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Dominion®

October 22, 2014

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

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NSSL/MLC	R0
Docket No.	50-336
License No.	DPR-65

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 2
LICENSE AMENDMENT REQUEST TO RELOCATE TS SURVEILLANCE FREQUENCIES TO LICENSEE CONTROLLED PROGRAM IN ACCORDANCE WITH TSTF-425, REVISION 3

In accordance with the provisions of 10 CFR 50.90, Dominion Nuclear Connecticut, Inc. (DNC) is submitting a request for an amendment to the technical specifications (TS) for Millstone Power Station Unit 2 (MPS2). The proposed amendment would modify TSs by relocating specific surveillance frequencies to a licensee-controlled program with the adoption of Technical Specification Task Force (TSTF)–425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control – Risk-Informed Technical Specification Task Force (RITSTF) Initiative 5b." Additionally, the change would add a new program, the Surveillance Frequency Control Program (SFCP), to TS Section 6, Administrative Controls. The changes are consistent with NRC-approved Industry/TSTF Standard Technical Specifications (STS) change TSTF-425, Revision 3, (ADAMS Accession No. ML090850642). The Federal Register notice published on July 6, 2009 (74 FR 31996), announced the availability of this TS improvement.

Attachment 1 provides a description and assessment of the proposed changes. Attachment 2 includes DNC documentation with regard to Probabilistic Risk Assessment technical adequacy. Attachment 4 provides a cross-reference between the NUREG-1432 surveillances included in TSTF-425 versus the MPS2 surveillances included in this amendment request. Attachments 3 and 6 provide the MPS2 marked-up TS pages and TS Bases pages, respectively. The marked-up TS Bases pages are provided for information only. The changes to the affected TS Bases pages will be incorporated in accordance with the TS Bases Control Program upon approval of this amendment request.

As detailed in Attachment 5, the proposed amendment does not involve a Significant Hazards Consideration pursuant to the provisions of 10 CFR 50.92. The Facility Safety Review Committee has reviewed and concurred with the determinations herein.

Issuance of this amendment is requested no later than October 22, 2015 with the amendment to be implemented within 90 days.

In accordance with 10 CFR 50.91(b), a copy of this license amendment request is being provided to the State of Connecticut.

Should you have any questions in regard to this submittal, please contact Wanda Craft at (804) 273-4687.

Sincerely,

Mark D. Sartain
Vice President – Nuclear Engineering

Vicki L. Hull
NOTARY PUBLIC
Commonwealth of Virginia
Reg. # 140542
My Commission Expires May 31, 2018

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Mark D. Sartain, who is Vice President - Nuclear Engineering of Dominion Nuclear Connecticut, Inc. He has affirmed before me that he is duly authorized to execute and file the foregoing document in behalf of that company, and that the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 22nd day of October, 2014.

My Commission Expires: May 31, 2018.

Vicki L. Hull
Notary Public

Attachments:

1. Description and Assessment of Proposed Changes
2. Documentation of PRA Technical Adequacy
3. Marked-up Technical Specifications Changes
4. Cross-References - NUREG-1432 to MPS2 TS Surveillance Frequencies Removed
5. Significant Hazards Consideration Determination
6. Marked-Up Technical Specifications Bases Changes (For Information Only)

Commitments made in this letter: None

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ATTACHMENT 1

Description and Assessment of Proposed Changes

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 2

DESCRIPTION AND ASSESSMENT OF PROPOSED CHANGES

1.0 DESCRIPTION

In accordance with the provisions of 10 CFR 50.90, Dominion Nuclear Connecticut, Inc. (DNC) submits a request for an amendment to the technical specifications (TSs) for Millstone Power Station Unit 2 (MPS2). The proposed amendment would modify TSs by relocating specific surveillance frequencies to a licensee-controlled program with the adoption of Technical Specification Task Force (TSTF)–425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control - Risk Informed Technical Specification Task Force (RITSTF) Initiative 5b." Additionally, the change would add a new program, the Surveillance Frequency Control Program (SFCP), to TS Section 6, Administrative Controls. The changes are consistent with NRC-approved Industry/TSTF Standard Technical Specifications (STS) change TSTF-425, Revision 3, (ADAMS Accession No. ML090850642). The Federal Register notice published on July 6, 2009 (74 FR 31996), announced the availability of this TS improvement.

2.0 ASSESSMENT

2.1 Applicability of Published Safety Evaluation

DNC has reviewed the safety evaluation provided in Federal Register Notice 74 FR 31996, dated July 6, 2009. 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).

Attachment 2 includes DNC documentation with regard to the technical adequacy of the probabilistic risk assessment (PRA) consistent with the requirements of Regulatory Guide (RG) 1.200, Revision 1 (ADAMS Accession No. ML070240001), Section 4.2. Attachment 2 also describes the PRA models without NRC-endorsed standards, including documentation of the quality characteristics of those models in accordance with RG 1.200.

DNC has concluded that the justifications presented in the TSTF proposal and the safety evaluation prepared by the NRC staff are applicable to MPS2 and justify this amendment to incorporate the changes to the MPS2 TSs.

2.2 Optional Changes and Variations

The proposed amendment is consistent with the STS changes described in TSTF-425, Revision 3. However, DNC proposes variations or deviations from TSTF-425, as identified below.

1. Revised (typed) TS pages are not included in this amendment request given the number of TS pages affected, the straightforward nature of the proposed changes, and outstanding MPS2 amendment requests that may impact some of the same TS pages. Providing only mark-ups of the proposed TS changes satisfies the requirements of 10 CFR 50.90 in that the mark-ups fully describe the changes desired. This represents an administrative deviation from the NRC staff's model application dated July 6, 2009 (74 FR 31996) with no impact on the NRC staff's model safety evaluation published in the same Federal Register notice. As a result of this deviation, the contents and numbering of the attachments for this amendment request differ from the attachments specified in the NRC staff's model application. The proposed TS Bases changes are provided to the NRC for information only.

2. The inserts provided in TSTF-425 are revised to fit the MPS2 TS format.

   The TSTF-425 insert for each relocated surveillance frequency is changed from "in accordance with the Surveillance Frequency Control Program to "at the frequency specified in the Surveillance Frequency Control Program."

   The insert provided in TSTF-425 to replace text describing the basis for each frequency relocated to the SFCP has been revised from "The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program" to read "The(se) Surveillance Frequency(ies) is/are controlled under the Surveillance Frequency Control Program." This deviation is consistent with NRC guidance. After NRC approval of the license amendment request (LAR) and as part of the LAR implementation, the existing MPS2 Bases information describing the basis for the relocated surveillance frequencies will also be relocated to a licensee-controlled program with the relocated surveillance frequencies.

   In addition, other editorial changes to the existing TS wording and/or text inserts are being made. These administrative/editorial deviations of the TSTF-425 inserts and the existing TS wording are made to fit the MPS2 TS format.

   The approved programs for MPS2 are described in Section 6.0, "Administrative Controls," of the MPS2 TSs. The title descriptor in Table 4.7-2 (i.e., Secondary Coolant System Specific Activity Sample and Analysis "Program.") may be misconstrued since there are no program requirements for secondary coolant specific activity sampling and analysis in Section 6.0 of the MPS2 TSs. To preclude future misunderstanding, DNC proposes to delete the word 'Program" from the title in Table 4.7-2. This change is reflected in the mark-up for Table 4.7-2 provided in Attachment 3.

3. Attachment 4 provides a cross-reference between the NUREG-1432 surveillances included in TSTF-425 versus the MPS2 surveillances included in this amendment

request. Attachment 4 includes a summary description of the referenced TSTF-425 (NUREG-1432)/MPS2 TS surveillances which is provided for information purposes only and is not intended to be a verbatim description of the TS surveillances. This cross reference highlights the following:

a. NUREG-1432 surveillances included in TSTF-425 and corresponding MPS2 surveillances with plant-specific surveillance numbers,

b. NUREG-1432 surveillances included in TSTF-425 that are not contained in the MPS2 TSs, and

c. MPS2 plant-specific surveillances that are not contained in NUREG-1432 and, therefore, are not included in the TSTF-425 mark-ups.

Since the MPS2 TSs are custom TSs, the applicable surveillance requirements and associated Bases numbers differ from the STSs presented in NUREG-1432 and TSTF-425, but with no impact on the NRC staff's model safety evaluation dated July 6, 2009 (74 FR 31996).

For NUREG-1432 surveillances not contained in MPS2 TSs, the corresponding mark-ups included in TSTF-425 for these surveillances are not applicable to MPS2. This is an administrative deviation from TSTF-425 with no impact on the NRC staff's model safety evaluation dated July 6, 2009 (74 FR 31996).

For MPS2 plant-specific surveillances not included in the NUREG-1432 markups provided in TSTF-425, DNC has determined that since these surveillances involve fixed periodic frequencies, relocation of these frequencies is consistent with 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. In accordance with TSTF-425, changes to the frequencies for these surveillances would be controlled under the SFCP.

There are several instances in the MPS2 TSs where the words 'and' and 'or' appear at the end of a surveillance requirement. In most cases, these words are not intended to be logical connectors which place the constraints of the preceding surveillance requirement (often times event-driven) on the remaining portion of the surveillance but rather are used for purposes of readability and flow. This situation applies to the following SRs: 4.1.1.2, 4.1.3.1.1, 4.1.3.1.4b, 4.2.3.2b, 4.5.1d, 4.9.16 and 4.9.17.

As currently written, SR 4.2.1.3b does not specify a surveillance frequency, however; it is performed at least once per 31 days, as required by its applicable station surveillance procedure. As a result, the markup for this SR references the SFCP in accordance with TSTF-425.

The SFCP provides the necessary administrative controls to require that surveillances related to testing, calibration, and inspection are conducted at a frequency to assure the necessary quality of systems and components is maintained, facility operation will be within safety limits, and the limiting conditions for operation will be met. Changes to frequencies in the SFCP would be evaluated using the methodology and PRA guidelines contained in NEI 04-10, Revision 1, "Risk-Informed Technical Specifications Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies" (ADAMS Accession No. ML071360456), as approved by NRC letter dated September 19, 2007 (ADAMS Accession No. ML072570267). The NEI 04-10, Revision 1 methodology includes qualitative considerations, risk analyses, sensitivity studies and bounding analyses, as necessary, and recommended monitoring of the performance of structures, systems, and components (SSCs) for which frequencies are changed to assure that reduced testing does not adversely impact the SSCs. In addition, the NEI 04-10, Revision 1 methodology satisfies the five key safety principles specified in RG 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," dated August 1998, relative to changes in surveillance frequencies.

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration

DNC has reviewed the proposed no significant hazards consideration (NSHC) determination published in the Federal Register dated July 6, 2009 (74 FR 31996). DNC has concluded that the proposed NSHC presented in the Federal Register notice is applicable to MPS2, and is provided as Attachment 5 to this amendment request, which satisfies the requirements of 10 CFR 50.91 (a).

