel IV (if applicable). The CHANNEL CALIBRATION and COTs are performed in a manner that is consistent with the assumptions used in analytically calculating the required channel accuracies.

SR 3.3.2.1

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

Agreement criteria are based on a combination of the channel instrument uncertainties, including indication and reliability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

Insert 2

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

SR 3.3.2.2

SR 3.3.2.2 is the performance of an ACTUATION LOGIC TEST~~. The SSPS is tested every 92 days on a STAGGERED TEST BASIS,~~ using the semiautomatic tester. The train being tested is placed in the

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.2 (continued)

Insert 2

bypass condition, thus preventing inadvertent actuation. Through the semiautomatic tester, all possible logic combinations, with and without applicable permissives, are tested for each protection and permissive function excluding the automatic actuation Logic for the trip of all main feedwater pumps. In addition, the master relay coil is pulse tested for continuity. This verifies that the logic modules are OPERABLE and that there is an intact voltage signal path to the master relay coils. ~~The Frequency of every 92 days on a STAGGERED TEST BASIS is justified in Reference 12.~~

on a STAGGERED TEST BASIS

SR 3.3.2.3

SR 3.3.2.3 is the performance of a MASTER RELAY TEST. The MASTER RELAY TEST is the energizing of the master relay, verifying contact operation and a low voltage continuity check of the slave relay coil. Upon master relay contact operation, a low voltage is injected to the slave relay coil. This voltage is insufficient to pick up the slave relay, but large enough to demonstrate signal path continuity. ~~This test is performed every 92 days on a STAGGERED TEST BASIS.~~ The time allowed for the testing (4 hours) is justified in Reference 10. ~~The Frequency of 92 days is justified in Reference 12.~~

Insert 2

SR 3.3.2.4

SR 3.3.2.4 is the performance of a COT.

A COT is performed on each required channel to ensure the rack components will perform the intended Function. Setpoints must be found within the Allowable Values specified in Table 3.3.2-1. With the exception of P-11, the COT also confirms the channel inputs to both actuation logic trains. The P-11 inputs are tested ~~on an 18 month basis~~ under SR 3.3.2.7.

The "as found" and "as left" data have been evaluated to ensure consistency with (i.e., bounded by) the drift allowance used in the setpoint methodology. The COT "as found" limits are based, in part, on expected performance of a healthy instrument channel. Appropriate corrective action is taken when the "as found" values exceed the prescribed values. The setpoint shall be left set consistent

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.4 (continued)

with the assumptions of the current unit specific setpoint methodology.

Insert 2

~~The Frequency of 184 days is justified in Reference 12.~~

SR 3.3.2.5

SR 3.3.2.5 is the performance of a TADOT every 184 days. This test is a check of the Undervoltage RCP Function. The Function is tested up to the SSPS logic circuit. Setpoints must be found within the Allowable Values specified in Table 3.3.2-1.

The test includes undervoltage sensing devices that provide actuation signals directly to the SSPS. The test functionally demonstrates channel OPERABILITY including verification of the trip setpoint. If necessary, the undervoltage setpoint is restored to within calibration tolerance. ~~The Frequency is adequate. It is based on instrument reliability and operating history data. In addition, it is consistent with setpoint uncertainty calculation allowances in Reference 6 and analysis modeled in Reference 12.~~

SR 3.3.2.6

SR 3.3.2.6 is the performance of a TADOT. This test is a check of the Manual Actuation Functions and the P-4 interlock Function, including turbine trip, automatic SI block, and seal-in of FWI by SI. ~~It is performed every 18 months.~~ Each Manual Actuation Function is tested up to, and including, the master relay coils. In some instances, the test includes actuation of the end device (i.e., pump starts, valve cycles, etc.). The turbine trip by reactor trip (P-4) is independently verified for both trains. ~~The Frequency is adequate, based on industry operating experience and is consistent with the typical refueling cycle and allows testing to be performed during shutdowns when necessary. However, the P-4 input signals to SSPS actuation logic are tested in conjunction with RTB testing under SR 3.3.1.4 on a 31-day STAGGERED TEST BASIS.~~ The SR is modified by a Note that excludes verification of setpoints during the TADOT. The manual initiation and P-4 interlock Functions have no associated setpoints.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.2.7

SR 3.3.2.7 is the performance of a CHANNEL CALIBRATION.

~~A CHANNEL CALIBRATION is performed every 18 months, or approximately at every refueling.~~ CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to measured parameter within the necessary range and accuracy.

CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the unit specific setpoint methodology. The "as found" and "as left" data have been evaluated to ensure consistency with (i.e., bounded by) the drift allowance used in the setpoint methodology.

~~The Frequency of 18 months is based on the assumption of an 18 month calibration interval in the determination of the magnitude of equipment drift in the setpoint methodology.~~

Insert 2

This SR is modified by a Note stating that this test should include verification that the time constants are adjusted to the prescribed values where applicable.

SR 3.3.2.8

SR 3.3.2.8 is the performance of a SLAVE RELAY TEST. The SLAVE RELAY TEST is the energizing of the slave relays. Contact operation is verified in one of two ways. Actuation equipment that may be operated in the design mitigation MODE is either allowed to function, or is placed in a condition where the relay contact operation can be verified without operation of the equipment. Actuation equipment that may not be operated in the design mitigation MODE is prevented from operation by the SLAVE RELAY TEST circuit or is tested when there will be no adverse impact on the plant. For this latter case, when using the SLAVE RELAY TEST circuit, contact operation is verified by a continuity check of the circuit containing the slave relay. ~~This test is performed every 18 months. The Frequency is adequate, based on plant operating experience, considering instrument reliability and operating history data.~~ While the ESFAS is designed to accommodate online testing at power, slave relay testing is normally conducted during refueling to minimize the potential for plant transients and unnecessary challenges to plant equipment.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.9 (continued)

electric repair work does not impact response time provided the parts used for repair are of the same type and value. Specific components identified in the WCAP may be replaced without verification testing. One example where time response could be affected is replacing the sensing assembly of a transmitter.

Insert 2

~~ESF RESPONSE TIME tests are conducted on an 18 month STAGGERED TEST BASIS. Each verification shall include at least one Logic train such that both Logic trains are verified at least once per 36 months. Testing of the final actuation devices, which make up the bulk of the response time, is included in the testing of each channel. The final actuation device in one train is tested with each channel. Therefore, staggered testing results in response time verification of these devices every 18 months. The 18 month Frequency is consistent with the typical refueling cycle and is based on unit operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences.~~

This SR is modified by a Note that clarifies that the turbine driven AFW pump is tested within 24 hours after reaching 1005 psig in the SGs. Based on operating experience, 24 hours is a sufficient time duration for performance of the TDAFW pump response time test. A steam pressure of 1005 psig corresponds to the RCS no-load T_{avg} for MODE 2. Valid response time tests can be performed at lower SG pressures.

SR 3.3.2.10

SR 3.3.2.10 is the performance of a TADOT as described in SR 3.3.2.6, except that it is performed for the AFW pump start on trip of all MFW pumps Function and the Frequency is prior to reactor startup if not performed within the previous 92 days. This Frequency is based on operating experience.

The SR is modified by a Note that excludes verification of setpoints during the TADOT. The Function tested has no associated setpoint.

REFERENCES

1. FSAR, Chapter 6.
2. FSAR, Chapter 7.

(continued)

BASES

REFERENCES (continued)

3. FSAR, Chapter 15.
4. Joseph M. Farley Nuclear Power Plant Unit 1 (2) Precautions, Limitations, and Setpoints U–266647 (U–280912).
5. IEEE-279-1971.
6. WCAP 13751, Rev. 1, Westinghouse Setpoint Methodology for Protection Systems Farley Nuclear Plant Units 1 and 2.
7. 10 CFR 50.49.
8. WCAP 13751 Rev. 0, Westinghouse Setpoint Methodology for Protection Systems SNOC Farley Nuclear Plant Units 1 and 2.
9. Joseph M. Farley Nuclear Power Plant Units 1 & 2 Precautions, Limitations, and Setpoints for Nuclear Steam Supply Systems, March 1978, U258631/U278997 Rev. 5.
10. WCAP-10271-P-A, Supplement 2, Rev. 1, "Updated Approved Version," June 1990.
11. WCAP-14333-P-A, Revision 1, "Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times," October 1998.

Not used.

12. ~~WCAP-15376-P-A, Revision 1, "Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times," March 2003.~~
13. FSAR, Table 7.3-16.
14. WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," Jan., 1996.
15. WCAP-14036-P-A, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," Oct. 1998.
16. NUREG-1218, April 1988.
17. A-181007 Reactor Protection System FSD.
18. Westinghouse Functional Diagrams U-166231 thru U-166245.

BASES

SURVEILLANCE REQUIREMENTS

A Note has been added to the SR Table to clarify that SR 3.3.3.1 and SR 3.3.3.2 apply to each PAM instrumentation Function in Table 3.3.3-1.

SR 3.3.3.1

Performance of the CHANNEL CHECK ~~once every 31 days~~ ensures that a gross instrumentation failure has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION. The high radiation instrumentation should be compared to similar unit instruments.

Agreement criteria are based on a combination of the channel instrument uncertainties, including isolation, indication, and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit. If the channels are within the criteria, it is an indication that the channels are OPERABLE.

As specified in the SR, a CHANNEL CHECK is only required for those channels that are normally energized.

Insert 2

~~The Frequency of 31 days is based on operating experience that demonstrates that channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.~~

SR 3.3.3.2

~~A CHANNEL CALIBRATION is performed every 18 months, or approximately at every refueling.~~ CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to measured parameter with the necessary range and accuracy.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.3.2 (continued)

Insert 2

~~The Frequency is based on operating experience and consistency with the typical industry refueling cycle.~~

REFERENCES

1. A-181866 Unit 1 RG 1.97 Compliance Review
   A-204866 Unit 2 RG 1.97 Compliance Review
   NRC SER for FNP RG 1.97 Compliance Report, Letter, Reeves to McDonald, 2/12/87.

2. Regulatory Guide 1.97.

3. NUREG-0737, Supplement 1, "TMI Action Items."

BASES

ACTIONS

A.1 (continued)

The Required Action is to restore the required Function to OPERABLE status within 30 days. The Completion Time is based on operating experience and the low probability of an event that would require evacuation of the control room.

B.1 and B.2

A Note modifies Condition B indicating that it is not applicable to the Source Range Neutron Flux (Gammametrics) Function. This Function is covered under Condition C.

If the Required Action and associated Completion Time of Condition A is not met, 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 4 within 12 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.

C.1

Condition C applies when the Required Action and associated Completion Time for Condition A are not met for the Source Range Neutron Flux (Gammametrics) monitor. This Required Action requires a written report be submitted to the NRC. This report discusses the results of the root cause evaluation of the inoperability, if performed, and identifies proposed restorative actions. This action is appropriate in lieu of a shutdown requirement since alternative actions are identified before loss of functional capability, and given the likelihood of unit conditions that would require information provided by this instrumentation.

SURVEILLANCE REQUIREMENTS

SR 3.3.4.1

Performance of the CHANNEL CHECK ~~once every 31 days~~ ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.4.1 (continued)

should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are based on a combination of the channel instrument uncertainties, including indication and readability. If the channels are within the criteria, it is an indication that the channels are OPERABLE. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

As specified in the Surveillance, a CHANNEL CHECK is only required for those channels which are normally energized.

~~The Frequency of 31 days is based upon operating experience which demonstrates that channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.~~

Insert 2

SR 3.3.4.2

SR 3.3.4.2 verifies each required Remote Shutdown System control circuit and transfer switch performs the intended function. This verification is performed from the remote shutdown panel and locally, as appropriate. Operation of the equipment from the remote shutdown panel is not necessary. The Surveillance can be satisfied by performance of a continuity check. This will ensure that if the control room becomes inaccessible, the unit can be placed and maintained in MODE 3 from the remote shutdown panel and the local control stations. ~~The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. (However, this Surveillance is not required to be performed only during a unit outage.) Operating experience demonstrates that remote shutdown control channels usually pass the Surveillance test when performed at the 18 month Frequency.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.4.3

CHANNEL CALIBRATION is a complete check of the monitoring instrument loop and the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy.

Insert 2

~~The Frequency of 18 months is based upon operating experience and consistency with the typical industry refueling cycle.~~

REFERENCES

1. 10 CFR 50, Appendix A, GDC 19.

BASES

ACTIONS (continued)

F.1 and F.2

Condition F becomes applicable when the Required Action and associated Completion Time of Condition E is not met. If the emergency bus voltage cannot be restored to ≥ 3850 volts within the Completion Time of Condition E, action must be taken to place the unit in a MODE where the LCO requirement for the Alarm function is not applicable. To achieve this status, the unit must be brought to MODE 3 within 6 hours and 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 3.3.5.1

SR 3.3.5.1 is the performance of a TADOT. ~~This test is performed every 31 days.~~ The test checks trip devices that provide actuation signals directly, bypassing the analog process control equipment.

The TADOT surveillance is modified by two Notes. The first Note excludes the actuation of the final trip actuation relay for LOP Functions 1 and 2 from this TADOT. The actuation of this relay would cause the DG start and separation of the emergency buses from the grid. The actual DG start and connection to the emergency bus is verified by other surveillance testing (SR 3.3.5.3) accomplished during shutdown conditions. The second Note provides an exception to the verification of the LOP function setpoints during performance of this monthly TADOT. The TADOT includes verification of the undervoltage device operation upon removal of the input voltage and does not require the setpoint be verified or adjusted. The LOP function setpoints are verified during the ~~18 month~~ CHANNEL CALIBRATION. In addition, the TADOT includes verification of the operation of the two-out-of-three logic associated with LOP Functions 1 and 2. ~~The Frequency is based on the known reliability of the relays and controls and the multichannel redundancy available, and has been shown to be acceptable through operating experience.~~

Insert 2

SR 3.3.5.2

SR 3.3.5.2 is the performance of a CHANNEL CALIBRATION.

The setpoints, as well as the response to a loss of voltage and a degraded grid voltage test, shall include a single point verification that

(continued)

The

SURVEILLANCE REQUIREMENTS

SR 3.3.5.2 (continued)

the trip occurs within the required time delay (refer to appropriate relay setting sheet calibration requirements).

~~A CHANNEL CALIBRATION is performed every 18 months, or approximately at every refueling.~~ CHANNEL CALIBRATION is a check of the major instrument components in the loop, including the sensor (relay or digital voltmeter). The test verifies that the channel responds to a measured parameter within the necessary range and accuracy.

The CHANNEL CALIBRATION is modified by a Note. The Note excludes the actuation of the final trip actuation relay for LOP functions 1 and 2 from this CHANNEL CALIBRATION. The actuation of this relay would cause the DG start and separation of the emergency buses from the grid. The actual DG start and connection to the emergency bus is verified by other surveillance testing (SR 3.3.5.3) accomplished during shutdown conditions.

Insert 2

~~The Frequency of 18 months is based on operating experience and consistency with the typical industry refueling cycle.~~

SR 3.3.5.3

This SR ensures the individual channel response times are less than or equal to the maximum values assumed in the safety analysis. The response time testing acceptance criteria are included in FSAR Table 7.3-16. This surveillance is performed in accordance with the guidance provided in the ESF RESPONSE TIME surveillance requirement in LCO 3.3.2, ESFAS.

This surveillance is modified by a Note. The Note states that this surveillance shall include verification of the actuation of the final trip actuation relay associated with LOP Functions 1 and 2.

REFERENCES

1. FSAR, Section 8.3.
2. FSAR, Chapter 15.
3. SNC Calculations E-35.1.A, E-35.2.A, and SE-94-0470-006.
4. FSAR, Section 7.3.

BASES

ACTIONS

C.1 and C.2 (continued)

A Note states that Condition C is applicable during the Applicability of CORE ALTERATIONS and during movement of irradiated fuel assemblies within containment.

SURVEILLANCE REQUIREMENTS

A Note has been added to the SR Table to clarify that Table 3.3.6-1 determines which SRs apply to which Containment Purge and Exhaust Isolation Functions.

SR 3.3.6.1

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

Agreement criteria are based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

Insert 2

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

SR 3.3.6.2

SR 3.3.6.2 is the performance of an ACTUATION LOGIC TEST. The train being tested is placed in the bypass condition, thus preventing inadvertent actuation. Through the semiautomatic tester, all possible logic combinations, with and without applicable permissives, are tested for each protection function. In addition, the master relay

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.6.2 (continued)

coil is pulse tested for continuity. This verifies that the logic modules are OPERABLE and there is an intact voltage signal path to the master relay coils. ~~This test is performed every 92 days on a STAGGERED TEST BASIS. The Surveillance interval is justified in Reference 2.~~

Insert 2

SR 3.3.6.3

SR 3.3.6.3 is the performance of a MASTER RELAY TEST. The MASTER RELAY TEST is the energizing of the master relay, verifying contact operation and a low voltage continuity check of the slave relay coil. Upon master relay contact operation, a low voltage is injected to the slave relay coil. This voltage is insufficient to pick up the slave relay, but large enough to demonstrate signal path continuity. ~~This test is performed every 92 days on a STAGGERED TEST BASIS. The Surveillance interval is justified in Reference 2.~~

SR 3.3.6.4

A COT is performed ~~every 92 days~~ on each required channel to ensure the entire channel will perform the intended Function. ~~The Frequency is based on the staff recommendation for increasing the availability of radiation monitors according to NUREG-1366 (Ref. 3).~~ This test verifies the capability of the instrumentation to provide the containment purge and exhaust system isolation. The setpoint shall be left consistent with the current unit specific calibration procedure tolerance.

SR 3.3.6.5

SR 3.3.6.5 is the performance of a SLAVE RELAY TEST. The SLAVE RELAY TEST is the energizing of the slave relays. Contact operation is verified in one of two ways. Actuation equipment that may be operated in the design mitigation mode is either allowed to function or is placed in a condition where the relay contact operation can be verified without operation of the equipment. Actuation equipment that may not be operated in the design mitigation mode is prevented from operation by the SLAVE RELAY TEST circuit. For this latter case, contact operation is verified by a continuity check of the circuit containing the slave relay.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.6.5 (continued)

~~This test is performed every 18 months. The Frequency is acceptable based on instrument reliability and operating experience.~~

Insert 2

SR 3.3.6.6

SR 3.3.6.6 is the performance of a TADOT. This test is a check of the Manual Actuation Functions ~~and is performed every 18 months~~. Each Manual Actuation Function is tested up to, and including, the master relay coils. In some instances, the test includes actuation of the end device (i.e., pump starts, valve cycles, etc.).

The test also includes trip devices that provide actuation signals directly to the SSPS, bypassing the analog process control equipment. The SR is modified by a Note that excludes verification of setpoints during the TADOT. The Functions tested have no setpoints associated with them.

~~The Frequency is based on the known reliability of the Function and the redundancy available, and has been shown to be acceptable through operating experience.~~

SR 3.3.6.7

The

~~A CHANNEL CALIBRATION is performed every 18 months, or approximately at every refueling.~~ CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy.

~~The Frequency is based on operating experience and is consistent with the typical industry refueling cycle.~~

SR 3.3.6.8

This SR ensures the individual channel response times are less than or equal to the maximum values assumed in the safety analysis. The response time testing acceptance criteria are included in FSAR Table 7.3-16 (Ref. 4). This surveillance is performed in accordance with the guidance provided in the ESF RESPONSE TIME surveillance requirement in LCO 3.3.2, ESFAS.

BASES

REFERENCES

1. 10 CFR 100.11.

Not used.

2. ~~WCAP-15376-P-A, Rev. 1, March 2003.~~

3. ~~NUREG-1366.~~

4. FSAR Table 7.3-16

BASES

ACTIONS

D.1 and D.2 (continued)

ALTERATIONS or when irradiated fuel assemblies are being moved. Condition D is only applicable to those CREFS functions in Table 3.3.7-1 required OPERABLE during CORE ALTERATIONS or during movement of irradiated fuel assemblies. Movement of irradiated fuel assemblies and CORE ALTERATIONS must be suspended immediately to reduce the risk of accidents that would require CREFS actuation or control room isolation.

SURVEILLANCE REQUIREMENTS

A Note has been added to the SR Table to clarify that Table 3.3.7-1 determines which SRs apply to which CREFS Actuation Functions.

SR 3.3.7.1

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

Agreement criteria are based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

Insert 2

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

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.7.2

A COT is performed ~~once every 92 days~~ on each required channel to ensure the entire channel will perform the intended function. This test verifies the capability of the instrumentation to provide the actuation function. The setpoints shall be left consistent with the unit specific calibration procedure tolerance. ~~The Frequency is based on the known reliability of the monitoring equipment and has been shown to be acceptable through operating experience.~~

SR 3.3.7.3

SR 3.3.7.3 is the performance of an ACTUATION LOGIC TEST. The train being tested is placed in the bypass condition, thus preventing inadvertent actuation. Through the semiautomatic tester, all possible logic combinations, with and without applicable permissives, are tested for each protection function. In addition, the master relay coil is pulse tested for continuity. This verifies that the logic modules are OPERABLE and there is an intact voltage signal path to the master relay coils. ~~This test is performed every 92 days on a STAGGERED TEST BASIS. The Surveillance interval is justified in Reference 1.~~

Insert 2

SR 3.3.7.4

SR 3.3.7.4 is the performance of a MASTER RELAY TEST. The MASTER RELAY TEST is the energizing of the master relay, verifying contact operation and a low voltage continuity check of the slave relay coil. Upon master relay contact operation, a low voltage is injected to the slave relay coil. This voltage is insufficient to pick up the slave relay, but large enough to demonstrate signal path continuity. ~~This test is performed every 92 days on a STAGGERED TEST BASIS. The Surveillance interval is justified in Reference 1.~~

SR 3.3.7.5

SR 3.3.7.5 is the performance of a SLAVE RELAY TEST. The SLAVE RELAY TEST is the energizing of the slave relays. Contact operation is verified in one of two ways. Actuation equipment that may be operated in the design mitigation MODE is either allowed to function or is placed in a condition where the relay contact operation

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.7.5 (continued)

can be verified without operation of the equipment. Actuation equipment that may not be operated in the design mitigation MODE is prevented from operation by the SLAVE RELAY TEST circuit. For this latter case, contact operation is verified by a continuity check of ~~the circuit containing the slave relay.~~ ~~This test is performed every 18 months. The Frequency is acceptable based on instrument reliability and operating experience.~~

Insert 2

SR 3.3.7.6

SR 3.3.7.6 is the performance of a TADOT. This test is a check of the Manual Actuation Functions ~~and is performed every 18 months.~~ . The test includes actuation of the end device (i.e., pump starts, valve cycles, etc.).