3.2 Applicable Regulatory Requirements

A description of the proposed changes and their relationship to applicable regulatory requirements is provided in TSTF-425, Revision 3 and the NRC's model safety evaluation published in the Notice of Availability dated July 6, 2009 (74 FR 31996). DNC has concluded that the relationship of the proposed changes to the applicable regulatory requirements presented in the Federal Register notice is applicable to MPS2.

3.3 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

4.0 ENVIRONMENTAL CONSIDERATION

DNC has reviewed the environmental consideration included in the NRC staff's model safety evaluation published in the Federal Register on July 6, 2009 (74 FR 31996). DNC has concluded that the staff's findings presented therein are applicable to MPS2, and the determination is hereby incorporated by reference for this application.

5.0 REFERENCES

1. TSTF-425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control - RITSTF Initiative 5b," March 18, 2009 (ADAMS Accession Number: ML090850642).

2. NRC Notice of Availability of Technical Specification Improvement to Relocate Surveillance Frequencies to Licensee Control - Risk-Informed Technical Specification Task Force (RITSTF) Initiative 5b, Technical Specification Task Force - 425, Revision 3, published on July 6, 2009 (74 FR 31996).

3. NEI 04-10, Revision 1, "Risk-Informed Technical Specifications Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies," April 2007 (ADAMS Accession Number: ML071360456).

4. Regulatory Guide 1.200, Revision 1, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," January 2007 (ADAMS Accession Number: ML070240001).

5. Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," dated August 1998 (ADAMS Accession No. ML003740176).

ATTACHMENT 2

Documentation of Probabilistic Risk Assessment (PRA) Technical Adequacy

**DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 2**

Documentation of Probabilistic Risk Assessment (PRA) Technical Adequacy

Quality of the PRA

Regulatory Guide (RG) 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," provides the regulatory guidance for assessing the technical adequacy of a probabilistic risk assessment (PRA) model. Revision 2 of this RG (Reference 1) endorses (with comments and qualifications) the use of American Society of Mechanical Engineers (ASME)/American Nuclear Society (ANS) RA-Sa-2009, "Addenda to ASME RA-S-2008 Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications," (Reference 2), NEI 00-02, "PRA Peer Review Process Guidelines," (Reference 3), and NEI 05-04, "Process for Performing Follow-On PRA Peer Reviews Using the ASME PRA Standard" (Reference 4). Revision 1 of this RG (Reference 5) had endorsed the internal events PRA standard ASME RA-Sb-2005, "Addenda to ASME RA-S-2002 Standard for Probabilistic Risk Assessment for Nuclear Power Plant Applications," (Reference 6). For the internal events PRA, there are no significant technical differences in the standard requirements between Revision 1 and Revision 2 of RG 1.200, and therefore assessments using the internal events standard of Revision 1 are acceptable.

To support approval and implementation of a Surveillance Frequency Control Program (SFCP) at Millstone Power Station Unit 2 (MPS2), Dominion Nuclear Connecticut, Inc. (DNC) evaluated the MPS2 PRA model using the guidance of RG 1.200 to ensure it is capable of determining the change in risk due to changes to surveillance frequencies of systems, structures and components (SSCs), using plant-specific data and models. Capability Category II (CC II) of the standard is required by NEI 04-10 (Reference 7) for the internal events PRA. Any identified deficiencies to those requirements are further assessed to determine impacts to proposed changes to surveillance frequencies, including the use of sensitivity studies, where appropriate.

The MPS2 internal events PRA model received a formal industry peer review in 2000. The purpose of the PRA peer review process is to provide a method for establishing the technical quality of a PRA model for the spectrum of potential risk-informed plant licensing applications for which the PRA model may be used. The PRA peer review process used a team composed of industry PRA and system analysts, each with significant expertise in both PRA development and PRA applications. This team provided both an objective review of the PRA technical elements and a subjective assessment, based on their PRA experience, regarding the acceptability of the PRA elements. The team used a set of checklists as a framework within which to evaluate the scope, comprehensiveness, completeness, and fidelity of the PRA products available. The MPS2 review team used the "Combustion Engineering Owner's Group (CEOG) Peer Review Process Guidance" as the basis for the review. This review was performed prior to issuance of an ASME PRA standard. With the exception of one significance level B finding and observation (F&O), the significance level A and B F&Os from this peer review have been resolved. NEI 05-04 characterizes only significance level A and B F&Os as "findings."

In 2007, DNC performed a self-assessment of the MPS2 internal events PRA model using the ASME PRA standard, ASME RA-Sb-2005, and the guidance in RG 1.200, Revision 1. This self-assessment was re-performed in 2011 using the updated ASME PRA standard, ASME/ANS RA-Sa-2009. Subsequently, in September 2012, Westinghouse completed a focused scope peer review of the upgraded PRA model of record, M209A, to evaluate its compliance with ASME/ANS RA-Sa-2009 and RG 1.200, Revision 2.

Open items and findings resulting from the CEOG industry peer review, DNC's self-assessments, and the Westinghouse focused scope peer review, are provided in Table 1. These open items and findings represent the gaps between DNC's internal events PRA model and the PRA standard supporting requirements (SRs). For each gap, the table provides the ASME/ANS SR, Review Type and Issue Description, Disposition, and Impact to MPS2 PRA Model and Resolution. Modeling gaps are classified as No Impact, Low Risk Significant, or Risk Significant to the application (based on their Fussell-Vesely (FV) importance value using a threshold value of 5E-3).

The findings identified in the 2012 peer review and the significance level A and B F&Os identified in the 2000 peer review that have been resolved are available for review.

PRA Model Maintenance and Update

The MPS2 PRA model of record, M209Ac, and associated documentation have been maintained as a living program. The model is routinely updated approximately every 3 to 5 years to reflect the current plant configuration, additional plant operating history, and new component failure data. The M209Ac PRA model is highly detailed, including a wide variety of initiating events, modeled systems, operator actions, and common cause events. The PRA model quantification process used for the MPS2 PRA is based on the event tree/fault tree methodology, which is a well-known methodology in the industry.

Dominion employs a structured approach to establishing and maintaining the technical adequacy and plant fidelity of the PRA models for the operating Dominion nuclear generating sites. This approach includes both a proceduralized PRA maintenance and update process, and the use of self-assessments and independent peer reviews. The following information describes this approach as it applies to the MPS2 PRA model.

There are several procedures and GARDs (Guidance and Reference Documentation) that govern Dominion's PRA program. These documents define the process to

delineate the types of calculations to be performed, the computer codes and models used, and the process (or technique) by which each calculation is performed.
The NF-AA-PRA series of GARDs and procedures provide a detailed description of the methodology necessary to:

- Perform PRA for the Dominion nuclear fleet, including Millstone, North Anna and Surry Power Stations
- Create and maintain products to support licensing and plant operation concerns for the Dominion nuclear fleet
- Provide PRA model configuration control
- Create and maintain configuration risk evaluation tools for the Dominion nuclear fleet

An administratively controlled process is used to maintain configuration control of the MPS2 PRA models, data, and software. In addition to model control, administrative mechanisms are in place to assure that plant modifications, procedure changes, system operation changes, and industry operating experience (OE) are appropriately screened, dispositioned and scheduled for incorporation into the model in a timely manner. These processes help assure that the MPS2 PRA reflects the as-built, as-operated plant within the limitations of the PRA methodology.

The PRA model is periodically reviewed and updated to incorporate any changes in plant design or operation. Plant modifications and procedure changes are reviewed periodically to determine if they impact PRA model and if any PRA modeling and/or documentation changes are warranted. These reviews are documented, and if any PRA changes are potentially needed, they are added to the PRA Configuration Control (PRACC) database for PRA evaluation and implementation tracking.

Scope of the PRA

Each proposed change to a relocated surveillance frequency will be evaluated using the guidance contained in NEI 04-10 to determine its potential impact on risk, due to impacts from internal events, fires, seismic, other external events, and from shutdown conditions. In cases where a PRA of sufficient scope or quantitative risk models are unavailable, either bounding analyses or other conservative quantitative evaluations will be performed. A qualitative screening analysis may be used when the surveillance frequency impact on plant risk is shown to be negligible or zero.

As noted above, MPS2 has an internal events PRA model which has received a peer review, self assessment, and a focused scope peer review. MPS2 does not have a PRA model for internal fire events or for external events. In accordance with NEI 04-10, Revision 1, the licensee will perform an initial qualitative screening analysis, and if the qualitative information is not sufficient, a bounding analysis will be performed. The bounding analysis will be performed in accordance with NEI 04-10, Revision 1, Step

10b, and will be based on risk insights and analysis documented in the MPS2 Individual Plant Examination of External Events (IPEEE) report with consideration of the IPEEE accident sequences, as well as relevant OE and additional risk insights obtained since the IPEEE study, in the context of the current plant configuration and operation.

For shutdown events, a qualitative assessment of the changes in the surveillance frequencies will be performed using guidance from NEI 04-10, Revision 1.

PRA Methodology

The PRA methodology used at MPS2 includes a determination of whether a SSC affected by a proposed change to a surveillance frequency is modeled in the PRA model. Where a SSC is directly or implicitly modeled, a quantitative evaluation of the risk impact is performed. The failure probability of the impacted SSCs, including the impact of the selected testing strategy (i.e., staggered or sequential testing) on common cause failure modes, is adjusted accordingly based on the proposed change to the surveillance frequency. Where a SSC is not modeled in the PRA, bounding analyses are performed to characterize the impact of the proposed change to the surveillance frequency. Potential impacts on the risk analyses due to screening criteria and truncation levels are addressed by sensitivity studies identified in NEI 04-10.

Assumptions for Time Related Failure Contributions

Failure probabilities of SSCs modeled in the PRA model may include both a standby time-related contribution and a cyclic demand-related contribution. For SSCs affected by a proposed change to a surveillance frequency, NEI 04-10 guidance provides for adjustment of the time-related failure contribution. This is consistent with RG 1.177, Section 2.3.3, which permits separation of the failure rate contributions into demand and standby for evaluation of surveillance frequency changes. If the available data does not support distinguishing between the time-related failures and demand failures, then the change to a surveillance frequency is conservatively assumed to impact the total failure probability of the SSC, including both standby and demand contributions. The SSC failure rate (per unit time) is assumed to be unaffected by the change in test frequency and will be confirmed by the monitoring and feedback that is required after the surveillance frequency change is implemented. The process requires consideration of qualitative sources of information with regards to the potential impact of surveillance frequency changes on SSC performance, including; industry and plant-specific OE, vendor recommendations, industry standards, and code-specified test intervals. Therefore, the process is not reliant upon risk analyses as the sole basis for the proposed changes.

The potential benefits of reduced surveillance frequency, which include reduced unavailability, less potential for restoration errors, reduced potential for test-caused transients, and reduced test-caused wear of equipment, will be qualitatively assessed, but not quantitatively assessed.