~~The Frequency is based on the known reliability of the Function and the redundancy available, and has been shown to be acceptable through operating experience.~~ The SR is modified by a Note that excludes verification of setpoints during the TADOT. The Functions tested have no setpoints associated with them.

SR 3.3.7.7

~~A CHANNEL CALIBRATION is performed every 18 months, or approximately at every refueling.~~ The CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy.

~~The Frequency is based on operating experience and is consistent with the typical industry refueling cycle.~~

REFERENCES

1. ~~WCAP-15376-P-A, Rev. 1, March 2003.~~ Not used.

BASES

ACTIONS

C.1 (continued)

required to mitigate the consequences of a LOCA (Phase B Isolation and associated automatic actuation logic and actuation relays). These Functions are not required OPERABLE when moving irradiated fuel assemblies and are unrelated to the mitigation of a fuel handling accident in the spent fuel pool room.

D.1 and D.2

Condition D applies when the Required Action and associated Completion Time for Condition A or B have not been met and the unit is in MODE 1, 2, 3, or 4. The unit must be brought to a MODE in which the LCO requirements are not applicable. To achieve this status, the unit must be brought to MODE 3 within 6 hours and 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.

This Condition is modified by a Note which limits the applicability of this Condition to those Functions on Table 3.3.8-1 required OPERABLE during MODES 1, 2, 3, or 4 to mitigate the consequences of a LOCA. This Condition is not intended to be applied to Functions which are only required to mitigate the consequences of a fuel handling accident in the Spent Fuel Pool Room (radiation monitors and Spent Fuel Pool Room normal ventilation differential pressure). These Functions are only required OPERABLE when moving irradiated fuel assemblies in the Spent Fuel Pool Room and are unrelated to the mitigation of the consequences of a LOCA.

SURVEILLANCE REQUIREMENTS

A Note has been added to the SR Table to clarify that Table 3.3.8-1 determines which SRs apply to which PRF Actuation Functions.

SR 3.3.8.1

Performance of the CHANNEL CHECK ~~once every 12 hours~~ ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.8.1 (continued)

assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

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

Insert 2

SR 3.3.8.2

A COT is performed ~~once every 92 days~~ on each required channel to ensure the entire channel will perform the intended function. This test verifies the capability of the instrumentation to provide the PRF actuation. The setpoints shall be left consistent with the unit specific calibration procedure tolerance. ~~The Frequency of 92 days is based on the known reliability of the monitoring equipment and has been shown to be acceptable through operating experience.~~

SR 3.3.8.3

SR 3.3.8.3 is the performance of an ACTUATION LOGIC TEST. ~~The actuation logic is tested every 92 days on a STAGGERED TEST BASIS.~~ All possible logic combinations, with and without applicable permissives, are tested for each protection function. ~~The Surveillance interval is justified in Reference 3.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.8.4

SR 3.3.8.4 is the performance of a MASTER RELAY TEST. The MASTER RELAY TEST is the energizing of the master relay, verifying contact operation and a low voltage continuity check of the slave relay coil. Upon master relay contact operation, a low voltage is injected to the slave relay coil. This voltage is insufficient to pick up the slave relay, but large enough to demonstrate signal path continuity~~. This test is performed every 92 days on a STAGGERED TEST BASIS. The Surveillance interval is justified in Reference 3.~~

Insert 2

SR 3.3.8.5

SR 3.3.8.5 is the performance of a SLAVE RELAY TEST. The SLAVE RELAY TEST is the energizing of the slave relays. Contact operation is verified in one of two ways. Actuation equipment that may be operated in the design mitigation MODE is either allowed to function or is placed in a condition where the relay contact operation can be verified without operation of the equipment. Actuation equipment that may not be operated in the design mitigation MODE is prevented from operation by the SLAVE RELAY TEST circuit. For this latter case, contact operation is verified by a continuity check of the circuit containing the slave relay. ~~This test is performed every 18 months. The Frequency is acceptable based on instrument reliability and operating experience.~~

SR 3.3.8.6

SR 3.3.8.6 is the performance of a TADOT. This test is a check of the manual and Spent Fuel Pool Room ventilation Differential Pressure actuation functions ~~and is performed every 18 months.~~ The test includes actuation of the end device (e.g., pump starts, valve cycles, etc.). ~~The Frequency is based on operating experience and is consistent with the typical industry refueling cycle.~~ The SR is modified by a Note that excludes verification of setpoints during the TADOT. The Functions tested have no required setpoints associated with them.

(continued)

The

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.8.7

~~A CHANNEL CALIBRATION is performed every 18 months, or approximately at every refueling.~~ CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy. ~~The Frequency is based on operating experience and is consistent with the typical industry refueling cycle.~~

Insert 2

REFERENCES

1. 10 CFR 100.11.
2. FNP – 1/2 - RCP - 252.
3. ~~WCAP-15376-P-A, Rev. 1, March 2003.~~

Not used.

BASES

ACTIONS (continued)

B.1

If Required Action A.1 is not met within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 2 within 6 hours. In MODE 2, the reduced power condition eliminates the potential for violation of the accident analysis bounds. The Completion Time of 6 hours is reasonable to reach the required plant conditions in an orderly manner.

SURVEILLANCE REQUIREMENTS

SR 3.4.1.1

~~Since Required Action A.1 allows a Completion Time of 2 hours to restore parameters that are not within limits, the 12 hour Surveillance Frequency for pressurizer pressure is sufficient to ensure the pressure can be restored to a normal operation, steady state condition following load changes and other expected transient operations. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess for potential degradation and to verify operation is within safety analysis assumptions.~~

Insert 2

SR 3.4.1.2

~~Since Required Action A.1 allows a Completion Time of 2 hours to restore parameters that are not within limits, the 12 hour Surveillance Frequency for RCS average temperature is sufficient to ensure the temperature can be restored to a normal operation, steady state condition following load changes and other expected transient operations. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess for potential degradation and to verify operation is within safety analysis assumptions.~~

SR 3.4.1.3

~~The 12 hour Surveillance Frequency for RCS total flow rate is a qualitative verification performed using the installed flow indicators on the main control board fed by elbow tap measurements. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess potential significant flow degradation and to verify operation within safety analysis assumptions.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.1.4

The ~~18 month~~ surveillance of the total RCS flow rate may be performed by one of two alternate methods. One method is a precision calorimetric ~~performed at the beginning of each fuel cycle~~ as documented in WCAP-12771, Rev. 1. The other method is based on the Δp measurements from the cold leg elbow taps, which are correlated to past precision heat balance measurements. Correlation of the flow indication channels with selected precision loop flow calorimetrics for this method is documented in WCAP-14750. Use of the elbow tap Δp measurement method removes the requirement for performance of a precision RCS flow caloricmetric measurement ~~for that cycle.~~

Measurement of RCS total flow rate by performance of one of these two methods ~~once every 18 months~~ verifies the actual RCS flow rate is greater than or equal to the minimum required RCS flow rate.

Insert 2

~~The Frequency of 18 months reflects the importance of verifying flow after a refueling outage when the core has been altered, which may have caused an alteration of flow resistance.~~

This SR is modified by a Note that allows entry into MODE 1, without having performed the SR, and placement of the unit in the best condition for performing the SR. The Note states that the SR is not required to be performed until 7 days after ≥ 90% RTP. This exception is appropriate since the heat balance and elbow tap measurement methods both require the plant to be at a minimum of 90% RTP to obtain the stated RCS flow accuracies. The Surveillance shall be performed within 7 days after reaching 90% RTP. The intent is that this Surveillance be performed near the beginning of the cycle as close as possible to 100% RTP.

REFERENCES

1. FSAR, Section 4.4 and 15.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.3.1

Verification that operation is within the PTLR limits is required ~~every hour~~ when RCS pressure and temperature conditions are undergoing planned changes. ~~This Frequency is considered reasonable in view of the control room indication available to monitor RCS status and is proven adequate by operating experience. The 1-hour frequency is also consistent with how the rate of change limits are specified.~~

Insert 2

Surveillance for heatup, cooldown, or ISLH testing may be discontinued when the definition given in the relevant plant procedure for ending the activity is satisfied.

This SR is modified by a Note that only requires this SR to be performed during system heatup, cooldown, and ISLH testing. No SR is given for criticality operations because LCO 3.4.2 contains a more restrictive requirement.

REFERENCES

1. WCAP-7924-A, April 1975.
2. 10 CFR 50, Appendix G.
3. ASME, Boiler and Pressure Vessel Code, Section XI, Appendix G.
4. ASTM E 185-82, July 1982.
5. 10 CFR 50, Appendix H.
6. Regulatory Guide 1.99, Revision 2, May 1988.
7. ASME, Boiler and Pressure Vessel Code, Section XI, Appendix E.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.4.1

Insert 2

This SR requires verification ~~every 12 hours~~ that each RCS loop is in operation. Verification includes flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing heat removal while maintaining the margin to DNB. ~~The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RCS loop performance.~~

REFERENCES

1. FSAR, Sections 15.2.2, 15.2.5, 15.3.4, 15.3.6, 15.4.4.3, and 15.4.6.3.

BASES

ACTIONS

C.1 and C.2 (continued)

inadvertent control rod withdrawal. This mandates having the heat transfer capacity of two RCS loops in operation. If only one loop is in operation, the RTBs must be opened.

The Completion Times of 1 hour to restore the required RCS loop to operation or de-energize all CRDMs is adequate to perform these operations in an orderly manner without exposing the unit to risk for an undue time period.

D.1, D.2, and D.3

If two required RCS loops are inoperable or no RCS loop is in operation, except as during conditions permitted by the Note in the LCO section, all CRDMs must be de-energized by opening the RTBs or de-energizing the MG sets. All operations involving a reduction of RCS boron concentration must be suspended, and action to restore one of the RCS loops to OPERABLE status and operation must be initiated. Boron dilution requires forced circulation for proper mixing, and opening the RTBs or de-energizing the MG sets removes the possibility of an inadvertent rod withdrawal. The immediate Completion Time reflects the importance of maintaining operation for heat removal. The action to restore must be continued until one loop is restored to OPERABLE status and operation.

SURVEILLANCE REQUIREMENTS

SR 3.4.5.1

Insert 2

This SR requires verification ~~every 12 hours~~ that the required loops are in operation. Verification includes flow rate, temperature, and pump status monitoring, which help ensure that forced flow is providing heat removal. ~~The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RCS loop performance.~~

SR 3.4.5.2

SR 3.4.5.2 requires verification of SG OPERABILITY. SG OPERABILITY is verified by ensuring that the secondary side narrow range water level is ≥ 30% for required RCS loops. If the SG

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.5.2 (continued)

secondary side narrow range water level is < 30%, the tubes may become uncovered and the associated loop may not be capable of providing the heat sink for removal ~~of the decay heat. The 12 hour Frequency is considered adequate in view of other indications available in the control room to alert the operator to a loss of SG level.~~

Insert 2

SR 3.4.5.3

Verification that the required RCPs are OPERABLE ensures that safety analyses limits are met. The requirement also ensures that an additional RCP can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power availability to the required RCPs.

REFERENCES

None.

BASES

ACTIONS (continued)

B.1

If one required RHR loop is OPERABLE and in operation and there are no RCS loops OPERABLE, an inoperable RCS or RHR loop must be restored to OPERABLE status to provide a redundant means for decay heat removal.

If the parameters that are outside the limits cannot be restored, the unit must be brought to MODE 5 within 24 hours. Bringing the unit to MODE 5 is a conservative action with regard to decay heat removal. With only one RHR loop OPERABLE, redundancy for decay heat removal is lost and, in the event of a loss of the remaining RHR loop, it would be safer to initiate that loss from MODE 5 (≤ 200°F) rather than MODE 4 (200 to 350°F). The Completion Time of 24 hours is a reasonable time, based on operating experience, to reach MODE 5 from MODE 4 in an orderly manner and without challenging plant systems.

C.1 and C.2

If no loop is OPERABLE or in operation, except during conditions permitted by Note 1 in the LCO section, all operations involving a reduction of RCS boron concentration must be suspended and action to restore one RCS or RHR loop to OPERABLE status and operation must be initiated. Boron dilution requires forced circulation for proper mixing, and the margin to criticality must not be reduced in this type of operation. The immediate Completion Times reflect the importance of maintaining operation for decay heat removal. The action to restore must be continued until one loop is restored to OPERABLE status and operation.

SURVEILLANCE REQUIREMENTS

SR 3.4.6.1

Insert 2

This SR requires verification ~~every 12 hours~~ that one RCS or RHR loop is in operation. Verification includes flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing ~~heat removal. The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RCS and RHR loop performance.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.6.2

SR 3.4.6.2 requires verification of SG OPERABILITY. SG OPERABILITY is verified by ensuring that the secondary side wide range water level is ≥ 75%. If the SG secondary side wide range water level is < 75%, the tubes may become uncovered and the associated loop ~~may not be~~ capable of providing the heat sink necessary for removal of decay heat. ~~The 12 hour Frequency is considered adequate in view of other indications available in the control room to alert the operator to the loss of SG level.~~

Insert 2

SR 3.4.6.3

Verification that the required pump is OPERABLE ensures that an additional RCS or RHR pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to the required pump. ~~The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.~~

REFERENCES None.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.7.1

This SR requires verification ~~every 12 hours~~ that the required loop is in operation. Verification includes flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing heat removal.

~~The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RHR loop performance.~~

SR 3.4.7.2

Insert 2

Verifying that at least two SGs are OPERABLE by ensuring their secondary side wide range water levels are ≥ 75% ensures an alternate decay heat removal method via natural circulation in the event that the second RHR loop is not OPERABLE. If both RHR loops are OPERABLE, this Surveillance is not needed. ~~The 12 hour Frequency is considered adequate in view of other indications available in the control room to alert the operator to the loss of SG level.~~

SR 3.4.7.3

Verification that a second RHR pump is OPERABLE ensures that an additional pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to the RHR pump. If secondary side water level is ≥ 75% (wide range) in at least two SGs, this Surveillance is not needed. ~~The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.~~

REFERENCES

1. NRC Information Notice 95-35, "Degraded Ability of Steam Generators to Remove Decay Heat by Natural Circulation."

BASES

ACTIONS (continued)

B.1 and B.2

If no required RHR loops are OPERABLE or in operation, except during conditions permitted by Note 1, all operations involving a reduction of RCS boron concentration must be suspended and action must be initiated immediately to restore an RHR loop to OPERABLE status and operation. Boron dilution requires forced circulation for uniform dilution, and the margin to criticality must not be reduced in this type of operation. The immediate Completion Time reflects the importance of maintaining operation for heat removal. The action to restore must continue until one loop is restored to OPERABLE status and operation.

SURVEILLANCE REQUIREMENTS

SR 3.4.8.1

This SR requires verification ~~every 12 hours~~ that one loop is in operation. Verification includes flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing heat removal. ~~The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RHR loop performance.~~

SR 3.4.8.2

Insert 2

Verification that the required number of pumps are OPERABLE ensures ~~that~~ additional pumps can be placed in operation, if needed, to maintain decay ~~heat~~ removal and reactor coolant circulation. Verification is performed by ~~verifying~~ proper breaker alignment and power available to the required pumps. ~~The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.~~

REFERENCES

None.

BASES

ACTIONS (continued)

B.1

If one required group of pressurizer heaters is inoperable, restoration is required within 72 hours. The Completion Time of 72 hours is reasonable considering the anticipation that a demand caused by loss of offsite power would be unlikely in this period. Pressure control may be maintained during this time using normal station powered heaters.

C.1 and C.2

If one group of pressurizer heaters are inoperable and cannot be restored in the allowed Completion Time of Required Action B.1, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 6 hours and to MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.4.9.1

This SR requires that during steady state operation, pressurizer level is maintained below the nominal upper limit to provide a minimum space for a steam bubble. The Surveillance is performed by observing the indicated level. ~~The Frequency of 12 hours corresponds to verifying the parameter each shift. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess level for any deviation and verify that operation is within safety analyses assumption of ensuring that a steam bubble exists in the pressurizer. Alarms are also available for early detection of abnormal level indications.~~

Insert 2

SR 3.4.9.2

The SR is satisfied when the power supplies are demonstrated to be capable of producing the minimum power and the associated pressurizer heaters are verified to be at their design rating. This may be done by measuring circuit current or testing the power supply output and by performing an electrical check on heater element continuity and resistance. ~~The Frequency of 92 days is considered adequate to detect heater degradation and has been shown by operating experience to be acceptable.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.9.3

This Surveillance demonstrates that the heaters can be manually transferred from the normal to the emergency power supply and energized~~. The Frequency of 18 months is based on a typical fuel cycle and is consistent with similar verifications of emergency power supplies.~~

Insert 2

REFERENCES

1. FSAR, Sections 15.1, 15.2, and 6.2.
2. NUREG-0737, November 1980.

BASES

ACTIONS (continued)

G.1 and G.2

If the Required Actions of Condition F are not met, then the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. In MODES 4, 5, and 6, the PORVs are not required OPERABLE.

SURVEILLANCE REQUIREMENTS

SR 3.4.11.1

Insert 2

Block valve cycling verifies that the valve(s) can be closed if needed. ~~The basis for the Frequency of 92 days is the ASME Code, Section XI (Ref. 3).~~ If the block valve is closed to isolate a PORV that is capable of being manually cycled, the OPERABILITY of the block valve is of importance, because opening the block valve is necessary to permit the PORV to be used for manual control of reactor pressure. If the block valve is closed to isolate an otherwise inoperable PORV, the maximum Completion Time to restore the PORV and open the block valve is 72 hours~~, which is well within the allowable limits (25%) to extend the block valve Frequency of 92 days.~~ . Furthermore, these test requirements would be completed by the reopening of a recently closed block valve upon restoration of the PORV to OPERABLE status (i.e., completion of the Required Actions fulfills the SR).

This SR is modified by two Notes. Note 1 modifies this SR by stating that it is not required to be met with the block valve closed, in accordance with the Required Action of this LCO. Note 2 modifies this SR to allow entry into and operation in MODE 3 prior to performing the SR. This allows the test to be performed in MODE 3 under operating temperature conditions, prior to entering MODE 1 or 2. A temporary third note has been added to suspend SR 3.4.11.1 for Unit Two PORV block valve Q2B31MOV8000B for the remainder of operating cycle 16.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.11.2

SR 3.4.11.2 requires a complete cycle of each PORV in MODE 3 or 4. The PORVs are stroke tested during MODES 3 or 4 with the associated block valves closed in order to limit the uncertainty introduced by testing the PORVs at lesser system temperatures than expected during actual operating conditions. Operating a PORV through one ~~complete~~ cycle ensures that the PORV can be manually actuated for mitigation of an SGTR. ~~The Frequency of 18 months is based on a typical refueling cycle and industry accepted practice.~~ The Note modifies this SR to allow entry into and operation in MODE 3 prior to performing the SR. This allows the test to be performed in MODE 3 under operating temperature conditions, prior to entering MODE 1 or 2.

Insert 2

SR 3.4.11.3

SR 3.4.11.3 requires a complete cycle of each PORV using the backup PORV control system. This surveillance verifies the capability to operate the PORVs using the backup air and nitrogen supply systems. Additionally, this surveillance ensures the correct function of the associated air and nitrogen supply system valves. ~~The 18-month Frequency is based on a typical refueling cycle and industry accepted practice for Surveillances requiring the PORVs to be cycled.~~

SR 3.4.11.4

SR 3.4.11.4 applies only to Unit 2 for the remainder of cycle 16 for PORV block valve Q2B31MOV8000B. It requires that power to the PORV block valve is checked to be available at least every 24 hours. This surveillance provides additional assurance that the PORV block valve could be stroked if demanded while SR 3.4.11.1 is suspended.

REFERENCES

1. Regulatory Guide 1.32, February 1977.

2. FSAR Sections 5.5 and 15.2.

~~3. ASME, Boiler and Pressure Vessel Code, Section XI.~~

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.12.1 and SR 3.4.12.2

To minimize the potential for a low temperature overpressure event by limiting the mass input capability, a maximum of one charging pump is verified capable of injecting into the RCS and the accumulator discharge isolation valves are verified closed and locked out.

The charging pumps are rendered incapable of injecting into the RCS through removing the power from the pumps by racking the breakers out under administrative control. An alternate method of LTOP control may be employed using at least two independent means to prevent a pump start such that a single failure or single action will not result in an injection into the RCS. This may be accomplished through the Hot Shutdown Panel Local/Remote and pump control switches being placed in the Local and Stop positions, respectively, and at least one valve in the discharge flow path being closed with the position of these components controlled administratively.

~~The Frequency of 12 hours is sufficient, considering other indications and alarms available to the operator in the control room, to verify the required status of the equipment.~~

SR 3.4.12.3

Each required RHR suction relief valve shall be demonstrated OPERABLE by verifying its RHR suction isolation valves (8701A, 8701B, 8702A and 8702B) are open. This Surveillance is only required to be performed if the RHR suction relief valve is being used to meet this LCO.

Insert 2

~~The RHR suction valve is verified to be opened every 72 hours. The Frequency is considered adequate in view of other administrative controls such as valve status indications available to the operator in the control room that verify the RHR suction valve remains open.~~

SR 3.4.12.4

The RCS vent of ≥ 2.85 square inches is proven OPERABLE by verifying its open condition ~~either:~~ .

~~a. Once every 12 hours for a valve that cannot be locked, sealed, or otherwise secured in position.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.12.4 (continued)

~~b. Once every 31 days for a valve that is locked, sealed, or secured in position. A removed pressurizer safety valve fits this category.~~

The passive vent arrangement must only be open to be OPERABLE. This Surveillance is required to be performed if the vent is being used to satisfy the pressure relief requirements of the LCO 3.4.12b.

SR 3.4.12.5

in accordance with the Surveillance Frequency Control Program.

The RHR relief valves are verified OPERABLE by testing the relief setpoint. The setpoint verification ensures proper relief valve mechanical motion as well as verifying the setpoint. Testing is performed in accordance with the Inservice Testing Program which is based on the requirements of the ASME Code, Section XI (Ref. 7). The RHR relief valve setpoints are verified ~~every 18 months on a STAGGERED TEST BASIS.~~ Per the Inservice Testing Program, if ~~the scheduled~~ valve exceeds the relief setpoint by 3% or greater, the remaining valve shall also be tested. ~~The frequency for testing the RHR relief valves has been shown to be adequate through operating experience.~~

Insert 2

REFERENCES

1. 10 CFR 50, Appendix G.
2. Generic Letter 88-11.
3. ASME, Boiler and Pressure Vessel Code, Section III.
4. FSAR, Chapter 5.2.2.4.
5. 10 CFR 50, Section 50.46.
6. 10 CFR 50, Appendix K.
7. ASME, Boiler and Pressure Vessel Code, Section XI.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.13.1

Verifying RCS LEAKAGE to be within the LCO limits ensures the integrity of the RCPB is maintained. Pressure boundary LEAKAGE would at first appear as unidentified LEAKAGE and can only be positively identified by inspection. It should be noted that LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE. Unidentified LEAKAGE and identified LEAKAGE are determined by performance of an RCS water inventory balance.

The RCS water inventory balance must be met with the reactor at steady state operating conditions and near operating pressure. The Surveillance is modified by two Notes. Note 1 states that this SR is not required to be performed in MODES 3 and 4 until 12 hours of steady state operation near operating pressure have been established.

Steady state operation is required to perform a proper inventory balance; calculations during maneuvering are not useful and a Note requires the Surveillance to be met when steady state is established. For RCS operational LEAKAGE determination by water inventory balance, steady state is defined as stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows.

An early warning of pressure boundary LEAKAGE or unidentified LEAKAGE is provided by the automatic systems that monitor the containment atmosphere radioactivity and the containment air cooler condensate flow rate. It should be noted that LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE. These leakage detection systems are specified in LCO 3.4.15, "RCS Leakage Detection Instrumentation."

Note 2 states that this SR is not applicable to primary to secondary LEAKAGE. This is because LEAKAGE of 150 gpd cannot be measured accurately by an RCS water inventory balance.

Insert 2

~~The 72 hour Frequency is a reasonable interval to trend LEAKAGE and recognizes the importance of early leakage detection in the prevention of accidents.~~ A Note under the Frequency column states that this SR is required to be performed during steady state operation.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.13.2

This SR verifies that primary to secondary LEAKAGE is less than or equal to 150 gpd through any one SG. Satisfying the primary to secondary LEAKAGE limit ensures that the operational LEAKAGE performance criterion in the Steam Generator Program is met. If this SR is not met, compliance with LCO 3.4.17, "Steam Generator Tube Integrity," should be evaluated. The 150 gpd limit is measured at room temperature as described in Reference 5. The operational LEAKAGE rate limit applies to LEAKAGE through any one SG. If it is not practical to assign the LEAKAGE to an individual SG, all the primary to secondary LEAKAGE should be conservatively assumed to be from one SG.

The Surveillance is modified by a Note which states that the Surveillance is not required to be performed until 12 hours after establishment of steady state operation. For RCS primary to secondary LEAKAGE determination, steady state is defined as stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows.

Insert 2

~~The Surveillance Frequency of 72 hours is a reasonable interval to trend primary to secondary LEAKAGE and recognizes the importance of early leakage detection in the prevention of accidents.~~ During normal operation the primary to secondary LEAKAGE is determined using continuous process radiation monitors or radiochemical grab sampling in accordance with EPRI guidelines.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 30.
2. Regulatory Guide 1.45, May 1973.
3. FSAR, Section 3.1.2.6, 5.2.7, 10.4, 11.0, 12.0 and 15.0.
4. NEI 97-06, "Steam Generator Program Guidelines."
5. EPRI TR-104788, "Pressurized Water Reactor Primary-to-Secondary Leak Guidelines."

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.14.1 (continued)

shutdown cooling mode of operation. PIVs contained in the RHR shutdown cooling flow path must be leakage rate tested when RHR is secured and stable unit conditions and the necessary differential pressures are established. Leak rate testing is performed manually, with test personnel in the vicinity of the system connections in containment during setup and testing. Should the check valve that was being tested rupture or pressure in the system cause a rupture of the test equipment, there would be a concern for the safety of the personnel in the area. In addition, testing with RCS temperature above 212 °F would result in any leakage past the RHR valves flashing into steam making accurate measurement of the leakage rate impossible. Therefore, testing of the RHR System PIVs should normally be performed in Mode 5, as the test results are meaningful and plant conditions in Mode 5 minimize the potential impact on personnel safety.

Insert 2

SR 3.4.14.2

Verifying that the RHR autoclosure interlock is OPERABLE ensures that RCS pressure will not pressurize the RHR system beyond 125% of its design pressure of 600 psig. The autoclosure interlock isolates the RHR System from the RCS when the interlock setpoint is reached. The setpoint ensures the RHR design pressure will not be exceeded. ~~The 18 month Frequency is based on the need to perform the Surveillance under conditions that apply during a plant outage. The 18 month Frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.~~

The SR is modified by a Note that provides an exception to the requirement to perform this surveillance when using the RHR System suction relief valves for cold overpressure protection in accordance with SR 3.4.12.3.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.14.3

Verifying that the RHR open permissive interlock is OPERABLE ensures that the RCS will not pressurize the RHR system beyond design of 600 psig. The open permissive interlock prevents opening the RHR System suction valves from the RCS when the RCS pressure is above the setpoint. The setpoint upper value ensures the RHR System design pressure will not be exceeded at the RHR pump discharge and was chosen taking into account instrument uncertainty and calibration tolerances. This value also provides assurance that the RHR System suction relief valves setpoint will not be exceeded.

Insert 2

The minimum value of the setpoint range is chosen based upon operational considerations (differential pressure) for the RCP seals and thus does not have a safety-related function. ~~The 18 month Frequency is based on the need to perform the Surveillance under conditions that apply during a plant outage. The 18 month Frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.~~

The SR is modified by a Note that provides an exception to the requirement to perform this surveillance when using the RHR System suction relief valves for cold overpressure protection in accordance with SR 3.4.12.3.

REFERENCES

1. 10 CFR 50.2.
2. 10 CFR 50.55a(c).
3. 10 CFR 50, Appendix A, Section V, GDC 55.
4. WASH-1400 (NUREG-75/014), Appendix V, October 1975.
5. NUREG-0677, May 1980.
6. Technical Requirement Manual (TRM).
7. ASME, Boiler and Pressure Vessel Code, Section XI.
8. 10 CFR 50.55a(g).

BASES

ACTIONS

C.1 and C.2 (continued)

achieve this status, the plant 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 plant conditions from full power conditions in an orderly manner and without challenging plant systems.

D.1

With all required monitors inoperable, no automatic means of monitoring leakage are available, and immediate plant shutdown in accordance with LCO 3.0.3 is required.

SURVEILLANCE REQUIREMENTS

SR 3.4.15.1

SR 3.4.15.1 requires the performance of a CHANNEL CHECK of the required containment atmosphere radioactivity monitor. The check gives reasonable confidence that the channel is operating properly. ~~The Frequency of 12 hours is based on instrument reliability and is reasonable for detecting off normal conditions.~~

Insert 2

SR 3.4.15.2

SR 3.4.15.2 requires the performance of a COT on the required containment atmosphere radioactivity monitor. The test ensures that the monitor can perform its function in the desired manner. The test verifies the alarm setpoint and relative accuracy of the instrument string. ~~The Frequency of 92 days considers instrument reliability, and operating experience has shown that it is proper for detecting degradation.~~

SR 3.4.15.3 and SR 3.4.15.4

These SRs require the performance of a CHANNEL CALIBRATION for each of the RCS leakage detection instrumentation channels. The calibration verifies the accuracy of the instrument string, including the instruments located inside containment. ~~The Frequency of 18 months is a typical refueling cycle and considers channel reliability. Again, operating experience has proven that this Frequency is acceptable.~~

BASES

ACTIONS (continued)

B.1

With the gross specific activity in excess of the allowed limit, the unit must be placed in a MODE in which the requirement does not apply.

The change within 6 hours to MODE 3 and RCS average temperature < 500°F lowers the saturation pressure of the reactor coolant below the setpoints of the main steam safety valves and prevents venting the SG to the environment in an SGTR event. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 below 500°F from full power conditions in an orderly manner and without challenging plant systems.

C.1

If a Required Action and the associated Completion Time of Condition A is not met or if the DOSE EQUIVALENT I-131 is in the unacceptable region of Figure 3.4.16-1, the reactor must be brought to MODE 3 with RCS average temperature < 500°F within 6 hours. The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 below 500°F from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.4.16.1

Insert 2

SR 3.4.16.1 requires performing a gamma isotopic analysis as a measure of the gross specific activity of the reactor coolant ~~at least once every 7 days.~~ While basically a quantitative measure of radionuclides with half lives longer than 15 minutes, excluding iodines, this measurement is the sum of the degassed gamma activities and the gaseous gamma activities in the sample taken. This Surveillance provides an indication of any increase in gross specific activity.

Trending the results of this Surveillance allows proper remedial action to be taken before reaching the LCO limit under normal operating conditions. The Surveillance is applicable in MODES 1 and 2, and in MODE 3 with T_{avg} at least 500°F. ~~The 7 day Frequency considers the unlikelihood of a gross fuel failure during the time.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.16.2

This Surveillance is performed in MODE 1 only to ensure iodine remains within limit during normal operation and following fast power changes when fuel failure is more apt to occur~~.~~ ~~The 14 day Frequency is adequate to trend changes in the iodine activity level, considering gross activity is monitored every 7 days.~~ The Frequency, between 2 ~~and 6~~ hours after a power change ≥ 15% RTP within a 1 hour period, is established because the iodine levels peak during this time following fuel failure; samples at other times would provide inaccurate results.

Insert 2

SR 3.4.16.3

A radiochemical analysis for Ē determination is required ~~every 184 days (6 months)~~ with the plant operating in MODE 1 equilibrium conditions. The Ē determination directly relates to the LCO and is required to verify plant operation within the specified gross activity LCO limit. The analysis for Ē is a measurement of the average energies per disintegration for isotopes with half lives longer than 15 minutes, excluding iodines. ~~The Frequency of 184 days recognizes Ē does not change rapidly.~~

This SR has been modified by a Note that indicates sampling is required to be performed within 31 days after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for at least 48 hours. This ensures that the radioactive materials are at equilibrium so the analysis for Ē is representative and not skewed by a crud burst or other similar abnormal event.

REFERENCES

1. 10 CFR 100.11, 1973.
2. FSAR, Section 15.4.3.

BASES

ACTIONS (continued)

B.1

If one accumulator is inoperable for a reason other than boron concentration, the accumulator must be returned to OPERABLE status within 24 hours. In this Condition, the required contents of two accumulators cannot be assumed to reach the core during a LOCA. Due to the severity of the consequences should a LOCA occur in these conditions, the 24 hour Completion Time to open the valve, remove power to the valve, or restore the proper water volume or nitrogen cover pressure ensures that prompt action will be taken to return the inoperable accumulator to OPERABLE status. The Completion Time minimizes the potential for exposure of the plant to a LOCA under these conditions. The 24 hours allowed to restore an inoperable accumulator to OPERABLE status is justified in WCAP-15049-A, Rev. 1 (Ref. 3).

C.1 and C.2

If the accumulator cannot be returned to OPERABLE status within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 6 hours and RCS pressure reduced to ≤ 1000 psig within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

D.1

If more than one accumulator is inoperable, the plant is in a condition outside the accident analyses; therefore, LCO 3.0.3 must be entered immediately.

SURVEILLANCE REQUIREMENTS

SR 3.5.1.1

Each accumulator valve should be verified to be fully open ~~every 12 hours.~~ This verification ensures that the accumulators are available for injection and ensures timely discovery if a valve should be less than fully open. If an isolation valve is not fully open, the rate of injection to the RCS would be reduced. Although a motor operated valve position should not change with power removed, a closed valve could result in not meeting accident analyses ~~assumptions.~~ ~~This Frequency is considered reasonable in view of other administrative controls that ensure a mispositioned isolation valve is unlikely.~~

Insert 2

(continued)

The

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.1.2 and SR 3.5.1.3

~~Every 12 hours,~~ borated water volume and nitrogen cover pressure are verified for each accumulator. ~~This Frequency is sufficient to ensure adequate injection during a LOCA. Because of the static design of the accumulator, a 12 hour Frequency usually allows the operator to identify changes before limits are reached. Operating experience has shown this Frequency to be appropriate for early detection and correction of off normal trends.~~

SR 3.5.1.4

The boron concentration should be verified to be within required limits for each accumulator ~~every 31 days~~ since the static design of the accumulators limits the ways in which the concentration can be changed. ~~The 31 day Frequency is adequate to identify changes that could occur from mechanisms such as stratification or inleakage.~~ Sampling the affected accumulator within 6 hours after a 12% level, indicated, increase (approximately 1% of tank volume) will identify whether inleakage has caused a reduction in boron concentration to below the required limit. It is not necessary to verify boron concentration if the added water inventory is from the refueling water storage tank (RWST), when the water contained in the RWST is within the accumulator boron concentration requirements. This is consistent with the recommendation of NUREG-1366 (Ref. 4).

Insert 2

SR 3.5.1.5

Verification ~~every 31 days~~ that power is removed from each accumulator isolation valve operator when the pressurizer pressure is ≥ 2000 psig ensures that an active failure could not result in the undetected closure of an accumulator motor operated isolation valve. If this were to occur, only one accumulator would be available for injection given a single failure coincident with a LOCA. Therefore, each isolation valve operator is disconnected by a locked open disconnect device. ~~Since power is removed under administrative control, the 31 day Frequency will provide adequate assurance that power is removed.~~

This SR allows power to be supplied to the motor operated isolation valves when RCS pressure is < 2000 psig, thus allowing operational flexibility by avoiding unnecessary delays to manipulate the breakers during plant startups or shutdowns.

(continued)

BASES

ACTIONS (continued)

B.1 and B.2

If the inoperable trains cannot be returned to OPERABLE status within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 6 hours and MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.5.2.1

Verification of proper valve position ensures that the flow path from the ECCS pumps to the RCS is maintained. Misalignment of these valves could render both ECCS trains inoperable. Securing these valves in position by removal of power by locking open the disconnect device to the valve operators ensures that they cannot change position as a result of an active failure or be inadvertently misaligned. These valves are of REQUIREMENTS the type, described in Reference 6, that can disable the function of both ECCS trains and invalidate the accident analyses. SR 3.5.2.1 is modified by a Note that specifies when this SR is applicable to valves 8132 A/B. Valves ~~8132 A/B only have the~~ potential to disable both ECCS trains when centrifugal charging pump "A" is ~~inoperable.~~ ~~A 12 hour Frequency is considered reasonable in view of other administrative controls that will ensure a mispositioned valve is unlikely.~~

Insert 2

SR 3.5.2.2

Verifying the correct alignment for manual, power operated, and automatic valves in the ECCS flow paths provides assurance that the proper flow paths will exist for ECCS operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an actuation signal is allowed to be in a nonaccident position provided the valve will automatically reposition within the proper stroke time. This Surveillance does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.2.2 (continued)

mispositioned are in the correct position. ~~The 31 day Frequency is appropriate because the valves are operated under administrative control, and an improper valve position would only affect a single train. This Frequency has been shown to be acceptable through operating experience.~~

SR 3.5.2.3

Periodic surveillance testing of ECCS pumps to detect gross degradation caused by impeller structural damage or other hydraulic component problems is required by Section XI of the ASME Code. This type of testing may be accomplished by measuring the pump developed head at only one point of the pump characteristic curve. For example, if measured on recirculation flow, the centrifugal charging pumps should develop a differential pressure of ≥ 2323 psid and the residual heat removal pumps should develop a differential pressure of ≥ 145 psid. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test flow is greater than or equal to the performance assumed in the plant safety analysis. Testing is performed in accordance with the Inservice Testing Program, which encompasses Section XI of the ASME Code. Section XI of the ASME Code provides the activities and Frequencies necessary to satisfy the requirements.

Insert 2

SR 3.5.2.4 and SR 3.5.2.5

These Surveillances demonstrate that each automatic ECCS valve actuates to the required position on an actual or simulated SI signal and that each ECCS pump (centrifugal charging and RHR) starts on receipt of an actual or simulated SI signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~The 18 month Frequency is based on the need to perform these Surveillances under the conditions that apply during a plant outage and the potential for unplanned plant transients if the Surveillances were performed with the reactor at power. The 18 month Frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment. The actuation logic is tested as part of ESF Actuation System testing, and equipment performance is monitored as part of the Inservice Testing Program.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.2.6

Realignment of valves in the flow path on an SI signal is necessary for proper ECCS performance. These valves have stops (RHR valves) or locking devices (other ECCS valves) to allow proper positioning for limiting total pump flow and/or restrict flow to a ruptured cold leg, ensuring that the other cold legs receive at least the required minimum flow. The required verification for the RHR valves, 603 A/B, assures that the associated pump will not be run out. For other ECCS valves, the locking device is verified in the correct position~~. The 18 month Frequency is based on the same reasons as those stated in SR 3.5.2.4 and SR 3.5.2.5.~~

Insert 2

SR 3.5.2.7

Periodic inspections of the containment sump suction inlet ensure that it is unrestricted and stays in proper operating condition. The inlet screens consist of perforated plates arranged such that their outer edges form a trash rack to reduce clogging of the screen surface by large debris. Each plate is covered by wire mesh to further protect against clogging by smaller debris. Separation between plates is maintained by spacers and each plate is joined to a central perforated cylinder, or inner cage, which collects the flow through each plate. Inspection of the screen plate structure, wire mesh screen, perforated plates and inner cage for evidence of structural distress or abnormal corrosion ensures that the inlet trash racks, screens and inner cages are properly installed and will perform their intended function. ~~The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage, and the need to have access to the location. This Frequency has been found to be sufficient to detect abnormal degradation and is confirmed by operating experience.~~

REFERENCES

1. 10 CFR 50, Appendix A, GDC 35.
2. 10 CFR 50.46.
3. FSAR, Section 6, "Engineered Safety Features."
4. FSAR, Chapter 15, "Accident Analysis."

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.3.2

Insert 2

Verification of proper valve alignment ensures that the flow path from the ECCS pumps to the RCS is maintained. Misalignment of these valves could render the required ECCS trains inoperable. Securing these valves in position by removal of power by locking open the breaker or disconnect device for the valve operator ensures that they ~~cannot change~~ position as a result of an active failure or be inadvertantly misaligned. ~~A 31 day frequency is considered reasonable in view of other administrative controls that will ensure a mispositioned valve is unlikely and this frequency has been shown to be acceptable by operating experience.~~

REFERENCES

The applicable references from Bases 3.5.2 apply.

BASES

ACTIONS

A.1 (continued)

System can perform its design function. Therefore, prompt action must be taken to restore the tank to OPERABLE condition. The 8 hour limit to restore the RWST temperature or boron concentration to within limits was developed considering the time required to change either the boron concentration or temperature and the fact that the contents of the tank are still available for injection.

B.1

With the RWST inoperable for reasons other than Condition A (e.g., water volume), it must be restored to OPERABLE status within 1 hour.

In this Condition, neither the ECCS nor the Containment Spray System can perform its design function. Therefore, prompt action must be taken to restore the tank to OPERABLE status or to place the plant in a MODE in which the RWST is not required. The short time limit of 1 hour to restore the RWST to OPERABLE status is based on this condition simultaneously affecting redundant trains.

C.1 and C.2

If the RWST cannot be returned to OPERABLE status within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant 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 plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.5.4.1

The RWST borated water temperature should be verified ~~every 24 hours~~ to be above the minimum limit assumed in the accident analyses~~. This Frequency is sufficient to identify a temperature change that would approach the limit and has been shown to be acceptable through operating experience.~~

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.4.1 (continued)

The SR is modified by a Note that eliminates the requirement to perform this Surveillance when ambient air temperature is within the operating limit of the RWST. With ambient air temperature within the limit, the RWST temperature should not exceed the limit.