Sensitivity and Uncertainty Analyses

In accordance with NEI 04-10, sensitivity studies will be performed to assess the impact of uncertainties from key assumptions of the PRA, uncertainty in the failure probabilities of the affected SSCs, impact on the frequency of initiating events, and any identified deviations from CC II of the PRA standard. When the sensitivity analyses identify a potential impact on a proposed change, revised surveillance frequencies are considered along with any qualitative considerations that could impact the results of the sensitivity studies. Continued monitoring and feedback of SSC performance is required once a revised surveillance frequency is implemented.

References

1. NRC Regulatory Guide 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," Revision 2.

2. ASME/ANS RA-S-2008, "Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications" and its 2009 addendum (ASME/ANS RA-Sa-2009).

3. NEI 00-02, "Probabilistic Risk Assessment (PRA) Peer Review Process Guidance," Revision 1.

4. NEI 05-04, "Process for Performing Internal Events PRA Peer Reviews Using the ASME/ANS PRA Standard," Revision 3, dated November 2009.

5. NRC Regulatory Guide 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," Revision 1.

6. ASME/ANS RA-S-2002, "Standard for Probabilistic Risk Assessment for Nuclear Power Plant Applications" and its 2005 addendum (ASME/ANS RA-Sb-2005).

7. NEI 04-10, "Risk-Informed Technical Specifications Initiative 5b – Risk-Informed Method for Control of Surveillance Frequencies – Industry Guidance Document," Revision 1, dated April 2007.

Table 1
MPS2 PRA Model Gaps

Gap #	SR	Review Type & Issue Description	Disposition	Impact to MPS2 PRA Model & Resolution
1	Observation ID: AS-10/ Sub-element AS-18	**2000 CEOG Peer Review:** Main feedwater (MFW) success criteria does not require makeup to the condenser when steam dump valves fail. Documentation to verify that adequate volume exists in the condenser for successful cooldown is required. No modeling of makeup to the condenser was identified.	Add the steam dump valves as a required support system for the MFW function.	**Impact:** The model change is expected to have an insignificant impact since four steam dump valves provide sufficient redundancy and the MFW function relies on the same support systems as the steam dump valves (i.e., instrument air and circulating water). ***Low Risk Significant*** **Resolution:** Until this F&O is resolved, a sensitivity study will be performed by adding the steam dump valves as a required support system for the MFW function.
2	IE-A8	**Self Assessment:** Plant personnel interviews to determine if potential events have been overlooked were not properly documented.	Interviews with plant system engineers were conducted and documented. As a result of these interviews, no new initiating events were required to be added to the PRA model. After completing the system engineer interviews, it was decided that since the group of interviewee's did not include Operations personnel, this SR was only partially met. This SR will remain as not met until similar interviews are conducted with Operations personnel.	**Impact**: Based on results of the system engineer interviews, this is considered a documentation issue only and thus, there is no impact on the PRA model. ***No impact*** **Resolution:** PRA procedure now requires interviews to be conducted regarding potential initiating events and past operating experience. This SR will continue to remain as not met until similar interviews are conducted with Operations personnel.
3	AS-A7	**Self Assessment:** Anticipated Transient Without Scram (ATWS) does not consider the time of adverse moderator temperature coefficient (MTC). Loss of seal cooling, loss of all alternating current (i.e., station	These issues have been resolved with the exception of power restoration following an SBO. For power restoration following an SBO, restarts of required accident	**Impact:** The impact of adding this consequential SGTR event to the PRA model is not expected to be significant since the frequency of the transfer branch (SBO with failure of TDAFW pump and consequential SGTR) is much lower than the frequency of the SGTR initiating event.

Table 1
MPS2 PRA Model Gaps

Gap #	SR	Review Type & Issue Description	Disposition	Impact to MPS2 PRA Model & Resolution
		blackout or SBO), inadvertent opening of power-operated relief valves (PORVs) and safety relief valves (SRVs) are included in some, but not all, event tree models. Operator action to throttle auxiliary feedwater (AFW) after power restoration following an SBO is assumed successful. No justification is provided for omitting this sequence.	mitigation components will be modeled. For SBO sequences with failure of TDAFW pump and offsite power recovery in time to prevent core damage, when operators restore AFW to dry/hot SGs, there is a potential for consequential steam generator tube rupture (SGTR). This potential event will be added to the SBO event tree and also transferred to the consequential SGTR branch of the SGTR event tree.	***Low Risk Significant*** **Resolution:** Until this F&O is resolved, a sensitivity study will be performed to model the restarts of required accident mitigation components and a sensitivity study will be performed by adding a transfer from the SBO and subsequent loss of TDAFWP sequence to the consequential SGTR failure branch of the SGTR event tree.
4	AS-A10	**Self Assessment** While differences in system requirements for each initiating event may be included in the fault tree models, no explanation of how these differences impact operator actions or system responses is provided.	This is a documentation issue. The model impact associated with this issue is covered by F&O HR-G4-01. (Gap #9) This SR will remain open until HR-G4-01 is met; including any needed updates to the PRA notebooks.	**Impact:** Documentation issue only, no impact to PRA model. ***No impact*** **Resolution:** None, documentation issue only.
5	AS-C2	**Self Assessment:** A one-to-one correlation between each initiating event and the associated event tree and the system success criteria and associated basis is not clearly documented. A discussion of the accident sequences pending resolution of issues associated with other AS SRs requires revision (AS-A7). Operator actions and any associated dependencies on system success are not clearly explained (AS-A10).	The documentation regarding the one-to-one correlation between each initiating event and the associated event tree needs to be completed. This SR will remain not met until SRs AS-7 and AS-A10 are met. (Gaps #3 and 4)	**Impact:** Documentation issue only, no impact to PRA model. ***No impact*** **Resolution:** None, documentation issue only.

Table 1
MPS2 PRA Model Gaps

Gap #	SR	Review Type & Issue Description	Disposition	Impact to MPS2 PRA Model & Resolution
6	SY-A4, SY-C2	**Self Assessment:** While the Individual Plant Examination (IPE) documentation and interviews with the PRA engineers indicate that the tasks in SY-A4 were performed, no documentation exists (walkdown sheets, system engineer interviews) to support this supposition.	Interviews with system engineers were conducted to partially address this SR. Additional interviews with Operations personnel and walk-downs will need to be completed before this supporting requirement is met.	**Impact**: Based on results of the system engineer interviews performed to date, this is considered a documentation issue only and therefore, there is no impact on the PRA model. ***No impact*** **Resolution:** PRA procedure now requires interviews and walkdowns to be conducted and documented to confirm system analysis correctly reflects the as-built, as-operated plant.
7	SY-A21, SY-A22, SY-C2	**Self Assessment:** Supporting room heatup calculations are not well documented. Also, failure of electrical load shedding and excessive humidity conditions that could lead to a loss of function were not addressed. For example, PRA documentation indicates that room cooling for the DC switchgear is needed only for equipment which requires DC power for more than one hour after an event occurs. This analysis needs to be reviewed.	Room heatup calculations have been performed for the most risk significant rooms (i.e., the switchgear rooms), and ventilation failures are included in the model, as appropriate. Components in rooms requiring ventilation dependencies are assumed to fail upon loss of ventilation unless the room heatup calculation showed otherwise. However, a room cooling matrix has not been included in the notebook to show which areas have calculations completed. During the 2009 model update, the failure of load shedding was added to the electric power fault tree. However, the effect of a Turbine Building high energy line break (HELB) on the direct current (DC) switchgear room chillers needs to be considered for excessive humidity conditions.	**Impact:** The room cooling matrix is a visual representation of which ventilation systems are modeled and what equipment is affected if the ventilation system fails. The matrix is used only for documentation purposes and therefore, has no impact to the PRA model. The impact of adding the loss of DC switchgear room chillers following a turbine building HELB to the model is not expected to be significant since the required response to the event is to establish compensatory cooling to the DC rooms. ***Low Risk Significant*** **Resolution:** Until this F&O is resolved, a sensitivity study will be performed by including the loss of DC switchgear room chillers following a Turbine Building HELB.

Table 1
MPS2 PRA Model Gaps

Gap #	SR	Review Type & Issue Description	Disposition	Impact to MPS2 PRA Model & Resolution
			The DC switchgear room cooling system is not modeled for components which only require DC power coincident with accident event initiation since the room temperature is expected to be below the maximum allowable when the initiating event occurs. DC switchgear room cooling is modeled for equipment requiring DC power after the initiating event occurs.	
8	HR-G3 Finding F&O: *HR-G3-01*	**Focused Scope Peer Review:** Two sections in the Human Reliability Analysis (HRA) calculator worksheets were identified as not being properly filled out, i.e., dependency factor and sigma.	The HRA calculator worksheets have been corrected in a draft file. A new dependency analysis will be performed using the HRA calculator with the corrected human error probabilities (HEPs). Then the MPS2 model will be quantified using the new HEP values. This F&O will remain open until the new HRA calculations are included in the MPS2 PRA model.	**Impact:** Potentially higher HEPs may result in an increase in core damage frequency (CDF) and Large Early Release Frequency (LERF). ***Risk Significant*** **Resolution:** Correct the HRA Calculator entries for dependency factor and sigma and then perform a sensitivity study with corrected HEPs.
9	HR-G4 Finding F&O: *HR-G4-01*	**Focused Scope Peer Review:** HEP timing information for HRA event OAADV1 showed two different times associated with this event; 30 minutes for General Transient and 11 minutes for Loss of Main Feedwater. Since 11 minutes is limiting, use of the 30 minute time for T_{sw} for OAADV1, could be non-conservative.	This F&O will remain open until the specific concern is addressed, the extent of condition review for other HRA events is completed, and HEPs are corrected for any issues identified during the extent of condition review.	**Impact:** Potentially higher HEPs may result in an increase in CDF and LERF. ***Risk Significant*** **Resolution:** A sensitivity study will be performed with a combination of corrected HEPs.