SR 3.5.4.2

The RWST water volume should be verified ~~every 7 days~~ to be above the required minimum level in order to ensure that a sufficient initial supply is available for injection and to support continued ECCS and Containment Spray System pump operation on recirculation. ~~Since the RWST volume is normally stable and is protected by an alarm, a 7 day Frequency is appropriate and has been shown to be acceptable through operating experience.~~

Insert 2

SR 3.5.4.3

The boron concentration of the RWST should be verified ~~every 7 days~~ to be within the required limits. This SR ensures that the reactor will remain subcritical following a LOCA. Further, it assures that the resulting sump pH will be maintained in an acceptable range so that boron precipitation in the core will not occur and the effect of chloride and caustic stress corrosion on mechanical systems and components will be minimized. ~~Since the RWST volume is normally stable, a 7 day sampling Frequency to verify boron concentration is appropriate and has been shown to be acceptable through operating experience.~~

REFERENCES

1. FSAR, Chapter 6 and Chapter 15.

ACTIONS

A.1

With the seal injection flow exceeding its limit, the amount of charging flow available to the RCS may be reduced. Under this Condition, action must be taken to restore the flow to below its limit. The operator has 4 hours from the time the flow is known to be above the limit to perform SR 3.5.5.1 and correctly position the manual valves and thus be in compliance with the accident analysis. The Completion Time minimizes the potential exposure of the plant to a LOCA with insufficient injection flow and provides a reasonable time to restore seal injection flow within limits. This time is conservative with respect to the Completion Times of other ECCS LCOs; it is based on operating experience and is sufficient for taking corrective actions by operations personnel.

B.1 and B.2

When the Required Actions cannot be completed within the required Completion Time, a controlled shutdown must be initiated. The Completion Time of 6 hours for reaching MODE 3 from MODE 1 is a reasonable time for a controlled shutdown, based on operating experience and normal cooldown rates, and does not challenge plant safety systems or operators. Continuing the plant shutdown begun in Required Action B.1, an additional 6 hours is a reasonable time, based on operating experience and normal cooldown rates, to reach MODE 4, where this LCO is no longer applicable.

SURVEILLANCE REQUIREMENTS

SR 3.5.5.1

Verification ~~every 31 days~~ that the manual seal injection throttle valves are adjusted to give a flow within the limits (operation in the acceptable region of Figure 3.5.5-1) ensures that proper manual seal injection throttle valve position, and hence, proper seal injection flow, is maintained. A differential pressure that is above the reference minimum value is established between the charging header (PT-121, charging header pressure) and the pressurizer, and the total seal injection flow is verified to be within the limits determined in accordance with the ECCS safety analysis. ~~The Frequency of 31 days is based on engineering judgment and is consistent with other ECCS valve Surveillance Frequencies. The Frequency has proven to be acceptable through operating experience.~~

Insert 2

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.5.6.1 (continued)

three TSP storage baskets. The baskets are marked with a minimum and maximum fill level that corresponds to a total TSP volume of between 185 ft^3 and 215 ft^3. The verification that the storage baskets contain the required amount of trisodium phosphate is accomplished by verifying that the TSP level is between the indicated fill marks on the baskets. The intent of the surveillance requirement is to verify containment of the TSP by visual inspection. Therefore, broken, crimped, or oxidized screen mesh is acceptable as long as the contents are contained. Also, lumps/caking is an analyzed condition.

Insert 2

~~The 18 month frequency is based on the passive nature of the system and the low probability of an undetected change in the TSP volume occurring during the surveillance interval.~~

REFERENCES

1. FSAR, Section 6.2.
2. FSAR, Section 15.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.2.1 (continued)

Rate Testing Program. This SR reflects the leakage rate testing requirements with regard to air lock leakage (Type B leakage tests). The acceptance criteria were established during initial air lock and containment OPERABILITY testing. The periodic testing requirements verify that the air lock leakage does not exceed the allowed fraction of the overall containment leakage rate. The Frequency is required by the Containment Leakage Rate Testing Program.

The SR has been modified by two Notes. Note 1 states that an inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. This is considered reasonable since either air lock door is capable of providing a fission product barrier in the event of a DBA. Note 2 has been added to this SR requiring the results to be evaluated against the acceptance criteria which is applicable to SR 3.6.1.1. This ensures that air lock leakage is properly accounted for in determining the combined Type B and C containment leakage rate.

SR 3.6.2.2

The air lock interlock is designed to prevent simultaneous opening of both doors in a single air lock. Since both the inner and outer doors of an air lock are designed to withstand the maximum expected post accident containment pressure, closure of either door will support containment OPERABILITY. Thus, the door interlock feature supports containment OPERABILITY while the air lock is being used for personnel transit in and out of the containment. Periodic testing of this interlock demonstrates that the interlock will function as designed and that simultaneous opening of the inner and outer doors will not inadvertently ~~occur.~~ ~~Due to the purely mechanical nature of this interlock, and given that the interlock mechanism is not normally challenged when the containment air lock door is used for entry and exit (procedures require strict adherence to single door opening), this test is only required to be performed every 24 months. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage, and the potential for loss of containment OPERABILITY if the surveillance were performed with the reactor at power. The 24 month Frequency for the interlock is justified based on generic operating experience. The Frequency is based on engineering judgment and is considered adequate given that the interlock is not challenged during the use of the airlock.~~

Insert 2

BASES

ACTIONS (continued)

D.1, D.2, and D.3

In the event one or more penetration flow paths containing containment purge valves, have penetration leakage such that the sum of the leakage for all Type B and C tests is not within limits, purge valve penetration leakage must be restored such that the overall Type B and C testing limit is not exceeded, or the affected penetration flow path must be isolated. The method of isolation must be by the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, closed manual valve, or blind flange. A purge valve with resilient seals utilized to satisfy Required Action D.1 must have been demonstrated to support the penetration meeting the leakage requirements of SR 3.6.3.5. The specified Completion Time is reasonable, considering that one containment purge valve remains closed so that a gross breach of containment does not exist.

In accordance with Required Action D.2, this penetration flow path must be verified to be isolated on a periodic basis. The periodic verification is necessary to ensure that containment penetrations required to be isolated following an accident, which are no longer capable of being automatically isolated, will be in the isolation position should an event occur. This Required Action does not require any testing or valve manipulation. Rather, it involves verification, through a system walkdown, that those isolation devices outside containment capable of being mispositioned are in the correct position. For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.

For the containment penetration containing a containment purge valve with resilient seal that is isolated in accordance with Required Action D.1, SR 3.6.3.5 must be performed at least once every 92 days. This assures that degradation of the resilient seal is detected and confirms that the leakage rate of the containment purge valve penetration does not increase during the time the penetration is isolated. ~~The normal Frequency for SR 3.6.3.5, 184 days, was established as part of the generic resolution by the NRC staff of Generic Issue B-20 (Ref. 3).~~ Since more reliance is placed on

(continued)

BASES

ACTIONS

D.1, D .2, and D.3 (continued)

a single valve while in this Condition, it is prudent to perform the SR more often. Therefore, a Frequency of once per 92 days was chosen and has been shown to be acceptable based on operating experience.

E.1 and E.2

If the Required Actions and associated Completion Times of Condition A, B, C, or D are not met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant 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 plant conditions from full power conditions in an orderly manner and without challenging plant systems.

F.1

In the event one or more penetration flow paths containing containment purge valves have penetration leakage which exceeds the individual purge valve penetration leakage limit, purge valve penetration leakage must be reduced to within the limit prior to the next time that the unit transitions from MODE 5 to MODE 4. Provided that the penetration flow path leakage does not cause the total leakage from all Type B and C tests to exceed the limits, no additional action is required (i.e., isolation or unit shutdown). If the leakage is sufficient to cause the total leakage from all Type B and C tests to exceed the limits, Condition D also applies.

SURVEILLANCE REQUIREMENTS

SR 3.6.3.1

Each 48-inch containment purge valve (CBV-HV-3198A, 3198D, 3196, 3197) is required to be verified sealed closed ~~at 31 day intervals.~~ This Surveillance is designed to ensure that a gross breach of containment is not caused by an inadvertent or spurious opening of a containment purge valve. Detailed analysis of the purge valves failed to conclusively demonstrate their ability to close during a LOCA in time to limit offsite doses. Therefore, these valves are required to be in the sealed closed position during MODES 1, 2, 3, and 4. A containment purge valve that is sealed closed must have motive power to the valve operator removed. This can be accomplished by de-energizing the

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.3.1 (continued)

source of electric power or by removing the air supply to the valve operator. In this application, the term "sealed" has no connotation of leak tightness. ~~The Frequency is a result of the generic resolution by the NRC staff of Generic Issue B-24 (Ref. 4), related to containment purge valve use during plant operations. In the event purge valve leakage requires entry into Condition D, the Surveillance permits opening one purge valve in a penetration flow path to perform repairs.~~

SR 3.6.3.2

This SR requires verification that each containment isolation manual valve and blind flange located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the containment boundary is within design limits. This SR does not require any testing or valve manipulation. Rather, it involves verification, through ~~a~~ system walkdown, that those containment isolation valves outside containment and capable of being mispositioned are in the correct position. ~~Since verification of valve position for containment isolation valves outside containment is relatively easy, the 31 day Frequency is based on engineering judgment and was chosen to provide added assurance of the correct positions.~~ The SR specifies that containment isolation valves that are open under administrative controls are not required to meet the SR during the time the valves are open. This includes RHR-MOV-8701A and RHR-MOV-8702A which may be opened and power removed under administrative controls when the plant is in MODE 4 (for ensuring over-pressure protection system operability). This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

Insert 2

The Note applies to valves and blind flanges located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted during MODES 1, 2, 3 and 4 for ALARA reasons. Therefore, the probability of misalignment of these containment isolation valves, once they have been verified to be in the proper position, is small.

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.3.5 (continued)

purge and exhaust penetration leakage limit is based on not exceeding the total combined leakage rate limit for all Type B and C testing specified in 5.5.17, Containment Leakage Rate Testing Program. Operating experience has demonstrated that this type of seal has the potential to degrade in a shorter time period than do other seal types. ~~Based on this observation and the importance of maintaining this penetration leak tight (due to the direct path between containment and the environment), a Frequency of 184 days was established as part of the generic resolution by the NRC staff of Generic Issue B-20, "Containment Leakage Due to Seal Deterioration" (Ref. 3).~~

Insert 2

Additionally, this SR must be performed within 92 days after opening the valve. The 92 day Frequency was chosen recognizing that cycling the valve could introduce additional seal degradation (beyond that occurring to a valve that has not been opened). Thus, decreasing the interval (from 184 days) is a prudent measure after a valve has been opened.

f

SR 3.6.3.6

Automatic containment isolation valves close on a containment isolation signal to prevent leakage of radioactive material from containment following a DBA. This SR ensures that each automatic containment isolation valve will actuate to its isolation position on a containment isolation signal (Phase A or Phase B). This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage, during the COLD SHUTDOWN or REFUELING MODES or defueled, and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass this Surveillance when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~

BASES

REFERENCES

Not used.

1. FSAR, Section 15.
2. FSAR, Section 6.2.
3. ~~Generic Issue B-20, "Containment Leakage Due to Seal Deterioration."~~
4. ~~Generic Issue B-24.~~
5. Standard Review Plan 6.2.4.

ACTIONS

A.1

When containment pressure is not within the limits of the LCO, it must be restored to within these limits within 1 hour. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, "Containment," which requires that containment be restored to OPERABLE status within 1 hour.

B.1 and B.2

If containment pressure cannot be restored to within limits within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant 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 plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.4.1

Verifying that containment pressure is within limits ensures that unit operation remains within the limits assumed in the containment analysis~~. The 12 hour Frequency of this SR was developed based on operating experience related to trending of containment pressure variations during the applicable MODES. Furthermore, the 12 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal containment pressure condition.~~

Insert 2

REFERENCES

1. FSAR, Section 6.2.
2. 10 CFR 50, Appendix K.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.5.1

Verifying that containment average air temperature is within the LCO limit ensures that containment operation remains within the limit assumed for the containment analyses. In order to determine the containment average air temperature, an arithmetic average is calculated using measurements taken at four of the following sensor locations with at least two being containment air cooler intake sensors:

Instrument Number	Sensor Location
TE3187 E, F, G, & H	Containment Air Cooler Intake
TE3188 H & I	Lower Compartment
TE3188 J	Reactor (lower)

Insert 2

~~The 24 hour Frequency of this SR is considered acceptable based on observed slow rates of temperature increase within containment as a result of environmental heat sources (due to the large volume of containment). Furthermore, the 24 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal containment temperature condition.~~

REFERENCES

1. FSAR, Section 6.2.

2. 10 CFR 50.49.

ACTIONS (continued)

E.1 and E.2

If the Required Action and associated Completion Time of Condition C or D of this LCO are not met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant 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 plant conditions from full power conditions in an orderly manner and without challenging plant systems.

F.1

With two containment spray trains or any combination of three or more containment spray and cooling trains inoperable, the unit is in a condition outside the accident analysis. Therefore, LCO 3.0.3 must be entered immediately.

SURVEILLANCE REQUIREMENTS

SR 3.6.6.1

Verifying the correct alignment for manual, power operated, and automatic valves in the containment spray flow path provides assurance that the proper flow paths will exist for Containment Spray System operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these were verified to be in the correct position prior to locking, sealing, or securing. This SR does not require any testing or valve manipulation. Rather, it involves verification, through a system walkdown, that those valves outside containment (only check valves are inside containment) and capable of potentially being mispositioned are in the correct position.

Insert 2

SR 3.6.6.2

Operating each required containment cooling train fan unit for ≥ 15 minutes ensures that all trains are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. The fans are started from the control room (unless already operating). ~~The 31 day Frequency was developed considering the known reliability of the fan units and controls, the two train redundancy available, and the low probability of significant~~

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.6.2 (continued)

~~degradation of the containment cooling train occurring between surveillances. It has also been shown to be acceptable through operating experience.~~

SR 3.6.6.3

Insert 2

Verifying that the SW flow rate to each containment cooling train is ~~≥ 1600 gpm~~ provides assurance that the design flow rate will be achieved (Ref. 3). ~~However,~~ safety analyses show that, under post-accident conditions, a flow rate of ~~600 gpm~~ to one fan unit is sufficient to meet the post-accident heat removal requirements. ~~The Frequency was developed considering the known reliability of the Cooling Water System, the two train redundancy available, and the low probability of a significant degradation of flow occurring between surveillances.~~

SR 3.6.6.4

Verifying each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head ensures that spray pump performance has not degraded during the cycle. On recirculation flow each pump develops a discharge pressure of ≥ 210 psig. On full flow testing, each pump is run and the flow directed through the containment spray system test line into the refueling canal. The flow is throttled across the pump curve via the regulating globe valve in the test line. Flow and differential pressure are normal tests of centrifugal pump performance required by the ASME Code for Operation and Maintenance of Nuclear Power Plants (Ref. 6). Since the containment spray pumps cannot be tested with flow through the spray headers, they are tested on recirculation flow and full flow to the refueling canal. Taken together, these tests confirm the pump design curve and are indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by abnormal performance. The Frequency of the SR is in accordance with the Inservice Testing Program.

SR 3.6.6.5 and SR 3.6.6.6

These SRs require verification that each automatic containment spray valve actuates to its correct position and that each containment spray pump starts upon receipt of an actual or simulated actuation of a containment High-3 pressure signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.6.5 and SR 3.6.6.6 (continued)

required position under administrative controls. ~~The 18 month Frequency is based on the need to perform these Surveillances under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillances were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillances when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~

The surveillance of containment sump isolation valves is also required by SR 3.5.2.5. A single surveillance may be used to satisfy both requirements.

SR 3.6.6.7

This SR requires verification that each containment cooling train actuates upon receipt of an actual or simulated safety injection signal. ~~The 18 month Frequency is based on engineering judgment and has been shown to be acceptable through operating experience. See SR 3.6.6.5 and SR 3.6.6.6, above, for further discussion of the basis for the 18 month Frequency.~~

Insert 2

SR 3.6.6.8

With the containment spray inlet valves closed and the spray header drained of any solution, low pressure air or smoke can be blown through test connections. This SR ensures that each spray nozzle is unobstructed and provides assurance that spray coverage of the containment during an accident is not degraded. ~~Due to the passive design of the nozzle, a test at 10 year intervals is considered adequate to detect obstruction of the nozzles.~~

REFERENCES

1. 10 CFR 50, Appendix A, GDC 38, GDC 39, GDC 40, GDC 41, GDC 42, and GDC 43.
2. 10 CFR 50, Appendix K.
3. FSAR, Section 6.2.
4. FSAR, Section 7.3.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.8.1

Operating each HMS train for ≥ 15 minutes ensures that each train is OPERABLE and that all associated controls (including starting from the control room) are functioning properly. It also ensures that blockage, fan and/or motor failure, or excessive vibration can be detected for corrective action. ~~While this system is not included in the scope of the Inservice Testing (IST) Program, the 92 day Frequency is consistent with IST Program Surveillance Frequencies, operating experience, the known reliability of the fan motors and controls, and the two train redundancy available.~~

Insert 2

SR 3.6.8.2

Verifying that each HMS fan speed is ≥ 1320 rpm ensures that each train is capable of maintaining localized hydrogen concentrations below the flammability limit. ~~The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~

SR 3.6.8.3

This SR ensures that each HMS train responds properly to a Safety Injection actuation signal. The Surveillance verifies that each fan starts from the nonoperating condition. ~~The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~

REFERENCES

1. Deleted
2. Deleted
3. Regulatory Guide 1.7, Revision 1.
4. WCAP 7901, Revision 1.

BASES

ACTIONS

B.1 (continued)

MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.9.1

Operating each RCHDS train for ≥ 15 minutes ensures that each train is OPERABLE and that all associated controls are functioning properly and that each fan may be started by operator action from the control room. It also ensures that blockage, fan and/or motor failure, or excessive vibration can be detected for corrective action. ~~While this system is not included in the scope of the Inservice Testing (IST) Program, the 92 day Frequency is consistent with IST Program Surveillance Frequencies, operating experience, the known reliability of the fan motors and controls, and the two train redundancy available.~~

Insert 2

SR 3.6.9.2

This SR ensures that each RCHDS train responds properly to a Safety Injection signal. The Surveillance verifies that each fan starts from the non-operating condition. ~~The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~

REFERENCES

1. Deleted
2. Deleted
3. Regulatory Guide 1.7, Revision 0.

BASES

ACTIONS

B.1 (continued)

be possible with the unit at power. The 24 hour Completion Time is reasonable to repair inoperable ARV lines, based on the availability of the Steam Dump System and MSSVs, and the low probability of an event occurring during this period that would require the ARV lines.

C.1 and C.2

If the ARV lines cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 18 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 3.7.4.1

To perform a controlled cooldown of the RCS, the ARVs must be able to be opened either remotely or locally and throttled through their full range. This SR ensures that the ARVs are tested through a full control cycle at least once per fuel cycle. Performance of inservice testing or use of an ARV during a unit cooldown may satisfy this requirement. ~~Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. The Frequency is acceptable from a reliability standpoint.~~

Insert 2

SR 3.7.4.2

The function of the manual isolation valve is to isolate a failed open ARV. Cycling the manual isolation valve both closed and open demonstrates its capability to perform this function. Performance of inservice testing or use of the manual isolation valve during unit cooldown may satisfy this requirement. ~~Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. The Frequency is acceptable from a reliability standpoint.~~

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.5.1 (continued)

This surveillance is modified by a Note that provides an exception for the AFW flow control valves. The verification of the AFW flow control valves in the full open position is not required during low power operation ($\leq$ 10% RTP) or when the AFW system is not in automatic control. The system is considered in automatic control when it is in standby for AFW automatic initiation and not being operated manually. The provisions of this note allow operation such as a normal unit startup or shutdown and required AFW pump testing at power to be performed without violating the requirements of this SR.

In addition, this surveillance includes verification that the stop check valves 3350A, 3350B, and 3350C are in the open position with the breaker to the valve operators locked open.

Insert 2

~~The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.~~

SR 3.7.5.2

Verifying that each AFW pump's developed head at the flow test point is greater than or equal to the required developed head ensures that AFW pump performance has not degraded during the cycle. Flow and differential head are normal tests of centrifugal pump performance required by Section XI of the ASME Code (Ref 2). Because it is undesirable to introduce cold AFW into the steam generators while they are operating, this testing is performed on recirculation flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. Performance of inservice testing discussed in the ASME Code, Section XI (Ref. 2) (only required at 3 month intervals) satisfies this requirement.

This SR is modified by a Note indicating that the SR should be deferred until suitable test conditions are established. This deferral is required because there is insufficient steam pressure to perform the test.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.5.3

This SR verifies that AFW can be delivered to the steam generators in the event of any accident or transient that generates an ESFAS, by demonstrating that each automatic valve in the flow path actuates to its correct position on an actual or simulated actuation (automatic pump start) signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 18 month Frequency is acceptable based on operating experience and the design reliability of the equipment.~~

Insert 2

SR 3.7.5.4

This SR verifies that the AFW pumps will start in the event of any accident or transient that generates an ESFAS by demonstrating that each AFW pump starts automatically on an actual or simulated actuation signal in MODES 1, 2, and 3. The motor-driven pumps must be verified to start on SI, SG water level low-low in any SG, and loss of offsite power. The turbine-driven pump must be verified to start on under-voltage on two out of three RCP buses and SG water level low-low in two SGs. ~~The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power.~~

This SR is modified by a Note that indicates the SR may be deferred until suitable test conditions are established. This deferral is required because there is insufficient steam pressure to perform the test.