Table 1
MPS2 PRA Model Gaps

Gap #	SR	Review Type & Issue Description	Disposition	Impact to MPS2 PRA Model & Resolution
		This has the potential to have an impact on HFE quantifications. For HEPs, where time available varies depending on the event sequence, provide a justification if the shorter time is not used. Spot checks of several other HRA events indicated that the example above is not an isolated case. The source of information for timing of operator actions should be accurately identified and clearly documented.		
10	LE-C2, LE-C7 Finding F&O *LE-C2-01*	**Focused Scope Peer Review:** The MPS2 Severe Accident Mitigation Guidelines (SAMGs) were evaluated to determine what post-core damage operator actions might be credited. Of the 10 operator actions in the SAMGs, only two were found to be potentially applicable to post-core damage credit. Of these two operator actions, the HEP for the SGTR scenario was set to 1.0 based on timing concerns (time to perform vs. time available). The other operator action for the containment isolation failure analysis was determined to be feasible but could not be located. Also, some implied operator actions in the containment isolation failure	(1) For the SGTR scenario, the SAMG operator action to feed a dry steam generator for scrubbing of fission products has not yet been added to the MPS2 model. (2) The valves in the containment isolation analysis, identified as having implied operator actions, are associated with containment spray and safety injection. These motor operated valves (MOVs), which are in series with check valves, do not get a containment isolation signal to close and, as such, should not have been credited in the containment isolation analysis. These valves should be removed from the analysis and therefore, no HEP calculation is	**Impact:** The impact of item 1 results in an insignificant decrease in LERF. The operator action to feed a dry steam generator for scrubbing of fission products needs to be realistically treated. The impact of item 2 results in an insignificant increase in LERF after the model is changed to remove the MOVs requiring manual action to close. ***Low Risk Significant*** **Resolution:** (1) Until this F&O is resolved, a sensitivity study will be performed by realistically modeling the SAMG operator action to feed a dry steam generator. (2) Until this F&O is resolved, a sensitivity study will be performed by removing credit for closing the

Table 1
MPS2 PRA Model Gaps

Gap #	SR	Review Type & Issue Description	Disposition	Impact to MPS2 PRA Model & Resolution
		analysis did not appear to have been addressed. Either calculate the HEP for the remaining HFE and include it in the model or document a basis for not including it in the model. Also, explain the operator actions implied in the containment isolation failure analyses and include these in the model with the HEPs. Two alternatives are to demonstrate and document that there are no applicable operator actions to be modeled or to include the actions in the model with a HEP screening value of 1.0	required for the operator action to close the MOVs.	containment spray and safety injection MOVs in the containment isolation analysis.
11	LE-F1 Finding F&O *LE-F1-01*	**Focused Scope Peer Review:** There is no quantitative evaluation and identification of the dominant LERF contributors to LERF by plant damage states.	The dominant LERF contributors to LERF needs to be presented by plant damage state, which requires enhancements to the CAFTA LERF model. This may be done in the next model update. However, this will have no effect on LERF results other than to provide another way to present the results.	**Impact:** Documentation issue only. This change will have no effect on the LERF results that are currently provided in the PRA model except to provide another way to present the results. ***No impact*** **Resolution:** None, documentation issue only.
12	IFPP-A4 Finding F&O: *IFPP-A4-01*	**Focused Scope Peer Review:** Assumptions of 30 inches and 2 hours for non-water tight doors do-not reflect the as-operated plant configuration which could lead to	EPRI Report 1019194, Guidelines for Performance of Internal Flooding PRA, December 2009, states that if door failure calculations are not available, the door failure flood height should be	**Impact:** Use of non-conservative assumptions may result in an increase in CDF and LERF. ***Risk Significant***

Table 1
MPS2 PRA Model Gaps

Gap #	SR	Review Type & Issue Description	Disposition	Impact to MPS2 PRA Model & Resolution
		potential non-conservative modeling. Either perform more realistic modeling or recognize the assumptions as uncertainties and perform sensitivity studies.	3 feet or less for doors that open into the flood area and 1 foot or less if the door opens out of the flood area. The MPS2 PRA model will be updated to either use water height door failure criteria from EPRI Report 1019194 or use criteria generated from door failure calculations. The 2 hour criterion is addressed in IFSN-A14-01 (Gap #15).	**Resolution:** Until this F&O is resolved, a sensitivity study will be performed by using water height door failure criteria from EPRI Report 1019194, December 2009.
13	IFSO-A3 Finding F&O: *IFSO-A3-01*	**Focused Scope Peer Review:** Assumptions of 30 inches and 2 hours for non-water tight doors could lead to potential non-conservative modeling.	See SR IFSN-A14-01 (Gap #15) and IFPP-A4-01 (Gap #12) for disposition.	See SR IFSN-A14-01 (Gap #15) and IFPP-A4-01 (Gap #12) for impact and resolution.
14	IFSN-A8 Finding F&O: *IFSN-A8-01*	**Focused Scope Peer Review:** Two conditions specified by the SR are not identified or documented. They are – IDENTIFY inter-area propagation through: 1. Areas connected via backflow through drain lines involving failed check valves, 2. Hatchways These conditions could be screened out later; however, they need to be identified first.	Drains with check valves and hatchways at MPS2 will be documented in a PRA Notebook to resolve this item.	**Impact:** There is the possibility a new propagation path will be identified that either changes an existing flood scenario or requires adding a new flood scenario to the model. ***[Potentially] Risk Significant*** **Resolution:** If new propagation pathways or flooding scenarios are identified, a sensitivity study will be performed to include propagation through hatchways or areas connected via backflow through drain lines involving failed check valves.

Table 1
MPS2 PRA Model Gaps

Gap #	SR	Review Type & Issue Description	Disposition	Impact to MPS2 PRA Model & Resolution
15	IFSN-A14, IFSN-A16 Finding F&O: *IFSN-A14-01*	**Focused Scope Peer Review:** The 2-hour isolation criteria for plant mitigative actions assumed qualitatively that sufficient time is available to perform the isolation. Justification is needed for the 2 hour assumption to meet the SR CCI or CCII requirements.	This item applies to both SR IFSN-A14 and IFSN-A16. The PRA procedure has been revised to better align with the criteria stated in the standard. The review of the 2 hour isolation criteria against this revised PRA procedure has not been completed. If appropriate justification is not provided for screening out flood areas in accordance with this SR, the MPS2 model will be revised. This F&O will remain open until the review has been completed and the model and documentation has been updated, if necessary, to meet the revised PRA procedure.	**Impact:** If appropriate justification is not provided for screening out flood areas in accordance with this SR, an increase in CDF and LERF may result. ***Risk Significant*** **Resolution:** Until this F&O is resolved, a sensitivity study will be performed by using the criteria provided in the revised PRA procedure.
16	IFEV-A5 Finding F&O: *IFEV-A5-01*	**Focused Scope Peer Review:** The MPS2 model did not reflect the most recent pipe break frequencies. Documented assessment is needed to ensure the pipe break frequency data used complies with the applicable requirement in Section 2-2.1 of ASME/ANS RA-Sa-2009.	The current MPS2 model was issued before issuance of the 2013 EPRI Report 300200079 for pipe rupture frequencies. The next model update will include the latest available pipe rupture frequencies. This F&O will remain open until the next model update is completed.	**Impact:** Failure to use the latest available industry data for pipe break frequencies may result in an increase in CDF and LERF ***Risk Significant*** **Resolution:** Until this F&O is resolved, a sensitivity study will be performed to use the latest available industry data which is currently EPRI Report 3002000079 issued in 2013.

Table 1
MPS2 PRA Model Gaps

Gap #	SR	Review Type & Issue Description	Disposition	Impact to MPS2 PRA Model & Resolution
17	IFEV-A6 Finding F&O: *IFEV-A6-01*	**Focused Scope Peer Review:** The MPS2 model used only generic pipe rupture frequencies. To satisfy CC II, both generic and plant specific data sources are required.	Plant specific information was collected and considered in determining flood initiating event frequencies. No adverse trends were found that required Bayesian updating of the generic pipe break frequencies. This evaluation was not documented at the time of the peer review. A PRA procedure was revised to improve the guidance and to clarify that reviews should be documented regardless of whether any relevant adverse trends were found in the search of plant specific data. This F&O will remain open until another search of plant specific information relevant to pipe rupture frequencies is completed and documented in the next MPS2 model update which is scheduled to begin in 2014. If any relevant adverse trends are found they will be considered in determining pipe rupture frequencies.	**Impact:** None. This is a documentation issue only, no impact to PRA model. ***No Impact*** **Resolution:** None, documentation issue only. A search of plant specific information during the most recent model update relevant to pipe rupture frequencies did not identify any adverse trends.

ATTACHMENT 3

Marked-up Technical Specifications Changes

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 2

SECTION PAGE

1.0 DEFINITIONS

AZIMUTHAL POWER TILT - T_q

1.18 AZIMUTHAL POWER TILT shall be the difference between the maximum power generated in any core quadrant (upper or lower) and the average power of all quadrants in that half (upper or lower) of the core divided by the average power of all quadrants in that half (upper or lower) of the core.

$$\text{AZIMUTHALPOWERTILT} = \left[\frac{\text{Maximum power in any core quadrant (upper or lower)}}{\text{Average power of all quadrants (upper or lower)}}\right] - 1$$

DOSE EQUIVALENT I-131

1.19 DOSE EQUIVALENT I-131 shall be that concentration of I-131 (micro-curie/gram) that alone would produce the same dose when inhaled as the combined activities of iodine isotopes I-131, I-132, I-133, I-134, and I-135 actually present. The determination of DOSE EQUIVALENT I-131 shall be performed using Committed Dose Equivalent (CDE) or Committed Effective Dose Equivalent (CEDE) dose conversion factors from Table 2.1 of EPA Federal Guidance Report No. 11, "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion and Ingestion."

DOSE EQUIVALENT XE-133

1.20 DOSE EQUIVALENT XE-133 shall be that concentration of Xe-133 (micro-curie/gram) that alone would produce the same acute dose to the whole body as the combined activities of noble gas nuclides Kr-85m, Kr-85, Kr-87, Kr-88, Xe-131m, Xe-133m, Xe-133, Xe-135m, Xe-135, and Xe-138 actually present. If a specific noble gas nuclide is not detected, it should be assumed to be present at the minimum detectable activity. The determination of DOSE EQUIVALENT XE-133 shall be performed using effective dose conversion factors for air submersion listed in Table III.1 of EPA Federal Guidance Report No. 12, 1993, "External Exposure to Radionuclides in Air, Water, and Soil."

~~STAGGERED TEST BASIS~~ DELETED

1.21 ~~A STAGGERED TEST BASIS shall consist of:~~

~~a.~~ ~~A test schedule for n systems, subsystems, trains or other designated components obtained by dividing the specified test interval into n equal subinterval, and~~

~~b.~~ ~~The testing of one system, subsystem, train or other designated component at the beginning of each subinterval.~~

FREQUENCY NOTATION

1.22 The FREQUENCY NOTATION specified for the performance of Surveillance Requirements shall correspond to the intervals defined in Table 1.2.

TABLE 1.2
FREQUENCY NOTATION

NOTATION	FREQUENCY
S	At least once per 12 hours.
D	At least once per 24 hours.
W	At least once per 7 days.
M	At least once per 31 days.
Q	At least once per 92 days.
SA	At least once per 6 months.
R	At least once per 18 months.
S/U	Prior to each reactor startup.
P	Prior to each release.
N.A.	Not applicable.
SFCP	At the frequency specified in the Surveillance Frequency Control Program.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.1 REACTIVITY CONTROL SYSTEMS

SHUTDOWN MARGIN - (SDM)

LIMITING CONDITION FOR OPERATION

3.1.1.1 The SHUTDOWN MARGIN shall be within the limit specified in the CORE OPERATING LIMITS REPORT.

APPLICABILITY: MODES 3[(1)*], 4 and 5.

ACTION:

With the SHUTDOWN MARGIN not within the limit specified in the CORE OPERATING LIMITS REPORT, within 15 minutes, initiate and continue boration at ≥ 40 gpm of boric acid solution at or greater than the required refueling water storage tank (RWST) concentration (ppm) until the SHUTDOWN MARGIN is restored to within limit.

SURVEILLANCE REQUIREMENTS

4.1.1.1 Verify SHUTDOWN MARGIN is within the limit specified in the CORE OPERATING LIMITS REPORT at ~~least once every 24 hours~~.

the frequency specified in the Surveillance Frequency Control Program

*(1)See Special Test Exception 3.10.1

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.1 REACTIVITY CONTROL SYSTEMS

REACTIVITY BALANCE

LIMITING CONDITION FOR OPERATION

3.1.1.2 The core reactivity balance shall be within ± 1% Δk/k of predicted values.

APPLICABILITY: MODES 1 and 2.

ACTION:

With core reactivity balance not within limit:

Re-evaluate core design and safety analysis and determine that the reactor core is acceptable for continued operation and establish appropriate operating restrictions and Surveillance Requirements within 7 days or otherwise be in MODE 3 within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.1.2 Verify*(1) overall core reactivity balance is within ± 1% Δk/k of predicted values prior to entering MODE 1 after fuel loading and at ~~least once every 31 Effective Full Power Days~~**(2). The provisions of Specification 4.0.4 are not applicable.

the frequency specified in the Surveillance Frequency Control Program

*(1) 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 after each fuel loading.

**(2) Only required after 60 Effective Full Power Days.

ACTION: (Continued):

C. CEA Deviation Circuit inoperable.	C.1 Verify the indicated position of each CEA to be within 10 steps of all other CEAs in its group within 1 hour and every 4 hours thereafter or otherwise be in MODE 3 within the next 6 hours.
D. One or more CEAs untrippable. OR Two or more CEAs misaligned by ≥ 20 steps.	D.1 Be in MODE 3 within 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.1.1 Verify the indicated position of each CEA to be within 10 steps of all other CEAs in its group at ~~least once per 12 hours~~ AND within 1 hour following any CEA movement larger than 10 steps.

4.1.3.1.2 Verify CEA freedom of movement (trippability) by moving each individual CEA that is not fully inserted into the reactor core 10 steps in either direction at ~~least once per 92 days~~.

4.1.3.1.3 Verify the CEA Deviation Circuit is OPERABLE at ~~least once per 92 days~~ by a functional test of the CEA group Deviation Circuit which verifies that the circuit prevents any CEA from being misaligned from all other CEAs in its group by more than 10 steps (indicated position).

4.1.3.1.4 Verify the CEA Motion Inhibit is OPERABLE by a functional test which verifies that the circuit maintains the CEA group overlap and sequencing requirements of Specification 3.1.3.6 and that the circuit prevents regulating CEAs from being inserted beyond the Transient Insertion Limits specified in the CORE OPERATING LIMITS REPORT:

a. Prior to each entry into MODE 2 from MODE 3, except that such verification need not be performed more often than once per 31 days, and

b. At ~~least once per 6 months~~.

the frequency specified in the Surveillance Frequency Control Program

LIMITING CONDITION FOR OPERATION (Continued)

b) The CEA group(s) with the inoperable indicator is fully inserted, and subsequently maintained fully inserted, while maintaining the withdrawal sequence and THERMAL POWER level required by Specification 3.1.3.6 and when this CEA group reaches its fully inserted position, the "Full In" limit of the CEA with the inoperable position indicator is actuated and verifies this CEA to be fully inserted. Subsequent operation shall be within the limits of Specification 3.1.3.6.

4. If the failure of the position indicator channel(s) is during STARTUP, the CEA group(s) with the inoperable position indicator channel must be moved to the "Full Out" position and verified to be fully withdrawn via a "Full Out" indicator within 4 hours.

c. With a maximum of one reed switch position indicator channel per group or one pulse counting position indicator channel per group inoperable and the CEA(s) with the inoperable position indicator channel at either its fully inserted position or fully withdrawn position, operation may continue provided:

1. The position of this CEA is verified immediately and at least once per 12 hours thereafter by its "Full In" or "Full Out" limit (as applicable).

2. The fully inserted CEA group(s) containing the inoperable position channel is subsequently maintained fully inserted, and

3. Subsequent operation is within the limits of Specification 3.1.3.6.

d. With one or more pulse counting position indicator channels inoperable, operation in MODES 1 and 2 may continue for up to 24 hours provided all of the reed switch position indicator channels are OPERABLE.

SURVEILLANCE REQUIREMENTS

required

4.1.3.3 Each position indicator channel shall be determined to be OPERABLE by verifying the pulse counting position indicator channels and the reed switch position indicator channels agree within 6 steps at ~~least once per 12 hours~~.

the frequency specified in the Surveillance Frequency Control Program

CEA DROP TIME

LIMITING CONDITION FOR OPERATION

3.1.3.4 The individual CEA drop time, from a fully withdrawn position, shall be ≤2.75 seconds from when electrical power is interrupted to the CEA drive mechanism until the CEA reaches its 90 percent insertion position with:

a. $T_{avg} \geq 515°$ F, and

b. All reactor coolant pumps operating.

APPLICABILITY: MODES 1 and 2.

ACTION:

With the drop time of any CEA determined to exceed the above limit, restore the CEA drop time to within the above limit prior to proceeding to MODE 1 or 2.

SURVEILLANCE REQUIREMENTS

4.1.3.4 The CEA drop time shall be demonstrated through measurement with $T_{avg} \geq 515°$ F, and all reactor coolant pumps operating prior to reactor criticality:

a. For all CEAs following each removal of the reactor vessel head,

b. For specifically affected individual CEAs following any maintenance on or modification to the CEA drive system which could affect the drop time of those specific CEAs, and

c. At ~~least once per 18 months~~.

the frequency specified in the Surveillance Frequency Control Program

SHUTDOWN CEA INSERTION LIMIT

LIMITING CONDITION FOR OPERATION

3.1.3.5 All shutdown CEAs shall be withdrawn to ≥ 176 steps.

APPLICABILITY: MODE 1*(1)
MODE 2(1),(2)** with any regulating CEA not fully inserted.

ACTION:

INOPERABLE EQUIPMENT	REQUIRED ACTION
A. One or more shutdown CEAs not within limit.	A.1 Restore shutdown CEA(s) to within limit within 2 hours or otherwise be in MODE 3 within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.5 Verify each shutdown CEA is withdrawan ≥ 176 steps at ~~least once per 12 hours~~.

the frequency specified in the Surveillance Frequency Control Program

*(1) This LCO is not applicable while performing Specification 4.1.3.1.2.

**(2)See Special Test Exceptions 3.10.1 and 3.10.2.

REGULATING CEA INSERTION LIMITS (Continued)

B. Regulating CEA groups inserted between the Long Term Steady State Insertion limit and the Transient Insertion Limit specified in the CORE OPERATING LIMITS REPORT for intervals > 4 hours per 24 hour interval.	B.1 Verify Short Term Steady State Insertion Limits as specified in the CORE OPERATING LIMITS REPORT are not exceeded within 15 minutes or otherwise be in MODE 3 within the next 6 hours. OR B.2 Restrict increases in THERMAL POWER to < 5% RATED THERMAL POWER per hour within 15 minutes or otherwise be in MODE 3 within the next 6 hours.
C. Regulating CEA groups inserted between the Long Term Steady State Insertion Limit and the Transient Insertion Limit specified in the CORE OPERATING LIMITS REPORT for intervals > 5 effective full power days (EFPD) per 30 EFPD or interval > 14 EFPD per 365 EFPD.	C.1 Restore regulating CEA groups to within the Long Term Steady State Insertion Limit specified in the CORE OPERATING LIMITS REPORT within 2 hours or otherwise be in MODE 3 within the next 6 hours.
D. PDIL alarm circuit inoperable.	D.1 Perform Specification 4.1.3.6.1 within 1 hour and once per 4 hours thereafter or otherwise be in MODE 3 within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.6.1 Verify each regulating CEA group position is within the Transient Insertion Limits specified in the CORE OPERATING LIMITS REPORT at ~~least once per 12 hours~~. The provisions of Specification 4.0.4 are not applicable for entering into MODE 2 from MODE 3.

4.1.3.6.2 Verify the accumulated times during which the regulating CEA groups are inserted beyond the Steady State Insertion Limits but within the Transient Insertion Limits specified in the CORE OPERATING LIMITS REPORT at ~~least once per 24 hours~~.

4.1.3.6.3 Verify PDIL alarm circuit is OPERABLE ~~at least once per 31 days~~.

the frequency specified in the Surveillance Frequency Control Program

LIMITING CONDITION FOR OPERATION

3.1.3.7 The control rod drive mechanisms shall be de-energized.

APPLICABILITY: MODES 3*, 4, 5 and 6, whenever the RCS boron concentration is less than refueling concentration of Specification 3.9.1.

ACTION:

With any of the control rod drive mechanisms energized, restore the mechanisms to their de-energized state within 2 hours or immediately open the reactor trip circuit breakers.

SURVEILLANCE REQUIREMENTS

4.1.3.7 The control rod drive mechanisms shall be verified to be de-energized at ~~least once per 24 hours~~.

the frequency specified in the Surveillance Frequency Control Program

* The control rod drive mechanisms may be energized for MODE 3 as long as 4 reactor coolant pumps are OPERATING, the reactor coolant system temperature is greater than 500° F, the pressurizer pressure is greater than 2000 psia and the requirements of Limiting Condition for Operation for Specification 3.3.1.1, "Reactor Protective Instrumentation," are met.

the frequency specified in the Surveillance Frequency Control Program

4.2.1.2 Excore Detector Monitoring System*(1) - The excore detector monitoring system may be used for monitoring the core power distribution ~~by~~:

a. Verifying at ~~least once per 12 hours~~ that the CEAs are withdrawn to and maintained at or beyond the Long Term Steady State Insertion Limits of Specification 3.1.3.6.

b. Verifying at ~~least once per 31 days~~ that the AXIAL SHAPE INDEX alarm setpoints are adjusted to within the allowable limits specified in the CORE OPERATING LIMITS REPORT.

4.2.1.3 Incore Detector Monitoring System**(2),***(3) - The incore detector monitoring system may be used for monitoring the core power distribution by verifying that the incore detector Local Power Density alarms:

a. Are adjusted to satisfy the requirements of the core power distribution map which shall be updated at ~~least once per 31 days~~.

b. Have their alarm setpoint adjusted to less than or equal to the limits specified in the CORE OPERATING LIMITS REPORT.

at the frequency specified in the Surveillance Frequency Control Program,

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*(1) Only required to be met when the Excore Detector Monitoring System is being used to determine Linear Heat Rate.

**(2) Only required to be met when the Incore Detector Monitoring System is being used to determine Linear Heat Rate.

***(3) Not required to be performed below 20% RATED THERMAL POWER.

TOTAL UNRODDED INTEGRATED RADIAL PEAKING FACTOR - F^T_r

LIMITING CONDITION FOR OPERATION

3.2.3 The calculated value of F^T_r shall be within the 100% power limit specified in the CORE OPERATING LIMITS REPORT. The F^T_r value shall include the effect of AZIMUTHAL POWER TILT.