SR 3.7.5.5

This SR verifies that the air stored in turbine-driven AFW pump steam admission valve air accumulators is sufficient to open valves Q1(2)N12V001A-A and Q1(2)N12V001B-B. Each steam admission valve has an air accumulator associated with it. The air accumulators provide sufficient air to ensure the operation of the steam admission valves for turbine-driven AFW pump during a loss of power or other

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.5.5 (continued)

Insert 2

failure of the normal air supply~~. The 18 month frequency is based on the need to perform this surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 18 month frequency is acceptable based on operating experience and the passive nature of the air accumulator operation.~~

REFERENCES

1. FSAR, Section 6.5.
2. ASME, Boiler and Pressure Vessel Code, Section XI.

BASES

SURVEILLANCE REQUIREMENTS

Insert 2

SR 3.7.6.1

This SR verifies that the CST contains the required volume of cooling ~~water. The 12 hour Frequency is based on operating experience and the need for operator awareness of unit evolutions that may affect the CST inventory between checks. Also, the 12 hour Frequency is considered adequate in view of other indications in the control room, including alarms, to alert the operator to abnormal deviations in the CST level.~~

REFERENCES

1. FSAR, Section 9.2.6.
2. FSAR, Chapter 6.
3. FSAR, Chapter 15.
4. AFW – FSD A-181010.
5. CALC. BM 95-0961-001, Rev. 1, Verification of CST Sizing Basis.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.7.1

This SR is modified by a Note indicating that the isolation of the CCW flow to individual components may render those components inoperable but does not affect the OPERABILITY of the CCW System. The Note is applicable to CCW loads and does not include components required for CCW OPERABILITY.

Verifying the correct alignment for accessible manual, power operated, and automatic valves in the CCW flow path provides assurance that the proper flow paths exist for CCW operation. The accessibility of the CCW valves is evaluated on a case by case basis considering such things as ALARA concerns and personnel safety as well as valve enclosures or barricades blocking access to the valves. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves are verified to be in the correct position prior to locking, sealing, or securing. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. This Surveillance does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position.

Insert 2

~~The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.~~

SR 3.7.7.2

This SR verifies proper automatic operation of the CCW valves on an actual or simulated Safety Injection actuation signal. The CCW System is a normally operating system that cannot be fully actuated as part of routine testing during normal operation. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.7.3

This SR verifies proper automatic operation of the CCW pumps on an actual or simulated actuation signal. The CCW System is a normally operating system that cannot be fully actuated as part of routine testing during normal operation~~. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~

Insert 2

REFERENCES

1. FSAR, Section 9.2.2.

ACTIONS

C.1 and C.2 (continued)

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 3.7.8.1

This SR is modified by a Note indicating that the isolation of the SWS components or systems may render those components inoperable, but does not affect the OPERABILITY of the SWS. The Note is applicable to SWS loads and does not include components required for SWS OPERABILITY.

Verifying the correct alignment for accessible manual, power operated, and automatic valves in the SWS flow path provides assurance that the proper flow paths exist for SWS operation. The accessibility of the SWS valves is evaluated on a case by case basis considering such things as ALARA concerns and personnel safety as well as valve enclosures or barricades blocking access to the valves. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since they are verified to be in the correct position prior to being locked, sealed, or secured. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves.

Insert 2

~~The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.~~

SR 3.7.8.2

This SR verifies proper automatic operation of the SWS valves on an actual or simulated Safety Injection actuation signal. The SWS is a normally operating system that cannot be fully actuated as part of normal testing. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply~~

(continued)

SURVEILLANCE REQUIREMENTS

SR. 3.7.8.2 (continued)

~~during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~

SR 3.7.8.3

This SR verifies proper automatic operation of the SWS pumps on an actual or simulated actuation signal. The SWS is a normally operating system that cannot be fully actuated as part of normal testing during normal operation. ~~The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~

Insert 2

SR 3.7.8.4

This SR requires a visual inspection be made of the ground area immediately surrounding the SWS buried piping. The performance of a visual inspection of the ground provides an indication of SWS piping integrity (leak tightness) by monitoring the surrounding ground for excessive moisture or erosion. ~~The 18 month Frequency is acceptable based on operating experience and the passive nature of the buried piping.~~

REFERENCES

1. FSAR, Section 9.2.1.
2. FSAR, Section 6.2.
3. FSAR, Section 5.1.

BASES

LCO

The UHS is required to be OPERABLE and is considered OPERABLE if it contains a sufficient volume of water at or below the maximum temperature that would allow the SWS to operate for at least 30 days following the design basis LOCA without the loss of net positive suction head (NPSH), and without exceeding the maximum design temperature of the equipment served by the SWS. To meet this condition, the UHS temperature should not exceed 95°F and the level should not fall below 184 ft mean sea level during normal unit operation.

APPLICABILITY

In MODES 1, 2, 3, and 4, the UHS is required to support the OPERABILITY of the equipment serviced by the UHS and required to be OPERABLE in these MODES.

In MODE 5 or 6, the OPERABILITY requirements of the UHS are determined by the systems it supports.

ACTIONS

A.1 and A.2

If the UHS water level or temperature are not within the required limits, 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 4 within 48 hours and in MODE 5 within 60 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 3.7.9.1

Insert 2

This SR verifies that adequate long term (30 day) cooling can be maintained. The specified level also ensures that sufficient NPSH is available to operate the SWS pumps~~. The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES.~~ This SR verifies that the UHS water level is ≥ 184 ft mean sea level.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.9.2

This SR verifies that the SWS is available to cool the CCW System to at least its maximum design temperature with the maximum accident or normal design heat loads for 30 days following a Design Basis Accident. ~~The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES.~~ This SR verifies that the water temperature at the discharge of the Service Water Pumps is ≤ 95°F.

Insert 2

REFERENCES

1. FSAR, Section 9.2.5.
2. Regulatory Guide 1.27.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.10.1

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 (CREFS and Pressurization) once every month provides an adequate check of this system. The CREFS trains are initiated from the control room with flow through the HEPA and charcoal filters. Systems must be operated for ≥ 15 minutes to demonstrate the function of the system (Ref. 3). Systems with heaters must be operated with the heaters energized. ~~The 31 day Frequency is based on the reliability of the equipment and the two train redundancy available.~~

SR 3.7.10.2

This SR verifies that the required CREFS testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The CREFS filter tests are in accordance with ASME N510-1989 (Ref. 4). The VFTP includes testing the performance of the HEPA filter, charcoal adsorber efficiency, flow rate, and the physical properties of the activated charcoal. Specific test Frequencies and additional information are discussed in detail in the VFTP.

SR 3.7.10.3

Insert 2

This SR verifies that each CREFS train starts and operates on an actual or simulated Safety Injection (SI) actuation signal. ~~The Frequency of 18 months is based on operating experience and is consistent with the typical industry refueling cycle.~~ This SR is modified by a note which provides an exception to the requirement to meet this SR in MODES 5 and 6. This is acceptable since the automatic SI actuation function is not required in these MODES.

SR 3.7.10.4

This SR verifies that the CRE Δp can be maintained within limits defined in the Control Room Integrity Program (CRIP) with one CREFS train in operation. If the requirements of this SR cannot be met, a determination must be made as to the cause of the failure. Once identified, the appropriate Condition (for either the CREFS or the CRE) must be entered. For example, if the failure is due to a breach in the integrity of the CRE, the Condition for an inoperable

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.11.1

This SR verifies that the heat removal capability of the system is sufficient to remove the heat load assumed in the safety analyses in the control room. This SR consists of ~~system testing. The 18 month Frequency is appropriate since significant degradation of the CRACS is slow and is not expected over this time period.~~

Insert 2

REFERENCES

1. FSAR, Section 6.4.

ACTIONS (continued)

E.1

When two trains of the PRF System are inoperable during movement of irradiated fuel assemblies in the spent fuel pool room, action must be taken to place the unit in a condition in which the LCO does not apply. Action must be taken immediately to suspend movement of irradiated fuel assemblies in the spent fuel pool room. This does not preclude the movement of fuel to a safe position.

SURVEILLANCE REQUIREMENTS

SR 3.7.12.1

Insert 2

During movement of irradiated fuel in the spent fuel pool room, the two PRF trains are required to be aligned to the spent fuel pool room. When moving irradiated fuel, periodic verification of the PRF system alignment is required. During movement of irradiated fuel the potential exists for a fuel handling accident. Verification of the PRF train alignment when moving irradiated fuel provides assurance the correct system alignment is maintained to support the assumptions of the fuel handling accident analysis regarding the OPERABILITY of the PRF System. ~~The 24-hour Frequency specified for this verification is adequate to confirm the PRF System alignment and has been shown to be acceptable by operating experience.~~ This surveillance is modified by a note which clarifies that the surveillance need only be performed during the movement of irradiated fuel in the spent fuel pool room.

SR 3.7.12.2

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. This Surveillance requires that the operation of the PRF System be verified in the applicable alignment (post LOCA and/or refueling accident). The surveillance is applied separately to each operating mode of the PRF System as required by plant conditions. In MODE 1-4, operational testing in the post LOCA alignment is required to verify the capability of the system to perform in this capacity. Operational testing of the PRF System in the refueling accident alignment is only required to be performed to support the movement of irradiated fuel in the spent fuel pool storage room (when the potential exists for a fuel handling accident).

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.7.12.2 (continued)

Systems that do not credit the operation of heaters need only be operated for ≥ 15 minutes to demonstrate the function of the system. The system is initiated from the control room with flow through the HEPA and charcoal filters. ~~The 31 day Frequency is based on the known reliability of the equipment and the two train redundancy available.~~

SR 3.7.12.3

This SR verifies that the required PRF System testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The PRF System filter tests are in accordance with ASME N510-1989 (Ref. 6). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, 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 3.7.12.4

Insert 2

This SR verifies that each PRF train starts and operates on an actual or simulated Phase B actuation signal. In addition, the normal spent fuel pool ventilation system must be verified to isolate on an actual or simulated spent fuel pool ventilation low differential pressure signal and on an actual or simulated spent fuel pool high radiation signal. ~~The 18 month Frequency is consistent with Reference 7.~~

SR 3.7.12.5

This SR verifies the integrity of the ECCS pump rooms and penetration area boundary. The ability of the boundary to maintain negative pressure with respect to potentially uncontaminated adjacent areas is periodically tested to verify proper function of the PRF System. During the post-LOCA mode of operation, the PRF System is designed to maintain a slight negative pressure in the ECCS pump rooms and penetration area boundary, to prevent unfiltered LEAKAGE. The PRF System is designed to maintain ≤ -0.125 inches water gauge with respect to adjacent area pressure (as measured by the ΔP between the PRF mechanical equipment room and the RHR Heat Exchanger Room) at a flow rate of ≤ 5,500 cfm.

~~An 18 month Frequency (on a STAGGERED TEST BASIS) is consistent with Reference 7.~~

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.12.6

During the fuel handling mode of operation, the PRF is designed to maintain a slightly negative pressure in the spent fuel pool room with respect to atmospheric pressure and surrounding areas at a flow rate of ≤ 5,500 cfm, to prevent unfiltered leakage. The slightly negative pressure is verified by using a non-rigorous method that yields some observable identification of the slightly negative pressure. Examples of non-rigorous methods are smoke sticks, hand held differential pressure indicators, or other measurement devices that do not provide for an absolute measurement.

Insert 2

REFERENCES

1. FSAR, Section 6.2.3.
2. FSAR, Section 9.4.2.
3. FSAR, Sections 15.4.1 and 15.4.5.
4. Regulatory Guide 1.25.
5. 10 CFR 100.
6. ASME N510-1989.
7. ~~Regulatory Guide 1.52 (Rev. 2).~~

BASES

LCO

The fuel storage pool water level is required to be ≥ 23 ft over the top of irradiated fuel assemblies seated in the storage racks. The specified water level preserves the assumptions of the fuel handling accident analysis (Ref. 3). As such, it is the minimum required for fuel storage and movement within the fuel storage pool.

APPLICABILITY

This LCO applies during movement of irradiated fuel assemblies in the fuel storage pool, since the potential for a release of fission products exists.

ACTIONS

A.1

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

When the initial conditions for prevention of an accident cannot be met, steps should be taken to preclude the accident from occurring. When the fuel storage pool water level is lower than the required level, the movement of irradiated fuel assemblies in the fuel storage pool is immediately suspended to a safe position. This action effectively precludes the occurrence of a fuel handling accident. This does not preclude movement of a fuel assembly to a safe position.

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 MODES 1, 2, 3, and 4, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.7.13.1

This SR verifies sufficient fuel storage pool water is available in the event of a fuel handling accident. The water level in the fuel storage pool must be checked periodically~~. The 7 day Frequency is appropriate because the volume in the pool is normally stable. Water level changes are controlled by plant procedures and are acceptable based on operating experience.~~

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.13.1 (continued)

During refueling operations, the level in the fuel storage pool is in equilibrium with the refueling canal, and the level in the refueling canal is checked ~~daily~~ in accordance with SR 3.9.6.1 (refueling cavity water level verification).

REFERENCES

1. FSAR, Section 9.1.2.
2. FSAR, Section 9.1.3.
3. FSAR, Section 15.4.5.
4. Regulatory Guide 1.25, Rev. 0.
5. 10 CFR 100.11.

BASES

ACTIONS

A.1 and A.2 (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 3.7.14.1

This SR verifies that the concentration of boron in the fuel storage 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.~~

Insert 2

REFERENCES

1. USNRC Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants, LWR Edition, NUREG-0800, June, 1987.
2. USNRC Spent Fuel Storage Facility Design Bases (for Comment) Proposed Revision 2, 1981.
3. ANS, "Design Requirements for Light Water Reactor Spent Fuel Storage Facilities at Nuclear Power Stations," ANSI/ANS-57.2-1983.
4. WCAP-14416-NP-A, Rev. 1, "Westinghouse Spent Fuel Rack Criticality Analysis Methodology," November, 1996.
5. FSAR, Section 4.3.2.7.2.
6. NRC, Letter to all Power Reactor Licensees from B.K. Grimes, "OT Position for Review and Acceptance of Spent Fuel Storage and Handling Applications," April 14, 1978.
7. "Farley Units 1 and 2 Spent Fuel Rack Criticality Analysis Using Soluble Boron Credit," CAA-97-138, Rev. 1.

BASES

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.

SURVEILLANCE REQUIREMENTS

SR 3.7.16.1

Insert 2

This SR verifies that the secondary specific activity in the steam generators 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.~~

REFERENCES

1. 10 CFR 100.11.
2. FSAR, Chapter 15.

BASES

APPLICABILITY

This LCO applies whenever any fuel assembly is stored in the cask storage area of the spent fuel pool.

ACTIONS

A.1 and A.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 pool (including the transfer canal and cask storage area) 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. Action is also initiated to restore the concentration of boron simultaneously with suspending movement of fuel assemblies.

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 3.7.17.1

The boron concentration in the spent fuel cask storage area water must be verified to be within limit within four hours prior to entering the Applicability of the LCO. For loading operations, this means within four hours of loading the first fuel assembly into the cask.

For unloading operations, this means verifying the concentration of the borated water source to be used to re-flood the spent fuel cask within four hours of commencing re-flooding operations. This ensures that when the LCO is applicable (upon introducing water into the spent fuel cask), the LCO will be met.

Insert 2

~~The frequency of every 48 hours thereafter applies if cask loading operations continue for 48 hours or more and continue until the spent fuel cask is removed from the cask storage area.~~

When both the transfer canal gate and the cask storage area gate are open, the boron concentration measurement may be performed by sampling in accordance with SR 3.7.14.1. When at least one gate is closed, the sample is to be taken in the cask storage area.

BASES

ACTIONS (continued)

A.1

If one train of a required ESF Room Cooler subsystem is inoperable, action must be taken to restore the subsystem train to OPERABLE status within 72 hours. In this Condition, the remaining OPERABLE ESF Room Cooler subsystem train is adequate to perform the heat removal function for its associated ESF equipment.

B.1 and B.2

If the ESF Room Cooler subsystem train cannot be restored to OPERABLE status within the associated Completion Time or two trains of the same ESF Room Cooler subsystem are inoperable, 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 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 3.7.19.1

Verifying the correct alignment for manual valves servicing safety-related equipment provides assurance that the proper flow paths exist for ESF Room Cooler operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since they are verified to be in the correct position prior to being locked, sealed, or secured. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves.

Insert 2

~~The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.19.2

This SR verifies proper operation of the ESF Room Cooler fans on an actual or simulated actuation signal. Depending on the room cooler, this may be manual, high room temperature, an equipment running signal, or some combination~~. Operating experience has shown that these components usually pass the surveillance when performed at the 18 month Frequency. Therefore, the 18 month Frequency is acceptable from a reliability standpoint.~~

Insert 2

Each Room Cooler Fan can be placed in Run mode locally. With the Room Cooler in the Run mode, all automatic functions are being met and the Room Cooler is considered OPERABLE.

REFERENCES

1. FSAR, Section 9.4.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.1 (continued)

appropriate independence of offsite circuits is maintained. ~~The 7 day Frequency is 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.~~

Insert 2

SR 3.8.1.2 and SR 3.8.1.6

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 2 for SR 3.8.1.2) 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 3.8.1.6 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, some manufacturers recommend 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 3, which is only applicable when such modified start procedures are recommended by the manufacturer. During a modified start, a DG will not respond to a ESF or LOSP signal automatically. Therefore, the DG is considered inoperable with respect to response to ESF or LOSP signals during the brief duration of modified starts. If necessary, Operator action is required to place the speed control in automatic and reset the excitation system. This will immediately allow the DG to achieve normal voltage and frequency.

The DG shall be verified to accelerate to at least a synchronous speed of 900 rpm for the 2850 kW generator and 514 rpm for the 4075 kW generators.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.2 and SR 3.8.1.6 (continued)

SR 3.8.1.6 requires that~~, at a 184 day Frequency,~~ the DG starts from standby conditions and achieves required voltage and frequency within 12 seconds. The permissive for closing the generator output breaker requires frequency to be greater than 57 Hz and voltage greater than 3952 V. The 12 second start requirement supports the assumptions of the design basis LOCA analysis in the FSAR, Chapter 15 (Ref. 5).

The 12 second start requirement is not applicable to SR 3.8.1.2 (see Note 3) when a modified start procedure as described above is used. If a modified start is not used, the 12 second start requirement of SR 3.8.1.6 applies.

Since SR 3.8.1.6 requires a 12 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. This is the intent of Note 1 of SR 3.8.1.2.

Insert 2

~~The normal 31 day Frequency for SR 3.8.1.2 is consistent with Regulatory Guide 1.108 (Ref. 9). The 184 day Frequency for SR 3.8.1.6 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.~~

SR 3.8.1.3

This Surveillance verifies that the DGs are capable of synchronizing with the offsite electrical system and accepting loads in a range comparable to 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.

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.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.3 (continued)

~~The 31 day Frequency for this Surveillance is consistent with Regulatory Guide 1.108 (Ref. 9).~~

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 bus loads, do not invalidate this test. Note 3 indicates that this Surveillance should be conducted on only one DG per unit at a time in order to avoid common cause failures that might result from offsite circuit or grid perturbations. Note 3 is intended to be applied on a per unit basis and is not intended to preclude testing DGs on different units at the same time. Note 4 stipulates a prerequisite requirement for performance of this SR. A successful DG start must precede this test to credit satisfactory performance.

SR 3.8.1.4

This SR provides verification that the level of fuel oil in the day tank is at or above a level which ensures sufficient time for manual transfer of fuel oil from the DG storage tank if the automatic transfer fails. The level is expressed as an equivalent volume in gallons, and ensures adequate fuel oil for a minimum of 3 hours of DG operation at the continuous rating.

Insert 2

~~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.~~

SR 3.8.1.5

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 fuel transfer systems are OPERABLE.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.5 (continued)

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 tanks during or following DG testing. ~~In such a case, a 31 day Frequency is appropriate.~~

SR 3.8.1.6

See SR 3.8.1.2.

Insert 2

SR 3.8.1.7

Transfer of the unit 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. ~~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.~~

This SR is modified by a Note. The reason for the Note 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.

SR 3.8.1.8

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 without exceeding predetermined voltage and while maintaining a specified margin to the overspeed trip. The single load for each DG is approximately 1000 kW. This Surveillance may be accomplished by:

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.8 (continued)

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; or

b. Tripping its associated single largest post-accident load with the DG solely supplying the bus.

As required by Regulatory Guide 1.9 (Ref. 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.

The voltage tolerance specified in this SR is derived from Regulatory Guide 1.9 (Ref. 3) recommendations for response during load sequence interval. The voltage specified is consistent with the design range of the equipment powered by the DG. SR 3.8.1.8.b is the steady state voltage value 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).~~

Insert 2

SR 3.8.1.9

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 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.

The DG autostart time of 12 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.

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.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.9 (continued)

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 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.

Insert 2

~~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.~~

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.

SR 3.8.1.10

This Surveillance demonstrates that the DG automatically starts and achieves the required voltage and frequency within the specified time (12 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 3.8.1.10.d and SR 3.8.1.10.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. Emergency loads are started simultaneously by logic in the load sequencers sensing the availability of offsite power.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.10 (continued)

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.

Insert 2

~~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.~~

This SR is modified by two Notes. The reason for the first Note 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 the second Note (which only applies to SR 3.8.1.10.d and e) is that during operation with the reactor critical, performance of SR 3.8.1.10.d and e could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems.

SR 3.8.1.11

This Surveillance demonstrates that DG noncritical protective functions (e.g., high jacket water temperature) are bypassed on a loss of voltage signal and/or an ESF actuation test signal, i.e., are bypassed during accident conditions.

(continued)

BASES

SURVEILLLANCE REQUIREMENTS

SR 3.8.1.11 (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.~~

SR 3.8.1.12

This surveillance requires demonstration once per 18 months 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 the 2000 hour load 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. The steady-state generator voltage and frequency shall be maintained between 4160 ± 420 volts and 60 ± 1.2 Hz during this test.