APPLICABILITY: MODE 1 with THERMAL POWER >20% RTP*.

ACTION:

With F^T_r exceeding the 100% power limit within 6 hours either:

a. Reduce THERMAL POWER to bring the combination of THERMAL POWER and F^T_r to within the power dependent limit specified in the CORE OPERATING LIMITS REPORT and withdraw the CEAs to or beyond the Long Term Steady State Insertion Limits of Specification 3.1.3.6; or

b. Be in at least HOT STANDBY.

SURVEILLANCE REQUIREMENTS

4.2.3.1 The provisions of Specification 4.0.4 are not applicable.

4.2.3.2 F^T_r shall be determined to be within the 100% power limit at the following intervals:

a. Prior to operation above 70 percent of RATED THERMAL POWER after each fuel loading,

b. At ~~least once per 31 days of accumulated operation~~ in MODE 1, and

c. Within four hours if the AZIMUTHAL POWER TILT (T_q) is > 0.020.

4.2.3.3 F^T_r shall be determined by using the incore detectors to obtain a power distribution map with all CEAs at or above the Long Term Steady State Insertion Limit for the existing Reactor Coolant Pump Combination.

the frequency specified in the Surveillance Frequency Control Program

* See Special Test Exception 3.10.2.

AZIMUTHAL POWER TILT - T_Q

LIMITING CONDITION FOR OPERATION

3.2.4 The AZIMUTHAL POWER TILT (T_q) shall be ≤ 0.02.

APPLICABILITY: MODE 1 with THERMAL POWER > 50% of RATED THERMAL POWER[(1)]*.

ACTION:

a. With the indicated T_q > 0.02 but ≤ 0.10, either restore T_q to ≤ 0.02 within 2 hours or verify the TOTAL UNRODDED INTEGRATED RADIAL PEAKING FACTOR (F^T_r) is within the limit of Specification 3.2.3 within 2 hours and once per 8 hours thereafter. Or otherwise, reduce THERMAL POWER to ≤ 50% of RATED THERMAL POWER within the next 4 hours.

b. With the indicated T_q > 0.10, perform the following actions: [(2)]**

1. Verify the TOTAL UNRODDED INTEGRATED RADIAL PEAKING FACTOR (F^T_r) is within the limit of Specification 3.2.3 within 2 hours; and

2. Reduce THERMAL POWER to ≤ 50% of RATED THERMAL POWER within 2 hours; and

3. Restore T_q ≤ 0.02 prior to increasing THERMAL POWER. Correct the cause of the out of limit condition prior to increasing THERMAL POWER. Subsequent power operation above 50% of RATED THERMAL POWER may proceed provided that the measured T_q is verified ≤ 0.02 at least once per hour for 12 hours, or until verified at 95% of RATED THERMAL POWER.

SURVEILLANCE REQUIREMENTS

4.2.4.1 Verify T_q is within limit at ~~least once every 12 hours~~. The provisions of Specification 4.0.4 are not applicable for entering into MODE 1 with THERMAL POWER > 50% of RATED THERMAL POWER from MODE 1.

the frequency specified in the Surveillance Frequency Control Program

*(1) See Special Test Exception 3.10.2.

**(2) All subsequent Required ACTIONS must be completed if power reduction commences prior to restoring T_q ≤ 0.10.

LIMITING CONDITION FOR OPERATION

3.2.6 The DNB margin shall be preserved by maintaining the cold leg temperature, pressurizer pressure, reactor coolant flow rate, and AXIAL SHAPE INDEX within the limits specified in the CORE OPERATING LIMITS REPORT.

APPLICABILITY: MODE 1.

ACTION:

With any of the above parameters exceeding its specified limits, restore the parameter to within its above specified limits within 2 hours or reduce THERMAL POWER to ≤ 5% of RATED THERMAL POWER within the next 4 hours.

SURVEILLANCE REQUIREMENTS

4.2.6.1 The cold leg temperature, pressurizer pressure, and AXIAL SHAPE INDEX shall be determined to be within the limits specified in the CORE OPERATING LIMITS REPORT at ~~least once per 12 hours~~. The reactor coolant flow rate shall be determined to be within the limit specified in the CORE OPERATING LIMITS REPORT at ~~least once per 31 days~~.

4.2.6.2 The provisions of Specification 4.0.4 are not applicable.

the frequency specified in the Surveillance Frequency Control Program

3/4.3.1 REACTOR PROTECTIVE INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.1.1 As a minimum, the reactor protective instrumentation channels and bypasses of Table 3.3-1 shall be OPERABLE.

APPLICABILITY: As shown in Table 3.3-1.

ACTION:

As shown in Table 3.3-1.

SURVEILLANCE REQUIREMENTS

required

4.3.1.1.1 Each reactor protective instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the MODES and at the frequencies shown in Table 4.3-1.

4.3.1.1.2 The bypass function and automatic bypass removal function shall be demonstrated OPERABLE during a CHANNEL FUNCTIONAL TEST once within 92 days prior to each reactor startup. The total bypass function shall be demonstrated OPERABLE at ~~least once per 18 months~~ during CHANNEL CALIBRATION testing of each channel affected by bypass operation.

4.3.1.1.3 The REACTOR TRIP SYSTEM RESPONSE TIME of each reactor trip function shall be demonstrated to be within its limit at ~~least once per 18 months~~. Neutron detectors are exempt from response time testing. Each test shall include at least one channel per function ~~such that all channels are tested at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip function as shown in the "Total No. of Channels" column of Table 3.3-1.~~

the frequency specified in the Surveillance Frequency Control Program

Replace each marked through surveillance frequency in the Check, Calibration, and Functional Test columns with "SFCP"

TABLE 4.3-1

REACTOR PROTECTIVE INSTRUMENTATION SURVEILLANCE REQUIREMENTS

	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1.	Manual Reactor Trip	N.A.	N.A.	S/U(1)	N.A.
2.	Power Level - High				
	a. Nuclear Power	~~S~~	~~D~~(2), ~~M~~(3), ~~Q~~(5)	~~M~~	1, 2, 3*
	b. ΔT Power	~~S~~	~~D~~(4), ~~Q~~	~~M~~	1
3.	Reactor Coolant Flow - Low	~~S~~	~~R~~	~~M~~	1, 2
4.	Pressurizer Pressure - High	~~S~~	~~R~~	~~M~~	1, 2
5.	Containment Pressure - High	~~S~~	~~R~~	~~M~~	1, 2
6.	Steam Generator Pressure - Low	~~S~~	~~R~~	~~M~~	1, 2
7.	Steam Generator Water Level - Low	~~S~~	~~R~~	~~M~~	1, 2
8.	Local Power Density - High	~~S~~	~~R~~	~~M~~	1
9.	Thermal Margin/Low Pressure	~~S~~	~~R~~	~~M~~	1, 2
10.	Loss of Turbine--Hydraulic Fluid Pressure - Low	N.A.	~~R~~	S/U(1)	N.A.

Replace each marked through surveillance frequency in the Check, Calibration, and Functional Test columns with "SFCP"

TABLE 4.3-1 ~~(Continued)~~

REACTOR PROTECTIVE INSTRUMENTATION SURVEILLANCE REQUIREMENTS

	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
11.	Wide Range Logarithmic Neutron Flux Monitor - Shutdown	~~S~~	~~R~~(5)	S/U(1)	3, 4, 5
12.	DELETED				
13.	Reactor Protection System Logic Matrices	N.A.	N.A.	~~M~~ and S/U(1)	1, 2 and *
14.	Reactor Protection System Logic Matrix Relays	N.A.	N.A.	~~M~~ and S/U(1)	1, 2 and *
15.	Reactor Trip Breakers	N.A.	N.A.	~~M~~	1, 2 and *

3/4.3.2 ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.2.1 The engineered safety feature actuation system instrumentation channels and bypasses shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4.

APPLICABILITY: As shown in Table 3.3-3.

ACTION:

a. With an engineered safety feature actuation system instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, either adjust the trip setpoint to be consistent with the value specified in the Trip Setpoint column of Table 3.3-4 within 2 hours or declare the channel inoperable and take the ACTION shown in Table 3.3-3.

b. With an engineered safety feature actuation system instrumentation channel inoperable, take the ACTION shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

required

4.3.2.1.1 Each engineered safety feature actuation system instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the MODES and at the frequencies shown in Table 4.3-2.

4.3.2.1.2 The bypass function and automatic bypass removal function shall be demonstrated OPERABLE during a CHANNEL FUNCTIONAL TEST once within 92 days prior to each reactor startup. The total bypass function shall be demonstrated OPERABLE at ~~least once per 18 months~~ during CHANNEL CALIBRATION testing of each channel affected by bypass operation.

the frequency specified in the Surveillance Frequency Control Program

4.3.2.1.3 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESF function shall be demonstrated to be within the limit at ~~least once per 18 months~~. Each test shall include at least one channel per function ~~such that all channels are tested at least once every N times 18 months where N is the total number of redundant channels in a specific ESF function as shown in the "Total No. of Channels" Column of Table 3.3-3~~.

the frequency specified in the Surveillance Frequency Control Program

Replace each marked through surveillance frequency in the Check, Calibration, and Functional Test columns with "SFCP"

TABLE 4.3-2

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT			CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1.	SAFETY INJECTION (SIAS)					
	a.	Manual (Trip Buttons)	N.A.	N.A.	~~R~~	N. A.
	b.	Containment Pressure - High	~~S~~	~~R~~	~~M~~	1, 2, 3
	c.	Pressurizer Pressure - Low	~~S~~	~~R~~	~~M~~	1, 2, 3
	d.	Automatic Actuation Logic	N.A.	N.A.	~~M~~(1)	1, 2, 3
2.	CONTAINMENT SPRAY (CSAS)					
	a.	Manual (Trip Buttons)	N.A.	N.A.	~~R~~	N.A.
	b.	Containment Pressure-- High - High	~~S~~	~~R~~	~~M~~	1, 2, 3
	c.	Automatic Actuation Logic	N.A.	N.A.	~~M~~(1)	1, 2, 3
3.	CONTAINMENT ISOLATION (CIAS)					
	a.	Manual CIAS (Trip Buttons)	N.A.	N.A.	~~R~~	N.A.
	b.	Manual SIAS (Trip Buttons)	N.A.	N.A.	~~R~~	N.A.
	c.	Containment Pressure - High	~~S~~	~~R~~	~~M~~	1, 2, 3
	d.	Pressurizer Pressure - Low	~~S~~	~~R~~	~~M~~	1, 2, 3
	e.	Automatic Actuation Logic	N.A.	N.A.	~~M~~(1)	1, 2, 3
4.	MAIN STEAM LINE ISOLATION					
	a.	Manual (Trip Buttons)	N.A.	N.A.	~~R~~	N.A.
	b.	Containment Pressure - High	~~S~~	~~R~~	~~M~~	1, 2, 3
	c.	Steam Generator Pressure - Low	~~S~~	~~R~~	~~M~~	1, 2, 3
	d.	Automatic Actuation Logic	N.A.	N.A.	~~M~~(1)	1, 2, 3
5.	ENCLOSURE BUILDING FILTRATION (EBFAS)					
	a.	Manual EBFAS (Trip Buttons)	N.A.	N.A.	~~R~~	N.A.
	b.	Manual SIAS (Trip Buttons)	N.A.	N.A.	~~R~~	N.A.
	c.	Containment Pressure - High	~~S~~	~~R~~	~~M~~	1, 2, 3
	d.	Pressurizer Pressure - Low	~~S~~	~~R~~	~~M~~	1, 2, 3
	e.	Automatic Actuation Logic	N.A.	N.A.	~~M~~(1)	1, 2, 3