Insert 2

~~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.~~

This Surveillance is modified by a Note. The Note states that momentary transients due to changing bus loads do not invalidate this test.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.13

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 12 seconds. The 12 second time is derived from the requirements of the accident analysis to respond to a design basis large break LOCA. ~~The 18 month Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(5).~~

This SR is modified by two Notes. Note 1 ensures that the test is performed with the diesel sufficiently hot. The requirement that the diesel has operated for at least 2 hours at full load conditions prior to performance of this Surveillance is consistent with the manufacturer recommendations for achieving hot conditions. Momentary transients due to changing 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.

SR 3.8.1.14

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 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 undervoltage, and the load sequence timers are reset.

Insert 2

~~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.~~

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.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.15

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.

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).~~

SR 3.8.1.16

Under accident conditions, loads are sequentially connected to the bus by the automatic load sequencer. The sequencing logic controls the permissive and starting signals to motor breakers to prevent overloading of the DGs due to high motor starting currents. The 10% (or 0.5 seconds, whichever is greater) 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.

Insert 2

~~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.~~

SR 3.8.1.17

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.

This Surveillance demonstrates the DG operation, as discussed in the Bases for SR 3.8.1.9, 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

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.17 (continued)

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.

Insert 2

~~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.~~

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.

SR 3.8.1.18

This Surveillance demonstrates the DG capability to reject a load of 1200-2400 kW without overspeed tripping or exceeding the predetermined voltage limits. The DG 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 1200-2400 kW 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 if the trip initiator can be corrected or isolated. The DG output breaker(s) must remain closed such that the DG is connected to at least one ESF bus. All fuses and breakers on the energized ESF bus(es) must be verified not to trip.

This surveillance is modified by a note which states that testing of the shared Emergency Diesel Generator (EDG) set (EDG 1-2A or EDG 1C) on either unit may be used to satisfy this surveillance requirement

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.18 (continued)

for these EDGs for both units. The surveillance requirement consists of sufficient testing to demonstrate that each DG, the DG output breaker, and bus fuses and breakers can successfully withstand a 1200-2400 kW load rejection on each unit. This does not require, however, that each shared DG be aligned to each unit and a load rejection be performed in a redundant fashion. This surveillance is intended to assure the correct performance of the DG voltage regulators and governors.

~~The 5 year Frequency is adequate and has been shown to be acceptable by operating experience.~~

Insert 2

SR 3.8.1.19

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).~~ This surveillance would also be applicable after any modifications which could affect DG interdependence.

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.
3. Regulatory Guide 1.9, Rev. 1, 1971.
4. FSAR, Chapter 6.
5. FSAR, Chapter 15.

(continued)

BASES

ACTIONS

E.1 (continued)

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.

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, the associated DG may be incapable of performing its intended function and must be immediately declared inoperable.

SURVEILLANCE REQUIREMENTS

SR 3.8.3.1

This SR provides verification that there is an adequate inventory of useable fuel oil in the shared storage tanks (25,000 gallons each) to support the operation of the required DG(s) for 7 days at full load. 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.

Insert 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.~~

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 inventory may consist of a combination of lube oil in storage and the useable sump volume above the manufacturer recommended minimum sump level or a total volume of lube oil in storage that is in addition to the lube oil normally maintained in each DG sump. The 238 gal requirement for the 4075 kW DGs and the 167 gal requirement for DG 1C are based on the DG manufacturer consumption values for 7 days of operation at full rated load. Implicit in this SR is the requirement to verify the capability

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.3.2 (continued)

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.

Insert 2

~~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.~~

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 storage tanks without concern for contaminating the entire volume of fuel oil in the storage tanks. These tests are to be conducted prior to adding the new fuel to the 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:

a. Sample the new fuel oil in accordance with ASTM D4057-06 (Ref. 2)

b. Verify in accordance with the tests specified in ASTM D975-07 (Ref. 3) 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 D1298-99 (Ref. 6), a kinematic viscosity at 40°C of ≥ 1.9 centistokes and ≤ 4.1 centistokes, and a flash point of ≥ 125°F; and

c. Verify that the new fuel oil has a clear and bright appearance with proper color when tested in accordance with ASTM D4176-04 (Ref. 7) or a water and sediment content within limits when tested in accordance with ASTM D2709-96 (Ref. 8)

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 storage tanks.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.3.4 (continued)

Insert 2

~~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.~~

REFERENCES

1. FSAR, Section 8.3.1.1.7.
2. ASTM-D4057-06.
3. ASTM-D975-07.
4. FSAR, Chapter 6.
5. FSAR, Chapter 15.
6. ASTM D1298-99.
7. ASTM D4176-04.
8. ASTM D2709-96.
9. ASTM D1552-07.
10. ASTM D2622-07.
11. ASTM D4294-03.
12. ASTM D5452-06.

BASES (continued)

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 charging system and the ability of the batteries to perform their intended function. Float charge is the condition in which the charger is applying a voltage to the battery to maintain it in a fully charged condition during normal operation. The float voltage of 2.2 V per cell or 132 V overall is higher than the nominal design voltage of 125 V and is consistent with the manufacturer's recommendations for maintaining a full charge. Verifying that terminal voltage is ≥ 127.8 V provides assurance that the average of all cell voltages is maintained greater than 2.13 V. Maintaining float voltage at the higher value of 2.2 V per cell prolongs cell life expectancy. ~~The 7 day Frequency is consistent with IEEE-450 (Ref. 9).~~

Insert 2

SR 3.8.4.2

Visual inspection to detect excessive corrosion on the battery terminals or connectors, or measurement of the post to post resistance of these items provides an indication of the need for cleaning and/or retorqueing.

~~The Surveillance Frequency for these inspections, which can detect conditions that can cause power losses due to resistance heating, is 92 days. This Frequency is considered acceptable based on operating experience related to detecting corrosion trends.~~

SR 3.8.4.3

Visual inspection of the battery cells, cell plates, and battery racks provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance. The presence of physical damage or deterioration does not necessarily represent a failure of this SR, provided an evaluation determines that the physical damage or deterioration does not affect the OPERABILITY of the battery (its ability to perform its design function).

~~The 18 month frequency for this SR is sufficient to detect abnormal deterioration and has been shown to be adequate by operating experience.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.4.4 and SR 3.8.4.5

Visual inspection and post to post resistance measurements of battery terminals or connectors provide an indication of the need for cleaning and/or retorqueing. The anticorrosion material is used to help ensure good electrical connections and to reduce terminal deterioration. The visual inspection for corrosion is not intended to require removal of and inspection under each terminal connection. The removal of visible corrosion is a preventive maintenance SR. The presence of visible corrosion does not necessarily represent a failure of this SR provided visible corrosion is removed during performance of SR 3.8.4.4.

~~The 18 month frequency for this SR is sufficient to detect abnormal deterioration and has been shown to be adequate by operating experience.~~

Insert 2

This SR requires that each required battery charger be capable of supplying 536 amps (Auxiliary Building chargers) and 3 amps (SWIS chargers) at 125 V for ≥ 4 hours. These requirements are based on the design capacity of the chargers (Ref. 4). According to Regulatory Guide 1.32 (Ref. 10), the battery charger supply is required 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.

~~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.~~

This surveillance is modified by a Note which clarifies that it may be performed in any mode of operation provided certain conditions are met. The design is such that any battery charger may be tested while a spare or redundant battery and/or charger is in service in its place. The spare or redundant battery and/or charger must be within the 18 month surveillance frequency to maintain the DC subsystem(s) to which they are aligned OPERABLE. This operational flexibility maintains TS OPERABILITY of the applicable battery and DC train while testing the normally aligned charger.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.4.7

A battery service test is a special test of battery capability, as found, to satisfy the design requirements (design load profile) of the DC electrical power system. The discharge rate and test length should correspond to the design load profile requirements as specified in Reference 4.

Insert 2

~~The Surveillance Frequency of 18 months is consistent with the recommendations of Regulatory Guide 1.32 (Ref. 10), which states that the battery service test should be performed during refueling operations or at some other outage, (applicable to Auxiliary Building batteries only) with intervals between tests, not to exceed 18 months.~~

This SR is modified by three Notes. Note 1 allows the performance of a performance discharge test in lieu of a service test once per 60 months. Note 2 allows the performance of a modified performance discharge test in lieu of a service test at any time.

The modified performance discharge test is a simulated duty cycle consisting of just two rates: the one minute rate published for the battery or the largest current load of the duty cycle, followed by the test rate employed for the performance test, both of which envelop the duty cycle of the service test. Since the ampere-hours removed by a rated one minute discharge represents a very small portion of the battery capacity, the test rate can be changed to that for the performance test without compromising the results of the performance discharge test. The battery terminal voltage for the modified performance discharge test should 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.

A modified 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). This will often confirm the battery's ability to meet the critical period of the load duty cycle, in addition to determining its percentage of rated capacity. Initial conditions for the modified performance discharge test should be identical to those specified for a service test.

The reason for Note 3 is that performing the Surveillance for the Auxiliary Building batteries would perturb the electrical distribution system and challenge safety systems.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.4.8

A battery performance discharge test is a test of constant current capacity of a battery, after having been in service, to detect any change in the capacity determined by the acceptance test. The test is intended to determine overall battery degradation due to age and usage.

A battery modified performance discharge test is described in the Bases for SR 3.8.4.7. Either the battery performance discharge test or the modified performance discharge test is acceptable for satisfying SR 3.8.4.8. The modified performance discharge test may be used to satisfy SR 3.8.4.8 while simultaneously satisfying the requirements of SR 3.8.4.7 at any time. The performance discharge test may be used to satisfy 3.8.4.8 while simultaneously satisfying the requirements of SR 3.8.4.7 once per 60 months.

The acceptance criteria for this Surveillance are consistent with IEEE-450 (Ref. 9). This reference recommends that the battery be replaced if its capacity is below 80% of the manufacturer's rating. A capacity of 80% shows that the battery rate of deterioration is increasing, even if there is ample capacity to meet the load requirements.

Insert 2

~~The Surveillance Frequency for this test is normally 60 months.~~ If the battery shows degradation, or if the battery has reached 85% of its expected life or 17 years, whichever comes first, the Surveillance Frequency is reduced to 18 months. Degradation is indicated, according to IEEE-450 (Ref. 9), when the battery capacity drops by more than 10% relative to its capacity on the previous performance test or when it is > 10% below the manufacturer's rating. ~~These Frequencies are consistent with the recommendations in IEEE-450 (Ref. 9).~~

This SR is modified by a Note. The reason for the Note is that performing the Surveillance for the Auxiliary Building batteries would perturb the electrical distribution system and challenge safety systems.

(continued)

BASES

ACTIONS

A.1, A.2, and A.3 (continued)

Continued operation is only permitted for 31 days before battery cell parameters must be restored to within Category A and B limits. With the consideration that, while battery capacity is degraded, sufficient capacity exists to perform the intended function and to allow time to fully restore the battery cell parameters to normal limits, this time is acceptable prior to declaring the battery inoperable.

B.1

With one or more required batteries with one or more battery cell parameters outside the Category C limit for any connected cell, sufficient capacity to supply the maximum expected load requirement is not assured and the corresponding DC electrical power subsystem must be declared inoperable. Additionally, other potentially extreme conditions, such as not completing the Required Actions of Condition A within the required Completion Time or average electrolyte temperature of representative cells falling below the minimum temperature limit, or the average cell float voltage ≤ 2.13 volts, which is equivalent to overall battery terminal voltage ≤ 127.8 volts, are also cause for immediately declaring the associated DC electrical power subsystem inoperable.

SURVEILLANCE REQUIREMENTS

Insert 2

SR 3.8.6.1

This SR verifies that Category A battery cell parameters are consistent with the values specified in Table 3.8.6-1. IEEE-450 (Ref. 3) recommends regular battery inspections ~~(at least one per month)~~ including voltage, specific gravity, and electrolyte temperature of pilot cells.

SR 3.8.6.2

The ~~quarterly~~ inspection of specific gravity and voltage is consistent with IEEE-450 (Ref. 3). In addition, within 7 days of a battery discharge < 110 V or a battery overcharge > 150 V, the battery must be demonstrated to meet Category B limits. Transients, such as motor starting transients, which may momentarily cause battery

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.6.2 (continued)

voltage to drop to ≤ 110 V, do not constitute a battery discharge provided the battery terminal voltage and float current return to pre-transient values. This inspection is also consistent with IEEE-450 (Ref. 3), which recommends special inspections following a severe discharge or overcharge, to ensure that no significant degradation of the battery occurs as a consequence of such discharge or overcharge.

Insert 2

SR 3.8.6.3

This Surveillance verification that the average temperature of 10 connected representative cells is ≥ 60°F for the Auxiliary Building batteries and ≥ 35°F for the SWIS batteries, is consistent with a recommendation of IEEE-450 (Ref. 3), that states that the temperature of electrolytes in representative cells should be determined ~~on a quarterly basis.~~

Lower than normal temperatures act to inhibit or reduce battery capacity. This SR ensures that the operating temperatures remain within an acceptable operating range. This limit is based on design considerations.

Table 3.8.6-1

This table delineates the limits on electrolyte level, float voltage, and specific gravity for three different categories. The meaning of each category is discussed below.

Category A defines the normal parameter limit for each designated pilot cell in each battery. The cells selected as pilot cells are those with the lowest specific gravity and voltage from the previous quarterly surveillance.

The Category A limits specified for electrolyte level are based on manufacturer recommendations and are consistent with the guidance in IEEE-450 (Ref. 3), with the extra ¼ inch allowance above the high water level indication for operating margin to account for temperatures and charge effects. In addition to this allowance, footnote a to Table 3.8.6-1 permits the electrolyte level to be above the specified maximum level during equalizing charge, provided it is

(continued)

BASES

SURVEILLANCE REQUIREMENTS

Table 3.8.6-1 (continued)

The Category B limits specified for electrolyte level and float voltage are the same as those specified for Category A and have been discussed above. The Category B limit specified for specific gravity for each connected cell is ≥ 1.190 with the average for all connected cells ≥ 1.195. The manufacturers recommended fully charged specific gravity is 1.215 for the Auxiliary Building and 1.210 for the SWIS batteries. The value of 0.020 below the manufacturers recommended fully charged value for SWIS batteries has been adopted as the Category B minimum for each connected cell for both the Auxiliary Building and SWIS batteries. The minimum specific gravity value required for each cell ensures that the effects of a highly charged or newly installed cell will not mask overall degradation of the battery.

Category C defines the limits for each connected cell. These values, although reduced, provide assurance that sufficient capacity exists to perform the intended function and maintain a margin of safety. When any battery parameter is outside the Category C limits, the assurance of sufficient capacity described above no longer exists, and the battery must be declared inoperable.

The Category C limits specified for electrolyte level (above the top of the plates and not overflowing) ensure that the plates suffer no physical damage and maintain adequate electron transfer capability. The Category C limits for float voltage are based on operating experience, which has shown that a cell voltage of 2.02 V or below, under float conditions and not caused by elevated temperature of the cell, indicates internal cell problems and may require cell replacement.

The Category C limit of average specific gravity ≥ 1.190 is based on operating experience. In addition to that limit, if a cell is < 1.190, then it shall not have decreased more than 0.080 from the previous ~~92 day~~ test.

The footnotes to Table 3.8.6-1 are applicable to Category A, B, and C specific gravity. Footnote (b) to Table 3.8.6-1 requires the above mentioned correction for electrolyte level and temperature, with the exception that level correction is not required when battery charging current is < 2 amps on float charge. This current provides, in general, an indication of overall battery condition.

(continued)

BASES

ACTIONS

A.1 (continued)

is powered from its constant voltage source, it is relying upon interruptible AC electrical power sources (offsite and onsite). The uninterruptible inverter source to the AC vital buses is the preferred source for powering instrumentation trip setpoint devices.

B.1 and B.2

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

SURVEILLANCE REQUIREMENTS

SR 3.8.7.1

Insert 2

This Surveillance verifies that the inverters are functioning properly with all required circuit breakers closed and AC vital buses energized from the inverter. The verification of proper voltage and frequency output ensures that the required power is readily available for the instrumentation of the RPS and ESFAS connected to the AC vital buses. ~~The 7 day Frequency takes into account the redundant capability of the inverters and other indications available in the control room that alert the operator to inverter malfunctions.~~

REFERENCES

1. FSAR, Chapter 8.
2. FSAR, Chapter 6.
3. FSAR, Chapter 15.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.8.1 (continued)

output ensures that the required power is readily available for the instrumentation connected to the AC vital buses~~. The 7 day Frequency takes into account the redundant capability of the inverters and other indications available in the control room that alert the operator to inverter malfunctions.~~

Insert 2

REFERENCES

1. FSAR, Chapter 6.
2. FSAR, Chapter 15.

BASES

ACTIONS (continued)

F.1

With two trains with inoperable distribution subsystems that result in a loss of safety function, adequate core cooling, containment OPERABILITY and other vital functions for DBA mitigation would be compromised, and immediate plant shutdown in accordance with LCO 3.0.3 is required.

SURVEILLANCE REQUIREMENTS

SR 3.8.9.1

This Surveillance verifies that the required AC, DC, and AC vital bus electrical power distribution systems are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures the appropriate separation and independence of the electrical divisions is maintained, and the appropriate voltage is available to each required bus. The verification of proper voltage availability on the buses ensures that the required voltage is readily available for motive ~~as~~ well as control functions for critical system loads connected to these buses. Insert 2 ~~The 7 day Frequency takes into account the redundant capability of the AC, DC, and AC vital bus electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.~~

REFERENCES

1. FSAR, Chapter 6.
2. FSAR, Chapter 15.
3. Regulatory Guide 1.93, December 1974.

BASES

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, A.2.4, and A.2.5 (continued)

heat removal. Pursuant to LCO 3.0.6, the RHR ACTIONS would not be entered. Therefore, Required Action A.2.5 is provided to direct declaring RHR inoperable, which results in taking the appropriate RHR actions.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required distribution subsystems should be completed as quickly as possible in order to minimize the time the unit safety systems may be without power.

SURVEILLANCE REQUIREMENTS

SR 3.8.10.1

Insert 2

This Surveillance verifies that the AC, DC, and AC vital bus electrical power distribution subsystems are functioning properly, with all the buses energized. The verification of proper voltage availability on the buses ensures that the required power is readily available for motive ~~as well~~ as control functions for critical system loads connected to these buses. ~~The 7 day Frequency takes into account the capability of the electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.~~

REFERENCES

1. FSAR, Chapter 6.
2. FSAR, Chapter 15.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.1.1

This SR ensures that the coolant boron concentration in the filled portions of the RCS, the refueling canal, and the refueling cavity that have direct access to the core is within the COLR limits. The boron concentration of the coolant in each volume that has direct access to the core is determined periodically by chemical analysis.

Insert 2

~~A minimum Frequency of once every 72 hours is a reasonable amount of time to verify the boron concentration of representative samples. The Frequency is based on operating experience, which has shown 72 hours to be adequate.~~

REFERENCES

1. 10 CFR 50, Appendix A, GDC 26.
2. FSAR, Chapter 15.2.4.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.2.1

SR 3.9.2.1 is the performance of a CHANNEL CHECK, which is a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that the two indication channels should be consistent with core conditions. Changes in fuel loading and core geometry can result in significant differences between source range channels, but each channel should be consistent with its local conditions.

Insert 2

~~The Frequency of 12 hours is consistent with the CHANNEL CHECK Frequency specified similarly for the same instruments in LCO 3.3.1.~~

SR 3.9.2.2

SR 3.9.2.2 is the performance of a CHANNEL CALIBRATION every 18 months. This SR is modified by a Note stating that neutron detectors are excluded from the CHANNEL CALIBRATION. The CHANNEL CALIBRATION for the source range neutron flux monitors consists of obtaining the detector plateau or preamp discriminator curves and evaluating those curves. The CHANNEL CALIBRATION for the Westinghouse monitors also includes verification of the audible count rate function. ~~The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage. Operating experience has shown these components usually pass the Surveillance when performed at the 18 month Frequency.~~

REFERENCES

1. 10 CFR 50, Appendix A, GDC 13, GDC 26, GDC 28, and GDC 29.

2. FSAR, Section 15.2.4.2.2.

BASES

ACTIONS

A.1 and A.2

If the containment equipment hatch, air locks, or any containment penetration that provides direct access from the containment atmosphere to the outside atmosphere is not in the required status, including the Containment Purge and Exhaust Isolation System not capable of automatic actuation when the purge and exhaust valves are open, the unit must be placed in a condition where the isolation function is not needed. This is accomplished by immediately suspending CORE ALTERATIONS and movement of irradiated fuel assemblies within containment. Performance of these actions shall not preclude completion of movement of a component to a safe position.

SURVEILLANCE REQUIREMENTS

SR 3.9.3.1

This Surveillance demonstrates that each of the containment penetrations required to be in its closed position is in that position. The Surveillance on the open purge and exhaust valves will demonstrate that the valves are not blocked from closing. Also, the Surveillance will demonstrate that each valve operator has motive power, which will ensure that each valve is capable of being closed by an OPERABLE automatic containment purge and exhaust isolation signal.

Insert 2

~~The Surveillance is performed every 7 days during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment. The Surveillance interval is selected to be commensurate with the normal duration of time to complete fuel handling operations. A surveillance before the start of refueling operations will provide two or three surveillance verifications during the applicable period for this LCO. As such, this Surveillance ensures that a postulated fuel handling accident that releases fission product radioactivity within the containment will not result in radiological doses in excess of those recommended by RG 1.195 (Reference 4).~~

SR 3.9.3.2

This Surveillance demonstrates that each containment purge and exhaust valve actuates to its isolation position on manual initiation or on an actual or simulated high radiation signal from each of the containment purge radiation monitoring instrumentation channels. ~~The 18 month Frequency maintains consistency with other similar~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.3.2 (continued)

~~ESFAS instrumentation and valve testing requirements. In LCO 3.3.6, the Containment Purge and Exhaust Isolation instrumentation requires a CHANNEL CHECK every 12 hours and a COT every 92 days to ensure the channel OPERABILITY during refueling operations. Every 18 months a CHANNEL CALIBRATION is performed. The system actuation response time is demonstrated every 18 months, during refueling, on a STAGGERED TEST BASIS.~~ SR 3.6.3.4 demonstrates that the isolation time of each valve is in accordance with the Inservice Testing Program requirements. These Surveillances performed during MODE 6 will ensure that the valves are capable of closing after a postulated fuel handling accident to limit a release of fission product radioactivity from the containment.

SR 3.9.3.3

The equipment hatch is provided with a set of hardware, tools, and equipment for moving the hatch from its storage location and installing it in the opening. The required set of hardware, tools, and equipment shall be inspected to ensure that they can perform the required functions.

Insert 2

~~The 7 day frequency is adequate considering that the hardware, tools, and equipment are dedicated to the equipment hatch and not used for any other functions.~~

The SR is modified by a Note which only requires that the surveillance be met for an open equipment hatch. If the equipment hatch is installed in its opening, the availability of the means to install the hatch is not required.

REFERENCES

1. GPU Nuclear Safety Evaluation SE-0002000-001, Rev. 0, May 20, 1988.

2. FSAR, Section 15.4.5.

3. NUREG-0800, Section 15.7.4, Rev. 1, July 1981.

4. Regulatory Guide 1.195, "Methods and Assumptions for Evaluating Radiological Consequences of Design Basis Accidents at Light-Water Nuclear Power Reactors," May 2003.

BASES

ACTIONS

A.4, A.5, A.6.1, and A.6.2 (continued)

With RHR loop requirements not met, the potential exists for the coolant to boil and release radioactive gas to the containment atmosphere. Performing the actions described above ensures that all containment penetrations are either closed or can be closed so that the dose limits are not exceeded.

The Completion Time of 4 hours allows fixing of most RHR problems and is reasonable, based on the low probability of the coolant boiling in that time.

SURVEILLANCE REQUIREMENTS

SR 3.9.4.1

Insert 2

This Surveillance demonstrates that the RHR loop is in operation and circulating reactor coolant. The flow rate is determined by the flow ~~rate necessary to provide~~ sufficient decay heat removal capability and to prevent thermal and boron stratification ~~in the core.~~ ~~The Frequency of 12 hours is sufficient, considering the flow, temperature, pump control, and alarm indications available to the operator in the control room for monitoring the RHR System.~~

REFERENCES

1. FSAR, Section 5.5.7.

BASES

ACTIONS (continued)

B.2

If no RHR loop is in operation, actions shall be initiated immediately, and continued, to restore one RHR loop to operation. Since the unit is in Conditions A and B concurrently, the restoration of two OPERABLE RHR loops and one operating RHR loop should be accomplished expeditiously.

B.3, B.4, B.5.1, and B.5.2

If no RHR is in operation, the following actions must be taken:

a) the equipment hatch must be closed and secured with four bolts;
b) one door in each air lock must be closed; and
c) each penetration providing direct access from the containment atmosphere to the outside atmosphere must be either closed by a manual or automatic isolation valve, blind flange, or equivalent, or verified to be capable of being closed by an OPERABLE Containment Purge and Exhaust Isolation System.

With RHR loop requirements not met, the potential exists for the coolant to boil and release radioactive gas to the containment atmosphere. Performing the actions described above ensures that all containment penetrations are either closed or can be closed so that the dose limits are not exceeded.

The Completion Time of 4 hours allows fixing of most RHR problems and is reasonable, based on the low probability of the coolant boiling in that time.

SURVEILLANCE REQUIREMENTS

SR 3.9.5.1

This Surveillance demonstrates that one RHR loop is in operation and circulating reactor coolant. The flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability and to prevent thermal and boron stratification in the core. In addition, during operation of the RHR loop with the water level in the vicinity of the reactor vessel nozzles, the RHR pump suction requirements must be met. ~~The Frequency of 12 hours is sufficient, considering the flow, temperature, pump control, and alarm indications available to the operator for monitoring the RHR System in the control room.~~

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.9.5.2

Verification that the required pump is OPERABLE ensures that an additional RCS or RHR pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. ~~Verification is performed by verifying proper breaker alignment and power available to the required pump.~~ ~~The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.~~

Insert 2

REFERENCES

1. FSAR, Section 5.5.7.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.6.1 (continued)

Insert 2

~~The Frequency of 24 hours is based on engineering judgment and is considered adequate in view of the large volume of water and the normal procedural controls of valve positions, which make significant unplanned level changes unlikely.~~

REFERENCES

1. Regulatory Guide 1.25, March 23, 1972.
2. FSAR, Section 15.4.5.
3. NUREG-0800, Section 15.7.4.
4. 10 CFR 100.10.
5. Malinowski, D. D., Bell, M. J., Duhn, E., and Locante, J., WCAP-828, Radiological Consequences of a Fuel Handling Accident, December 1971.
6. NUREG/CR 5009.

Joseph M. Farley Nuclear Plant
License Amendment Request for Adoption of TSTF-425-A, Revision 3, Risk-Informed Justification for the Relocation of Specific Surveillance Frequency Requirements to a Licensee Controlled Program Using the Consolidated Line Item Improvement Process

Enclosure 6

Technical Specification Cross Reference for FNP and TSTF 425 Mark ups

Enclosure 6
Technical Specification Cross Reference for FNP Units 1 and 2 and TSTF 425 Mark ups

Technical Specification Section Title/Surveillance Description*	TSTF-425	FNP Units 1 and 2
Shutdown Margin (SDM)	**3.1.1**	**3.1.1**
Verify SDM to be within the limits specified in the COLR	3.1.1.1	3.1.1.1
Core Reactivity	**3.1.2**	**3.1.2**
Verify measured core reactivity is within ± 1% L1k1k of predicted values.	3.1.2.1	3.1.2.1
Rod Group Alignment Limits	**3.1.4**	**3.1.4**
Verify individual rod positions within alignment limit.	3.1.4.1	3.1.4.1
Verify rod freedom of movement (trippability) by moving each rod not fully inserted in the core *2* 10 steps in either direction.	3.1.4.2	3.1.4.2
Shutdown Bank Insertion Limits	**3.1.5**	**3.1.5**
Verify each shutdown bank is within the insertion limits specified in the COLR.	3.1.5.1	3.1.5.1
Control Bank Insertion Limits	**3.1.6**	**3.1.6**
Verify each control bank insertion is within the insertion limits specified in the COLR.	3.1.6.2	3.1.6.2
Verify sequence and overlap limits specified in the COLR are met for control banks not fully withdrawn from the core.	3.1.6.3	3.1.6.3
Physics Tests Exceptions – MODE 2	**3.1.8**	**3.1.8**
Verify the RCS lowest loop average temperature is ≥ [531]°F	3.1.8.2	3.1.8.2
Verify THERMAL POWER is ≤ 5% RTP.	3.1.8.3	3.1.8.3
Verify SDM is within the limits specified in the COLR.	3.1.8.4	3.1.8.4
$F_Q(Z)$	**3.2.1**	**3.2.1**
Verify $F_Q(Z)$ is within steady state limit.	3.2.1.1	3.2.1.1
Verify $F_Q(Z)$ is within the transient limit.	3.2.1.2	3.2.1.2
$F^N_{\Delta H}$	**3.2.2**	**3.2.2**
Verify $F^N_{\Delta H}$ is within limits specified in the COLR.	3.2.2.1	3.2.2.1
AFD	**3.2.3**	**3.2.3**
Verify AFD within limits for each OPERABLE excore channel	3.2.3.1	3.2.3.1
QPTR	**3.2.4**	**3.2.4**
Verify QPTR is within limit by calculation	3.2.4.1	3.2.4.1
Verify QPTR is within limit using the movable incore detectors.	3.2.4.2	---------------
Confirm that the normalized symmetric power distribution is consistent with QPTR.	---------------	3.2.4.2
RTS Instrumentation	**3.3.1**	**3.3.1**
Perform CHANNEL CHECK.	3.3.1.1	3.3.1.1
Compare results of calorimetric heat balance calculation to power range channel output.	3.3.1.2	3.3.1.2
Compare results of the incore detector measurements to Nuclear Instrumentation System (NIS) AFD.	3.3.1.3	3.3.1.3
Perform TADOT	3.3.1.4	3.3.1.4
Perform ACTUATION LOGIC TEST	3.3.1.5	3.3.1.5
Perform TADOT	---------------	3.3.1.6
Calibrate excore channels to agree with incore detector measurements.	3.3.1.6	3.3.1.9
Perform COT	3.3.1.7	3.3.1.7
Perform COT	3.3.1.8	3.3.1.8

Technical Specification Section Title/Surveillance Description*	TSTF-425	FNP Units 1 and 2
Perform TADOT	3.3.1.9	---------------
Perform CHANNEL CALIBRATION.	3.3.1.10	3.3.1.10
Perform CHANNEL CALIBRATION.	3.3.1.11	---------------
Perform CHANNEL CALIBRATION	3.3.1.12	---------------
Perform COT	3.3.1.13	3.3.1.11
Perform TADOT	3.3.1.14	3.3.1.12
Perform TADOT	3.3.1.15	3.3.1.12
Verify RTS RESPONSE TIME is within limits	3.3.1.16	3.3.1.14
ESFAS Instrumentation	**3.3.2**	**3.3.2**
Perform CHANNEL CHECK	3.3.2.1	3.3.2.1
Perform ACTUATION LOGIC TEST	3.3.2.2	3.3.2.2
Perform ACTUATION LOGIC TEST	3.3.2.3	---------------
Perform MASTER RELAY TEST	3.3.2.4	3.3.2.3
Perform COT	3.3.2.5	3.3.2.4
Perform SLAVE RELAY TEST	3.3.2.6	3.3.2.8
Perform TADOT	3.3.2.7	3.3.2.5
Perform TADOT	3.3.2.8	3.3.2.6
Perform CHANNEL CALIBRATION.	3.3.2.9	3.3.2.7
Verify ESFAS RESPONSE TIMES are within limit.	3.3.2.10	3.3.2.9
Perform TADOT	3.3.2.11	3.3.2.10
PAM Instrumentation	**3.3.3**	**3.3.3**
Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	3.3.3.1	3.3.3.1
Perform CHANNEL CALIBRATION	3.3.3.2	3.3.3.2
Remote Shutdown System	**3.3.4**	**3.3.4**
Perform CHANNEL CHECK	3.3.4.1	3.3.4.1
Verify each required control circuit and transfer switch is capable of performing the intended function	3.3.4.2	3.3.4.2
Perform CHANNEL CALIBRATION for each required instrumentation channel.	3.3.4.3	3.3.4.3
Perform TADOT of the reactor trip breaker open/closed indication.	3.3.4.4	---------------
LOP DG Start Instrumentation	**3.3.5**	**3.3.5**
Perform CHANNEL CHECK	3.3.5.1	---------------
Perform TADOT	3.3.5.2	3.3.5.1
Perform CHANNEL CALIBRATION	3.3.5.3	3.3.5.2
Verify ESF RESPONSE TIME within limit.	---------------	3.3.5.3
Containment Purge and Exhaust Isolation Instrumentation	**3.3.6**	**3.3.6**
Perform CHANNEL CHECK	3.3.6.1	3.3.6.1
Perform ACTUATION LOGIC TEST	3.3.6.2	3.3.6.2
Perform MASTER RELAY TEST	3.3.6.3	3.3.6.3
Perform ACTUATION LOGIC TEST	3.3.6.4	---------------
Perform MASTER RELAY TEST	3.3.6.5	---------------
Perform COT	3.3.6.6	3.3.6.4
Perform SLAVE RELAY TEST	3.3.6.7	3.3.6.5
Perform TADOT	3.3.6.8	3.3.6.6

Technical Specification Section Title/Surveillance Description*	TSTF-425	FNP Units 1 and 2
Perform CHANNEL CALIBRATION	3.3.6.9	3.3.6.7
Verify ESF RESPONSE TIME within limit.	--------------	3.3.6.8
CREFS Actuation Instrumentation	**3.3.7**	**3.3.7**
Perform CHANNEL CHECK	3.3.7.1	3.3.7.1
Perform COT	3.3.7.2	3.3.7.2
Perform ACTUATION LOGIC TEST	3.3.7.3	3.3.7.3
Perform MASTER RELAY TEST	3.3.7.4	3.3.7.4
Perform ACTUATION LOGIC TEST	3.3.7.5	--------------
Perform MASTER RELAY TEST	3.3.7.6	--------------
Perform SLAVE RELAY TEST	3.3.7.7	3.3.7.5
Perform TADOT	3.3.7.8	3.3.7.6
Perform CHANNEL CALIBRATION	3.3.7.9	3.3.7.7
PRF Actuation Instrumentation	--------------	**3.3.8**
Perform CHANNEL CHECK	--------------	3.3.8.1
Perform COT	--------------	3.3.8.2
Perform ACTUATION LOGIC TEST	--------------	3.3.8.3
Perform MASTER RELAY TEST	--------------	3.3.8.4
Perform SLAVE RELAY TEST	--------------	3.3.8.5
Perform TADOT	--------------	3.3.8.6
Perform CHANNEL CALIBRATION	--------------	3.3.8.7
FBACS Actuation Instrumentation	**3.3.8**	--------------
Perform CHANNEL CHECK	3.3.8.1	--------------
Perform COT	3.3.8.2	--------------
Perform ACTUATION LOGIC TEST	3.3.8.3	--------------
Perform TADOT	3.3.8.4	--------------
Perform CHANNEL CALIBRATION	3.3.8.5	--------------
BDPS	**3.3.9**	--------------
Perform CHANNEL CHECK	3.3.9.1	--------------
Perform COT	3.3.9.2	--------------
Perform CHANNEL CALIBRATION	3.3.9.3	--------------
RCS Pressure, Temperature, and Flow DNB Limits	**3.4.1**	**3.4.1**
Verify pressurizer pressure is greater than or equal to the limit specified in the COLR.	3.4.1.1	3.4.1.1
Verify RCS average temperature is less than or equal to the limit specified in the COLR.	3.4.1.2	3.4.1.2
Verify RCS total flow rate is **r** [284,000] gpm and greater than or equal to the limit specified in the COLR.	3.4.1.3	3.4.1.3
Verify by measurement that RCS total flow rate is within the limits.	--------------	3.4.1.3
Verify by precision heat balance that RCS total flow rate is ≥ [284,000] gpm and greater than or **equal** to the limit specified in the COLR.	3.4.1.4	--------------
Reactor Coolant System (RCS)	**3.4.2**	**3.4.2**
Verify RCS T_{avg} in each loop ≥ [541]°F.	3.4.2.1	3.4.2.1
RCS P/T Limits	**3.4.3**	**3.4.3**
Verify RCS pressure, RCS temperature, and RCS heatup and cooldown rates are within the limits specified in the PTLR.	3.4.3.1	3.4.3.1

Technical Specification Section Title/Surveillance Description*	TSTF-425	FNP Units 1 and 2
RCS Loops MODES 1 and 2	**3.4.4**	**3.4.4**
Verify each RCS loop is in operation.	3.4.4.1	3.4.4.1
RCS Loops MODES 3	**3.4.5**	**3.4.5**
Verify required RCS loops are in operation.	3.4.5.1	3.4.5.1
Verify steam generator secondary side water levels are ≥ [17]% for required RCS loops.	3.4.5.2	3.4.5.2
Verify correct breaker alignment and indicated power are available to each required pump.	3.4.5.3	3.4.5.3
RCS Loops MODES 4	**3.4.6**	**3.4.6**
Verify required RHR or RCS loop is in operation.	3.4.6.1	3.4.6.1
Verify SG secondary side water levels are ≥ [17]% for required RCS loops.	3.4.6.2	3.4.6.2
Verify correct breaker alignment and indicated power are available to each required pump.	3.4.6.3	3.4.6.3
RCS Loops – MODE 5, Loops Filled	**3.4.7**	**3.4.7**
Verify required RHR loop is in operation.	3.4.7.1	3.4.7.1
Verify SG secondary side water level is ≥ [17]% in required SGs.	3.4.7.2	3.4.7.2
Verify correct breaker alignment and indicated power are available to each required RHR pump.	3.4.7.3	3.4.7.3
RCS Loops – MODE 5, Loops Not Filled	**3.4.8**	**3.4.8**
Verify required RHR loop is in operation.	3.4.8.1	3.4.8.1
Verify correct breaker alignment and indicated power are available to each required RHR pump.	3.4.8.2	3.4.8.2
Pressurizer	**3.4.9**	**3.4.9**
Verify pressurizer water level is ≤ [92]%.	3.4.9.1	3.4.9.1
Verify capacity of each required group of pressurizer heaters is ≥ [125] **kW.**	3.4.9.2	3.4.9.2
Verify required pressurizer heaters are capable of being powered from an emergency power supply.	3.4.9.3	3.4.9.3
Pressurizer PORVs	**3.4.11**	**3.4.11**
Perform a complete cycle of each block valve.	3.4.11.1	3.4.11.1
Perform a complete cycle of each PORV.	3.4.11.2	3.4.11.2
Perform a complete cycle of each PORV using the backup PORV control system.	---------------	3.4.11.3
Perform a complete cycle of each solenoid air control valve and check valve on the air accumulators in PORV control systems.	3.4.11.3	---------------
Verify PORVs and block valves are capable of being powered from emergency power sources.	3.4.11.4	---------------
Check power available to the Unit Two PORV block valve	---------------	3.4.11.4
LTOP System	**3.4.12**	**3.4.12**
Verify a maximum of [one] [HPI] pump is capable of injecting into the RCS.	3.4.12.1	---------------
Verify a maximum of one charging pump is capable of injecting into the RCS.	3.4.12.2.	3.4.12.1
Verify each accumulator is isolated.	3.4.12.3	3.4.12.2

Technical Specification Section Title/Surveillance Description*	TSTF-425	FNP Units 1 and 2
Verify RHR suction valve is open for each required RHR suction relief valve	3.4.12.4	3.4.12.3
Verify required RCS vent ≥ [2.07] square inches open.	3.4.12.5	3.4.12.4
Verify each required RHR suction relief valve setpoint.	---------------	3.4.12.5
Verify PORV block valve is open for each required PORV.	3.4.12.6	---------------
Verify associated RHR suction isolation valve is locked open with operator power removed for each required RHR suction relief valve.	3.4.12.7	---------------
Perform a COT on each required PORV, excluding actuation.	3.4.12.8	---------------
Perform CHANNEL CALIBRATION for each required PORV actuation channel.	3.4.12.9	---------------
RCS Operational LEAKAGE	**3.4.13**	**3.4.13**
Verify RCS operational LEAKAGE is within limits by performance of RCS water inventory balance.	3.4.13.1	3.4.13.1
Verify primary to secondary LEAKAGE is ≤ 150 gallons per day through any one SG.	3.4.13.2	3.4.13.2
RCS PIV Leakage	**3.4.14**	**3.4.14**
Verify leakage from each RCS PIV is equivalent to ≤ 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm at an RCS pressure ≥ [2215] psig and ≤ [2255] psig.	3.4.14.1	3.4.14.1
Verify RHR System autoclosure interlock prevents the valves from being opened with a simulated or actual RCS pressure signal ≥ [425] psig.	3.4.14.2	3.4.14.2
Verify RHR System autoclosure interlock causes the valves to close automatically with a simulated or actual RCS pressure signal ≥ [600] psig.	3.4.12.3	3.4.14.3
RCS Leakage Detection Instrumentation	**3.4.15**	**3.4.15**
Perform CHANNEL CHECK of the required containment atmosphere radioactivity monitor.	3.4.15.1	3.4.15.1
Perform COT of the required containment atmosphere radioactivity monitor.	3.4.15.2	3.4.15.2
Perform CHANNEL CALIBRATION of the required containment sump monitor.	3.4.15.3	---------------
Perform CHANNEL CALIBRATION of the required containment atmosphere radioactivity monitor.	3.4.15.4	3.4.15.3
Perform CHANNEL CALIBRATION of the required containment air cooler condensate flow rate monitor.	3.4.15.5	3.4.15.4
RCS Specific Activity	**3.4.16**	**3.4.16**
Verify reactor coolant gross specific activity ≤ 100/E μCi/gm.	3.4.16.1	3.4.16.1
Verify reactor coolant DOSE EQUIVALENT I-131 specific activity ≤ 1 μCi/gm.	3.4.16.2	3.4.16.2
Determine E from a sample taken in MODE 1 after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours.	3.4.16.3	3.4.16.3
RCS Loop Isolation Valves	**3.4.17**	---------------