Replace each marked through surveillance frequency in the Check, Calibration, and Functional Test columns with "SFCP"

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT			CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
6.	CONTAINMENT SUMP RECIRCULATION (SRAS)					
	a.	Manual SRAS (Trip Buttons)	N.A.	N.A.	~~R~~	N.A.
	b.	Refueling Water ~~Storage~~ Tank - Low	~~S~~	~~R~~	~~M~~	1, 2, 3
	c.	Automatic Actuation Logic	N.A.	N.A.	~~M~~(1)	1, 2, 3
7.	DELETED					
8.	LOSS OF POWER					
	a.	4.16 kv Emergency Bus Undervoltage - level one	~~S~~	~~R~~	~~M~~	1, 2, 3
	b.	4.16 kv Emergency Bus Undervoltage - level two	~~S~~	~~R~~	~~M~~	1, 2, 3
9.	AUXILIARY FEEDWATER					
	a.	Manual	N.A.	N.A.	~~R~~	N.A.
	b.	Steam Generator Level - Low	~~S~~	~~R~~	~~M~~	1, 2, 3
	c.	Automatic Actuation Logic	N.A.	N.A.	~~M~~	1, 2, 3
10.	STEAM GENERATOR BLOWDOWN					
	a.	Steam Generator Level - Low	~~S~~	~~R~~	~~M~~	1, 2, 3

TABLE 4.3-2 (Continued)

the frequency specified in the Surveillance Frequency Control Program

TABLE NOTATION

(1) The coincident logic circuits shall be tested automatically or manually ~~at least once per 31 days~~. The automatic test feature shall be verified OPERABLE at ~~least once per 31 days~~. The provisions of Specification 4.0.4 are not applicable for entry into MODE 3 or other specified conditions for surveillance testing of the following:

a. Pressurizer Pressure Safety Injection Automatic Actuation Logic; and

b. Pressurizer Pressure Containment Isolation Automatic Actuation Logic; and

c. Steam Generator Pressure Main Steam Line Isolation Automatic Actuation Logic; and

d. Pressurizer Pressure Enclosure Building Filtration Automatic Actuation Logic.

Testing of the automatic actuation logic for Pressurizer Pressure Safety Injection, Pressurizer Pressure Containment Isolation, and Pressurizer Pressure Enclosure Building Filtration shall be performed within 12 hours after exceeding a pressurizer pressure of 1850 psia in MODE 3. Testing of the automatic actuation logic for Steam Generator Pressure Main Steam Line Isolation shall be performed within 12 hours after exceeding a steam generator pressure of 700 psia in MODE 3.

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM SENSOR CABINET POWER SUPPLY DRAWERS

LIMITING CONDITION FOR OPERATION

3.3.2.2 The engineered safety feature actuation system Sensor Cabinets (RC02A1, RC02B2, RC02C3 & RC02D4) Power Supply Drawers shall be OPERABLE and energized from the normal power source with the backup power source available. The normal and backup power sources for each sensor cabinet is detailed in Table 3.3-5a:

CABINET	NORMAL POWER	BACKUP POWER
RC02A1	VA-10	VA-40
RC02B2	VA-20	VA-30
RC02C3	VA-30	VA-20
RC02D4	VA-40	VA-10

Table 3.3-5a

APPLICABILITY: MODES 1, 2, 3 and 4

ACTION:

With any of the Sensor Cabinet Power Supply Drawers inoperable, or either the normal or backup power source not available as delineated in Table 3.3-5a, restore the inoperable Sensor Cabinet Power Supply Drawer to OPERABLE status within 48 hours or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

at the frequency specified in the Surveillance Frequency Control Program

4.3.2.2.1 The engineered safety feature actuation system Sensor Cabinet Power Supply Drawers shall be determined OPERABLE ~~once per shift~~ by visual inspection of the power supply drawer indicating lamps.

4.3.2.2.2 Verify the OPERABILITY of the Sensor Cabinet Power Supply auctioneering circuit at ~~least once per 18 months~~.

the frequency specified in the Surveillance Frequency Control Program

3/4.3.3 MONITORING INSTRUMENTATION

RADIATION MONITORING

LIMITING CONDITION FOR OPERATION

3.3.3.1 The radiation monitoring instrumentation channels shown in Table 3.3-6 shall be OPERABLE with their alarm/trip setpoints within the specified limits.

APPLICABILITY: As shown in Table 3.3-6.

ACTION:

a. With a radiation monitoring channel alarm/trip setpoint exceeding the value shown in Table 3.3-6, adjust the setpoint to within the limit within 2 hours or declare the channel inoperable.

b. With the number of OPERABLE channels less than the number of MINIMUM CHANNELS OPERABLE in Table 3.3-6, take the ACTION shown in Table 3.3-6. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.1.1 Each required radiation monitoring instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the MODES and at the frequencies shown in Table 4.3-3.

4.3.3.1.2 DELETED

4.3.3.1.3 Verify the response time of the control room isolation channel at ~~least once per 18 months~~ the frequency specified in the Surveillance Frequency Control Program.

Replace each marked through surveillance frequency in the Check, Calibration, and Functional Test columns with "SFCP"

TABLE 4.3-3

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT			CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1.	AREA MONITORS					
	a.	Deleted				
	b.	Control Room Isolation	~~S~~	~~R~~	~~M~~	ALL MODES
	c.	Containment High Range	~~S~~	~~R~~*	~~M~~	1, 2, 3, & 4
2.	PROCESS MONITORS					
	a.	Containment Atmosphere-Particulate	~~S~~	~~R~~	~~M~~	1, 2, 3, & 4
	b.	Deleted				
	c.	Noble Gas Effluent Monitor (high range) (Unit 2 Stack)	~~S~~	~~R~~	~~M~~	1, 2, 3, & 4

* Calibration of the sensor with a radioactive source need only be performed on the lowest range. Higher ranges may be calibrated electronically.

REMOTE SHUTDOWN INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.5 The remote shutdown monitoring instrumentation channels shown in Table 3.3-9 shall be OPERABLE with readouts displayed external to the control room.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

With the number of OPERABLE remote shutdown monitoring instrumentation channels less than required by Table 3.3-9, either:

a. Restore the inoperable channel to OPERABLE status within 7 days, or

b. Be in HOT SHUTDOWN within the next 24 hours.

SURVEILLANCE REQUIREMENTS

required

4.3.3.5 Each remote shutdown monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-6.

Replace each marked through surveillance frequency in the Check and Calibration columns with "SFCP"

TABLE 4.3-6

REMOTE SHUTDOWN MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT		CHANNEL CHECK	CHANNEL CALIBRATION
1.	Wide Range Logarithmic Neutron Flux	~~M~~	~~R~~*
2.	Reactor Trip Breaker Indication	~~M~~	N.A.
3.	Reactor Cold Leg Temperature	~~M~~	~~R~~
4.	Pressurizer Pressure		
	a. Low Range	~~M~~	~~R~~
	b. High Range	~~M~~	~~R~~
5.	Pressurizer Level	~~M~~	~~R~~
6.	Steam Generator Level	~~M~~	~~R~~
7.	Steam Generator Pressure	~~M~~	~~R~~

* Neutron detectors are excluded from the CHANNEL CALIBRATION.

LIMITING CONDITION FOR OPERATION

3.3.3.8 The accident monitoring instrumentation channels shown in Table 3.3-11 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

a. ACTIONS per Table 3.3-11.

SURVEILLANCE REQUIREMENTS

required

4.3.3.8 Each accident monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-7.

Replace each marked through surveillance frequency in the Check and Calibration columns with "SFCP"

TABLE 4.3-7

ACCIDENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT		CHANNEL CHECK	CHANNEL CALIBRATION
1.	Pressurizer Water Level	~~M~~	~~R~~
2.	Auxiliary Feedwater Flow Rate	~~M~~	~~R~~
3.	Reactor Coolant System Subcooled/Superheat Monitor	~~M~~	~~R~~
4.	PORV Position Indicator	~~M~~	~~R~~
5.	PORV Block Valve Position Indicator	N.A.	~~R~~
6.	Safety Valve Position Indicator	~~M~~	~~R~~
7.	Containment Pressure	~~M~~	~~R~~
8.	Containment Water Level (Narrow Range)	~~M~~	~~R~~
9.	Containment Water Level (Wide Range)	~~M~~	~~R~~
10.	Core Exit Thermocouples	~~M~~	~~R~~*
11.	Main Steam Line Radiation Monitor	~~M~~	~~R~~
12.	Reactor Vessel Coolant Level	~~M~~	~~R~~*

* Electronic calibration from the ICC cabinets only.

STARTUP AND POWER OPERATION

LIMITING CONDITION FOR OPERATION

3.4.1.1 Two reactor coolant loops shall be OPERABLE and in operation.

APPLICABILITY: MODES 1 and 2.

ACTION:

With the requirements of the above specification not met, be in at least HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.4.1.1 The above required reactor coolant loops shall be verified to be in operation at ~~least once per 12 hours~~.

the frequency specified in the Surveillance Frequency Control Program

LIMITING CONDITION FOR OPERATION

3.4.1.2 Two reactor coolant loops shall be OPERABLE and one reactor coolant loop shall be in operation.

> NOTE
>
> All reactor coolant pumps may not be in operation for up to 1 hour per 8 hour period provided:
>
> a. no operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1; and
>
> b. core outlet temperature is maintained at least 10°F below saturation temperature.

APPLICABILITY: MODE 3.

ACTION: a. With one reactor coolant loop inoperable, restore the required reactor coolant loop to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.

b. With no reactor coolant loop OPERABLE or in operation, immediately suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1 and immediately initiate corrective action to return one required reactor coolant loop to OPERABLE status and operation.

SURVEILLANCE REQUIREMENTS

at the frequency specified in the Surveillance Frequency Control Program

4.4.1.2.1 The ~~required~~ reactor coolant pump, if not in operation, shall be determined to be OPERABLE ~~once per 7 days~~ by verifying correct breaker alignment and indicated power available.