Technical Specification Section Title/Surveillance Description*	TSTF-425	FNP Units 1 and 2
Verify each RCS loop isolation valve is open and power is removed from each loop isolation valve operator	3.4.17.1	---------------
RCS Loops – Test Exceptions	**3.4.19**	---------------
Verify THERMAL POWER is < P-7.	3.4.19.1	---------------
Accumulators	**3.5.1**	**3.5.1**
Verify each accumulator isolation valve is fully open	3.5.1.1	3.5.1.1
Verify borated water volume in each accumulator is ≥ [7853 gallons ()% and 8171 gallons ()%]	3.5.1.2	3.5.1.2
Verify nitrogen cover pressure in each accumulator is ≥[385] psig and ≤[481] psig	3.5.1.3	3.5.1.3
Verify boron concentration in each accumulator is ≥ [1900] ppm and ≤ [2100] ppm.	3.5.1.4	3.5.1.4
Verify power is removed from each accumulator isolation valve operator when RCS pressure is ≥ [2000] psig	3.5.1.5	3.5.1.5
ECCS – Operating	**3.5.2**	**3.5.2**
Verify the following valves are in the listed position with power to the valve operator removed.	3.5.2.1	3.5.2.1
Verify each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	3.5.2.2	3.5.2.2
Verify ECCS piping is full of water.	3.5.2.3	---------------
Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	3.5.2.5	3.5.2.4
Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	3.5.2.6	3.5.2.5
Verify, for each ECCS throttle valve listed below each position stop is in the correct position.	3.5.2.7	3.5.2.6
Verify, by visual inspection, each ECCS train containment sump suction inlet is not restricted by debris and the suction inlet trash racks and screens show no evidence of structural distress or abnormal corrosion.	3.5.2.8	3.5.2.7
RWST	**3.5.4**	**3.5.4**
Verify RWST borated water temperature	3.5.4.1	3.5.4.1
Verify RWST borated water volume	3.5.4.2	3.5.4.2
Verify RWST boron concentration	3.5.4.3	3.5.4.3
Seal Injection Flow	**3.5.5**	**3.5.5**
Verify manual seal injection throttle valves are adjusted	3.5.5.1	3.5.5.1
Eccs Recirculation Fluid pH Control System	---------------	**3.5.6**
Perform a visual inspection of the ECCS Recirculation Fluid pH Control System and verify	---------------	3.5.6.1
BIT	**3.5.6**	---------------
Verify BIT borated water temperature is ≥ [145]°F.	3.5.6.1	---------------
Verify BIT borated water volume is ≥ [1100] gallons.	3.5.6.2	---------------
Verify BIT boron concentration is ≥ [20,000] ppm and ≤ [22,500] ppm.	3.5.6.3	---------------
Containment Air Locks (Atmospheric, Subatmospheric, Ice	**3.6.2**	**3.6.2**

Technical Specification Section Title/Surveillance Description*	TSTF-425	FNP Units 1 and 2
Condenser, and Dual)		
Perform required air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program.	3.6.2.1	3.6.2.1
Verify only one door in the air lock can be opened at a time.	3.6.2.2	3.6.2.2
Containment Isolation Valves (Atmospheric, Subatmospheric, Ice Condenser, and Dual)	**3.6.3**	**3.6.3**
Verify each [42] inch purge valve is sealed closed, except for one purge valve in a penetration flow path while in Condition E of this LCO.	3.6.3.1	3.6.3.1
Verify each [8] inch purge valve is closed, except when the [8] inch containment purge valves are open for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open.	3.6.3.2	--------------
Verify each containment isolation manual valve and blind flange that is located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	3.6.3.3	3.6.3.2
Cycle each weight or spring loaded check valve testable during operation through one complete cycle of full travel, and verify each check valve remains closed when the differential pressure in the direction of flow is ≤ [1.2] psid and opens when the differential pressure in the direction of flow is ≥ [1.2] psid and < [5.0] psid.	3.6.3.6	--------------
Perform leakage rate testing for containment purge valves with resilient seals.	3.6.3.7	3.6.3.5
Verify each automatic containment isolation valve that is not locked, sealed or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal.	3.6.3.8	3.6.3.6
Cycle each weight or spring loaded check valve not testable during operation through one complete cycle of full travel, and verify each check valve remains closed when the differential pressure in the direction of flow	3.6.3.9	--------------
Verify each [ ] inch containment purge valve is blocked to restrict the valve from opening	3.6.3.10	--------------
Verify the combined leakage rate for all shield building bypass leakage paths	3.6.3.11	--------------
Containment Pressure	**3.6.4**	**3.6.4**
Verify containment pressure is within limits.	3.6.4.1	3.6.4.1
Containment Air Temperature	**3.6.5**	**3.6.5**
Verify containment average air temperature is within limits	3.6.5.1	3.6.5.1
Containment Spray and Cooling Systems	--------------	**3.6.6**
Verify each containment spray manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	--------------	3.6.6.1
Operate each required containment cooling train fan unit	--------------	3.6.6.2
Verify each containment cooling train cooling water flow rate	--------------	3.6.6.3

Technical Specification Section Title/Surveillance Description*	TSTF-425	FNP Units 1 and 2
Verify each automatic containment spray valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	--------------	3.6.6.5
Verify each containment spray pump starts automatically on an actual or simulated actuation signal.	--------------	3.6.6.6
Verify each containment cooling train starts automatically on an actual or simulated actuation signal.	--------------	3.6.6.7
Verify each spray nozzle is unobstructed.	--------------	3.6.6.8
Spray Additive System (Atmospheric, Subatmospheric, Ice Condenser, and Dual)	**3.6.7**	--------------
Verify each spray additive manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	3.6.7.1	--------------
Verify spray additive tank solution volume	3.6.7.2	--------------
Verify spray additive tank [NaOH] solution	3.6.7.3	--------------
Verify each spray additive automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	3.6.7.4	--------------
Verify spray additive flow [rate] from each solution's flow path.	3.6.7.5	--------------
Shield Building (Dual and Ice Condenser)	**3.6.8**	--------------
Verify annulus negative pressure is > [5] inches water gauge.	3.6.8.1	--------------
Verify shield building structural integrity by performing a visual inspection of the exposed interior and exterior surfaces of the shield building.	3.6.8.2	--------------
Verify the shield building can be maintained at a pressure equal to or more negative than [-0.5] inch water gauge in the annulus by one Shield Building Air Cleanup System train with final flow ≤ [ ] cfm within [22] seconds after a start signal.	3.6.8.3	--------------
HMS (Atmospheric, Ice Condenser, and Dual)	**3.6.9**	**3.6.8**
Operate each HMS train for ≥ 15 minutes.	3.6.9.1	3.6.8.1
Verify each HMS train flow rate on slow speed is ≥ [4000] cfm	3.6.9.2	3.6.8.2
Verify each HMS train starts on an actual or simulated actuation signal.	3.6.9.3	3.6.8.3
HIS (Ice Condenser)	**3.6.10**	--------------
Energize each HIS train power supply breaker and verify ≥ [32] ignitors are energized in each train	3.6.10.1	--------------
Verify at least one hydrogen ignitor is OPERABLE in each containment region.	3.6.10.2	--------------
Energize each hydrogen ignitor and verify temperature is ≥ [1700]°F.	3.6.10.3	--------------
Reactor Cavity Hydrogen Dilution System	--------------	**3.6.9**
Operate each Reactor Cavity Hydrogen Dilution train	--------------	3.6.9.1
Verify each Reactor Cavity Hydrogen Dilution train	--------------	3.6.9.2
ICS (Atmospheric and Subatmoapheric)	**3.6.11**	--------------
Operate each ICS train for ≥10 continuous hours with heaters	3.6.11.1	--------------

Technical Specification Section Title/Surveillance Description*	TSTF-425	FNP Units 1 and 2
operating or (for systems without heaters) ≥ 15 minutes].		
Verify each ICS train actuates on an actual or simulated actuation signal.	3.6.11.3	--------------
Verify each ICS filter bypass damper can be opened	3.6.11.4	--------------
SBACE (Dual and Ice Condenser)	**3.6.13**	--------------
Operate each SBACS train for [≥ 10 continuous hours with heaters operating or (for systems without heaters) ≥ 15 minutes]	3.6.13.1	--------------
Verify each SBAC train actuates on an actual or simulated actuation signal	3.6.13.3	--------------
Verify each SBACS filter bypass damper can be opened.	3.6.13.4	--------------
Verify each SBACS train flow rate is ≥ [ ] cfm.	3.6.13.5	--------------
ARS (Ice Condenser)	**3.6.14**	--------------
Verify each ARS fan starts on an actual or simulated actuation signal	3.6.14.1	--------------
Verify, with the ARS fan dampers closed, each ARS fan motor	3.6.14.2	--------------
Verify, with the ARS fan not operating,	3.6.14.3	--------------
Verify each motor operated valve in the hydrogen collection header that is not locked, sealed, or otherwise secured in position, opens ...	3.6.14.4	--------------
Ice Bed (Ice Condenser)	**3.6.15**	--------------
Verify maximum ice bed temperature is ≤ [27]°F.	3.6.15.1	--------------
Verify total mass of stored ice ...	3.6.15.2	--------------
Verify that the ice mass of each basket sampled	3.6.15.3	--------------
Verify, by visual inspection, accumulation of ice on structural members	3.6.15.4	--------------
Verify, by chemical analysis of the stored ice in at least one randomly selected ice basket from each ice condenser bay, that ice bed:	3.6.15.5	--------------
Visually inspect, for detrimental structural wear, cracks, corrosion, or other damage, two ice baskets from each group of bays	3.6.15.6	--------------
Verify, by chemical analysis, that ice added to the ice condenser meets the boron concentration and pH requirements of SR 3.6.15.5.	3.6.15.7	--------------
Ice Condenser Doors (Ice Condenser)	**3.6.16**	--------------
Verify all inlet doors indicate closed by the Inlet Door Position Monitoring System.	3.6.16.1	--------------
Verify, by visual inspection, each intermediate deck door is closed and not impaired by ice, frost, or debris.	3.6.16.2	--------------
Verify, by visual inspection, each inlet door is not impaired by ice, frost, or debris.	3.6.16.3	--------------
Verify torque	3.6.16.4	--------------
Perform a torque test	3.6.16.5	--------------
Verify for each intermediate deck door	3.6.16.6	--------------
Verify, by visual inspection, each top deck [door]	3.6.16.7	--------------
Divider Barrier Integrity (Ice Condenser)	**3.6.17**	--------------

Technical Specification Section Title/Surveillance Description*	TSTF-425	FNP Units 1 and 2
Verify, by visual inspection, that the seals and sealing surfaces of each personnel access door and equipment hatch	3.6.17.2	--------------
Remove two divider barrier seal test coupons and verify	3.6.17.4	--------------
Visually inspect	3.6.17.5	--------------
Containment Recirculation Drains (Ice Condenser)	**3.6.18**	--------------
Verify, by visual inspection	3.6.18.1	--------------
Verify for each ice condenser floor drain	3.6.18.2	--------------
MSIVs	**3.7.2**	**3.7.2**
Verify each MSIV actuates	3.7.2.2	3.7
MFIVs and MFRVs and [Associated Bypass Valves]	**3.7.3**	**3.7.3**
Verify each MFIV, MFRV	3.7.3.2	--------------
ARVs	--------------	**3.7.4**
Verify one complete cycle of each ARV.	--------------	3.7.4.1
Verify one complete cycle of at least one manual isolation valve in each ARV Line.	--------------	3.7.4.2
ADVs	**3.7.4**	--------------
Verify one complete cycle of each ADV.	3.7.4.1	--------------
Verify one complete cycle of each ADV block valve.	3.7.4.2	--------------
AFW System	**3.7.5**	**3.7.5**
Verify each AFW manual, power operated, and automatic valve in each water flow path,	3.7.5.1	3.7.5.1
Verify each AFW automatic valve that is not locked	3.7.5.3	3.7.5.3
Verify each AFW pump starts automatically	3.7.5.4	3.7.5.4
Verify the turbine driven AFW pump steam admission valves open when air is supplied from their respective air accumulators.	--------------	3.7.5.5
CST	**3.7.6**	**3.7.6**
Verify the CST level	3.7.6.1	3.7.6.1
CCW System	**3.7.7**	**3.7.7**
Verify each CCW manual, power operated,'and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	3.7.7.1	3.7.7.1
Verify each CCW automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	3.7.7.2	3.7.7.2
Verify each CCW pump starts automatically on an actual or simulated actuation signal.	3.7.7.3	3.7.7.3
SWS	**3.7.8**	**3.7.8**
Verify each SWS manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	3.7.8.1	3.7.8.1
Verify each SWS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	3.7.8.2	3.7.8.2
Verify each SWS pump starts automatically on an actual or simulated actuation signal.	3.7.8.3	3.7.8.3

Technical Specification Section Title/Surveillance Description*	TSTF-425	FNP Units 1 and 2
Verify the integrity of the SWS buried piping by visual inspection of the ground area.	--------------	3.7.8.4
UHS	**3.7.9**	**3.7.9**
Verify water level of UHS	3.7.9.1	3.7.9.1
Verify average water temperature of UHS	3.7.9.2	3.7.9.2
Operate each cooling tower fan	3.7.9.3	--------------
Verify each cooling tower fan starts automatically on an actual or simulated actuation signal.	3.7.9.4	--------------
Control Room	--------------	**3.7.10**
Operate each CREFS Pressurization train	--------------	3.7.10.1
Verify each CREFS train actuates	--------------	3.7.10.3
Verify CRE Δp within limits in the Control Room IntegrityProgram (CRIP).	--------------	3.7.10.4
CREFS	**3.7.10**	--------------
Operate each CREFS train	3.7.10.1	--------------
Verify each CREFS train actuates	3.7.10.3	--------------
Verify one CREFS train can maintain positive pressure	3.7.10.4	--------------
CRACS	--------------	**3.7.11**
Verify each CRACS train	--------------	3.7.11.1
CREATCS	**3.7.11**	--------------
Verify each CREATCS train	3.7.11.1	--------------
PRF	--------------	**3.7.12**
Verify two PRF trains aligned to the SFPR.	--------------	3.7.12.1
Operate each PRF train	--------------	3.7.12.2
Verify each PRF train actuates	--------------	3.7.12.4
Verify one PRF train can maintain a pressure	--------------	3.7.12.5
Verify one PRF train can maintain a slightly negative pressure	--------------	3.7.12.6
ECCS PREACS	**3.7.12**	--------------
Operate each ECCS PREACS train	3.7.12.1	--------------
Verify each ECCS PREACS train actuates	3.7.12.3	--------------
Verify one ECCS PREACS train can maintain a pressure	3.7.12.4	--------------
Verify each ECCS PREACS filter bypass damper can be closed	3.7.12.5	--------------
FBACS	**3.7.13**	--------------
Operate each FBACS train	3.7.13.1	--------------
Verify each FBACS train actuates	3.7.13.3	--------------
Verify one FBACS train can maintain a pressure	3.7.13.4	--------------
Verify each FBACS filter bypass damper can be closed	3.7.13.5	--------------
PREACS	**3.7.14**	--------------
Operate each PREACS train	3.7.14.1	--------------
Verify each PREACS train actuates	3.7.14.3	--------------
Verify one PREACS train can maintain a pressure	3.7.14.4	--------------
Verify each PREACS filter bypass damper can be closed	3.7.14.5	--------------
Fuel Storage Pool Water Level	**3.7.15**	**3.7.13**
Verify the fuel storage pool water level	3.7.15.1	3.7.13.1
Fuel Storage Pool Boron Concentration	**3.7.16**	**3.7.14**
Verify the fuel storage pool boron concentration is within limit.	3.7.16.1	3.7.14.1

Technical Specification Section Title/Surveillance Description*	TSTF-425	FNP Units 1 and 2
Secondary Specific Activity	**3.7.18**	**3.7.16**
Verify the specific activity	3.7.18.1	3.7.16.1
ESF Room Coolers	---------------	**3.7.19**
Verify each ESF Room Cooler system manual valve servicing safety-related equipment that is not locked, sealed, or otherwise secured in position, is in the correct position.	---------------	3.7.19.1
Verify each ESF Room Cooler fan starts automatically on an actual or simulated actuation signal.	---------------	3.7.19.2
AC Sources - Operating	**3.8.1**	**3.8.1**
Verify correct breaker alignment and indicated power availability for each [required] offsite circuit.	3.8.1.1	3.8.1.1
Verify each DG starts from standby conditions	3.8.1.2	3.8.1.2
Verify each DG is synchronized and loaded and operates	3.8.1.3	3.8.1.3
Verify each day tank	3.8.1.4	3.8.1.4
Check for and remove accumulated water from each day tank	3.8.1.5	---------------
Verify the fuel oil transfer system operates	3.8.1.6	3.8.1.5
Verify each DG starts from standby	3.8.1.7	3.8.1.6
Verify [automatic [and] manual] transfer of AC power sources from the normal offsite circuit to each alternate [required] offsite circuit.	3.8.1.8	3.8.1.7
Verify each DG rejects a load greater than or equal to its associated single largest post-accident load	3.8.1.9	3.8.1.8
Verify each DG does not trip and voltage is maintained	3.8.1.10	---------------
Verify on an actual or simulated loss of offsite power signal	3.8.1.11	3.8.1.9
Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition	3.8.1.12	3.8.1.10
Verify each DG's noncritical automatic trips are bypassed on [actual or simulated loss of voltage signal on the emergency bus concurrent with an actual or simulated ESF actuation signal]	3.8.1.13	---------------
Verify each DG's automatic trips are bypassed	---------------	3.8.1.11
Verify each DG operates	3.8.1.14	3.8.1.12
Verify each DG starts and achieves…	3.8.1.15	3.8.1.13
Verify each DG	3.8.1.16	3.8.1.14
Verify, with a DG operating in test mode and connected to its bus, an actual or simulated ESF actuation signal overrides the	3.8.1.17	3.8.1.15

Technical Specification Section Title/Surveillance Description*	TSTF-425	FNP Units 1 and 2
test mode		
Verify interval between each sequenced load block	3.8.1.18	3.8.1.16
Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal	3.8.1.19	3.8.1.17
Verify each DG does not trip and voltage	--------------	3.8.1.18
Verify when started simultaneously from standby condition	3.8.1.20	3.8.1.19
Diesel Fuel Oil, Lube Oil, and Starting Air	**3.8.3**	**3.8.3**
Verify each fuel oil storage tank	3.8.3.1	3.8.3.1
Verify lubricating oil inventory	3.8.3.2	3.8.3.2
Verify each DG air start receiver pressure	3.8.3.4	3.8.3.4
Check for and remove accumulated water from each fuel oil storage tank.	3.8.3.5	--------------
DC Sources - Operating	**3.8.4**	**3.8.4**
Verify battery terminal voltage	3.8.4.1	3.8.4.1
Verify no visible corrosion at battery terminal	--------------	3.8.4.2
Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration.	--------------	3.8.4.3
Remove visible terminal corrosion, verify battery cell- to-cell and terminal connections are coated with anti-corrosion material.	--------------	3.8.4.4
Verify post-to-post battery connection resistance	--------------	3.8.4.5
Verify each required Auxiliary Building battery	--------------	3.8.4.6
Verify battery capacity	--------------	3.8.4.7
Verify each battery charge	3.8.4.2	--------------
Verify battery capacity	3.8.4.3	3.8.4.8
Battery Cell Parameters	--------------	**3.8.6**
Verify battery cell parameters	--------------	3.8.6.1
Verify battery cell parameters	--------------	3.8.6.2
Verify average electrolyte temperature of representative cells	--------------	3.8.6.3
Battery Parameters	**3.8.6**	--------------
Verify each battery float current	3.8.6.1	--------------
Verify each battery pilot cell voltage	3.8.6.2	--------------
Verify each battery connected cell electrolyte level	3.8.6.3	--------------
Verify each battery pilot cell temperature	3.8.6.4	--------------
Verify each battery connected cell voltage	3.8.6.5	--------------
Verify battery capacity	3.8.6.6	--------------
Inverters – Operating	**3.8.7**	**3.8.7**
Verify correct inverter voltage, [frequency]. And alignment to required AC vital buses	3.8.7.1	3.8.7.1
Inverters – Shutdown	**3.8.8**	**3.8.8**
Verify correct inverter voltage, [frequency,] and alignments to required AC vital buses.	3.8.8.1	3.8.8.1
Distribution Systems – Operating	**3.8.9**	**3.8.9**
Verify correct breaker alignments and voltage to [required]	3.8.9.1	3.8.9.1

Technical Specification Section Title/Surveillance Description*	TSTF-425	FNP Units 1 and 2
AC, DC, and AC vital bus electrical power distribution subsystems.		
Distribution Systems – Shutdown	**3.8.10**	**3.8.10**
Verify correct breaker alignments and voltage to required AC, DC, and AC vital bus electrical power distribution subsystems.	3.8.10.1	3.8.10.1
Boron Concentration	**3.9.1**	**3.9.1**
Verify boron concentration is within the limit specified in the COLR.	3.9.1.1	3.9.1.1
Unborated Water Source Isolation Water	**3.9.2**	--------------
Verify each valve that isolates unborated water sources is secured in the closed position.	3.9.2.1	--------------
Nuclear Instrumentation	**3.9.3**	**3.9.2**
Perform CHANNEL CHECK	3.9.3.1	3.9.2.1
Perform CHANNEL CALIBRATION	3.9.3.2	3.9.2.2
Containment Penetrations	**3.9.4**	**3.9.3**
Verify each required containment penetration is in the required status.	3.9.4.1	3.9.3.1
Verify each required containment purge and exhaust valve actuates to the isolation position on an actual or simulated actuation signal.	3.9.4.2	3.9.3.2
Verify the capability to install the equipment hatch.	--------------	3.9.3.3
RHR and Coolant Circulation - High Water Level	**3.9.5**	**3.9.4**
Verify one RHR loop is in operation and circulating reactor coolant at a flow rate	3.9.5.1	3.9.4.1
RHR and Coolant Circulation - Low Water Level	**3.9.6**	**3.9.5**
Verify one RHR loop is in operation and circulating reactor coolant at a flow rate	3.9.6.1	3.9.5.1
Verify correct breaker alignment and indicated power available to the required RHR pump that is not in operation.	3.9.6.2	3.9.5.2
Refueling Cavity Water Level	**3.9.7**	**3.9.6**
Verify refueling cavity water level	3.9.7.1	3.9.6.1

The Technical Specification (TS) Section Title/Surveillance Description portion of this Enclosure is a summary description of the referenced TSTF 425/ FNP TS Surveillances which is provided for information.