4.4.1.2.2 One reactor coolant loop shall be verified to be in operation at ~~least once per 12 hours~~.

4.4.1.2.3 Each steam generator secondary side water level shall be verified to be ≥ 10% narrow range at ~~least once per 12 hours~~.

the frequency specified in the Surveillance Frequency Control Program

REACTOR COOLANT SYSTEM

COOLANT LOOPS AND COOLANT CIRCULATION

HOT SHUTDOWN

SURVEILLANCE REQUIREMENTS

4.4.1.3.1 The required pump, if not in operation, shall be determined OPERABLE ~~once per 7 days~~ by verifying correct breaker alignment and indicated power available.

at the frequency specified in the Surveillance Frequency Control Program

4.4.1.3.2 The required steam generator(s) shall be determined OPERABLE, by verifying the secondary side water level to be ≥ 10% narrow range at ~~least once per 12 hours~~.

4.4.1.3.3 One reactor coolant loop or shutdown cooling train shall be verified to be in operation at ~~least once per 12 hours~~.

the frequency specified in the Surveillance Frequency Control Program

LIMITING CONDITION FOR OPERATION (continued)

APPLICABILITY: MODE 5 with Reactor Coolant System loops filled.

ACTION: a. With one shutdown cooling train inoperable and any steam generator secondary water level not within limits, immediately initiate action to either restore a second shutdown cooling train to OPERABLE status or restore steam generator secondary water levels to within limit.

b. With no shutdown cooling train OPERABLE or in operation, immediately suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1 and immediately initiate action to restore one shutdown cooling train to OPERABLE status and operation.

SURVEILLANCE REQUIREMENTS

at the frequency specified in the Surveillance Frequency Control Program

4.4.1.4.1 The required shutdown cooling pump, if not in operation, shall be determined OPERABLE ~~once per 7 days~~ ~~by verifying~~ correct breaker alignment and indicated power available.

4.4.1.4.2 The required steam generators shall be determined OPERABLE, by verifying the secondary side water level to be ≥ 10% narrow range at ~~least once per 12 hours~~.

4.4.1.4.3 One shutdown cooling train shall be verified to be in operation at ~~least once per 12 hours~~.

the frequency specified in the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

at the frequency specified in the Surveillance Frequency Control Program

4.4.1.5.1 The required shutdown cooling pump, if not in operation, shall be determined OPERABLE ~~once per 7 days~~ ~~by~~ verifying correct breaker alignment and indicated power available.

4.4.1.5.2 One shutdown cooling train shall be verified to be in operation at ~~least once per 12 hours~~.

the frequency specified in the Surveillance Frequency Control Program

REACTOR COOLANT SYSTEM

REACTOR COOLANT PUMPS

COLD SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.4.1.6 A maximum of two reactor coolant pumps shall be OPERABLE.

APPLICABILITY: MODE 5

ACTION:

With more than two reactor coolant pumps OPERABLE, take immediate action to comply with Specification 3.4.1.6.

SURVEILLANCE REQUIREMENTS

4.4.1.6 Two reactor coolant pumps shall be demonstrated inoperable at ~~least once per 12 hours~~ by verifying that the motor circuit breakers have been disconnected from their electrical power supply circuits.

the frequency specified in the Surveillance Frequency Control Program

at the frequency specified in the Surveillance Frequency Control Program

4.4.3.1 In addition to the requirements of Specification 4.0.5, each PORV shall be demonstrated OPERABLE:

a. ~~Once per 31 days~~ by performance of a CHANNEL FUNCTIONAL TEST, excluding valve operation, and

b. ~~Once per 18 months~~ by performance of a CHANNEL CALIBRATION.

c. ~~Once per 18 months~~ by operating the PORV through one complete cycle of full travel at conditions representative of MODES 3 or 4.

4.4.3.2 Each block valve shall be demonstrated OPERABLE ~~once per 92 days~~ by operating the valve through one complete cycle of full travel. This demonstration is not required if a PORV block valve is closed in accordance with the ACTIONS of Specification 3.4.3.

At the frequency specified in the Surveillance Frequency Control Program

LIMITING CONDITION FOR OPERATION

3.4.4 The pressurizer shall be OPERABLE with:

a. Pressurizer water level ≤ 70%, and

b. At least two groups of pressurizer heaters each having a capacity of at least 130 kW.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

a. With only one group of pressurizer heaters OPERABLE, restore at least two groups to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 12 hours.

b. With the pressurizer otherwise inoperable, be in at least HOT STANDBY with the reactor trip breakers open within 6 hours and in HOT SHUTDOWN within the following 6 hours.

SURVEILLANCE REQUIREMENTS

4.4.4.1 The pressurizer water level shall be determined to be within its limits at ~~least once per 12 hours~~.

4.4.4.2 Verify at least two groups of pressurizer heaters each ~~have~~ have a capacity of at least 130 kW at ~~least once per 92 days.~~

the frequency specified in the Surveillance Frequency Control Program

3/4.4.6 REACTOR COOLANT SYSTEM LEAKAGE

LEAKAGE DETECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

ACTION: (Continued)

2. Appropriate grab samples of the containment atmosphere are obtained and analyzed for particulate radioactivity within 6 hours and at least once per 6 hours thereafter, and

3. A Reactor Coolant System water inventory balance is performed within 6 hours and at least once per 6 hours thereafter.

Otherwise, be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.4.6.1 The leakage detection systems shall be demonstrated OPERABLE by:

a. Containment atmosphere particulate monitoring system-performance of CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST at the frequencies specified in Table 4.3-3, and

b. Containment sump level monitoring system-performance of CHANNEL CALIBRATION TEST at ~~least once per 18 months~~.

the frequency specified in the Surveillance Frequency Control Program

REACTOR COOLANT SYSTEM OPERATIONAL LEAKAGE

LIMITING CONDITION FOR OPERATION

3.4.6.2 Reactor Coolant System Operational LEAKAGE shall be limited to:

a. No PRESSURE BOUNDARY LEAKAGE,

b. 1 GPM UNIDENTIFIED LEAKAGE,

c. 75 GPD primary to secondary LEAKAGE through any one steam generator, and

d. 10 GPM IDENTIFIED LEAKAGE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With any RCS operational LEAKAGE not within limits for reasons other than PRESSURE BOUNDARY LEAKAGE or primary to secondary LEAKAGE, reduce LEAKAGE to within limits within 4 hours.

b. With ACTION and associated completion time of ACTION a. not met, or PRESSURE BOUNDARY LEAKAGE exists, or primary to secondary LEAKAGE not within limits, be in HOT STANDBY within 6 hours and be in COLD SHUTDOWN within 36 hours.

SURVEILLANCE REQUIREMENTS

4.4.6.2.1

NOTES

1. Not required to be performed until 12 hours after establishment 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 at ~~least once per 72 hours~~.

the frequency specified in the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (Continued)

4.4.6.2.2

------------------------------------ NOTE ------------------------------------

Not required to be performed until 12 hours after establishment of steady state operation.

Verify primary to secondary LEAKAGE is ≤ 75 gallons per day through any one SG at ~~least once per 72 hours~~.

the frequency specified in the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

4.4.8.1 Verify the specific activity of the primary coolant ≤ 1100 μCi/gram DOSE EQUIVALENT XE-133 ~~once per 7 days~~.*

4.4.8.2 Verify the specific activity of the primary coolant ≤ 1.0 μCi/gram DOSE EQUIVALENT I-131 ~~once per 14 days~~,* and between 2 and 6 hours after a THERMAL POWER change of ≥ 15% RATED THERMAL POWER within a one hour period.

at the frequency specified in the Surveillance Frequency Control Program

* Surveillance only required to be performed for MODE 1 operation, consistent with the provisions of Specification 4.0.1.

4.4.9.1

a. The Reactor Coolant System temperature and pressure shall be determined to be within the limits at ~~least once per 30 minutes~~ during system heatup, cooldown, and inservice leak and hydrostatic testing operations.

b. DELETED

the frequency specified in the Surveillance Frequency Control Program

4.4.9.3.1 Each PORV shall be demonstrated OPERABLE by:

a. Performance of a CHANNEL FUNCTIONAL TEST on the PORV actuation channel, but excluding valve operation, within 31 days prior to entering a condition in which the PORV is required OPERABLE and at ~~least once per 31 days~~ thereafter when the PORV is required OPERABLE.

b. Performance of a CHANNEL CALIBRATION on the PORV actuation channel at ~~least once per 18 months~~.

c. Verifying the PORV block valve is open at ~~least once per 72 hours~~ when the PORV is being used for overpressure protection.

d. Testing in accordance with the inservice test requirements of Specification 4.0.5.

4.4.9.3.2 Verify no more than the maximum allowed number of charging pumps are capable of injecting into the RCS at ~~least once per 12 hours~~.

4.4.9.3.3 Verify no more than the maximum allowed number of HPSI pumps are capable of injecting into the RCS at ~~least once per 12 hours~~.

4.4.9.3.4 Verify the required RCS vent is open at ~~least once per 31 days~~ when the vent pathway is provided by vent valve(s) that is(are) locked, sealed, or otherwise secured in the open position, otherwise, verify the vent pathway at ~~least once per 12 hours~~.

the frequency specified in the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

4.5.1 Each SIT shall be demonstrated OPERABLE:

a. Verify each SIT isolation valve is fully open at ~~least once per 12 hours~~.*(1)

b. Verify borated water volume in each SIT is ≥ 1080 cubic feet and ≤ 1190 cubic feet at ~~least once per 12 hours~~.**(2)

c. Verify nitrogen cover-pressure in each SIT is ≥ 200 psig and ≤ 250 psig at ~~least once per 12 hours~~.***(3)

d. Verify boron concentration in each SIT is ≥ 1720 ppm at ~~least once per 6 months,~~ and once within 6 hours after each solution volume increase of ≥ 1% of tank volume****(4) that is not the result of addition from the refueling water storage tank.

e. Verify that the closing coil in the valve breaker cubicle is removed ~~at~~ ~~least once per 31 days~~.

the frequency specified in the Surveillance Frequency Control Program

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*(1) If one SIT is inoperable, except as a result of boron concentration not within limits or inoperable level or pressure instrumentation, surveillance is not applicable to the affected SIT.

**(2) If one SIT is inoperable due solely to inoperable water level instrumentation, surveillance is not applicable to the affected SIT.

***(3) If one SIT is inoperable due solely to inoperable pressure instrumentation, surveillance is not applicable to affected SIT.

****(4)Only required to be performed for affected SIT.

4.5.2 Each ECCS subsystem shall be demonstrated OPERABLE:

a. At ~~least once per 31 days~~ by verifying each Emergency Core Cooling System 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.

b. At ~~least once per 31 days~~ by verifying that the following valves are in the indicated position with power to the valve operator removed:

Valve Number	Valve Function	Valve Position
2-SI-306	Shutdown Cooling Flow Control	Open*
2-SI-659	SRAS Recirc.	Open**
2-SI-660	SRAS Recirc.	Open**

* Pinned and locked at preset throttle open position.

** To be closed prior to recirculation following LOCA.

c. By verifying the developed head of each high pressure safety injection pump at the flow test point is greater than or equal to the required developed head when tested pursuant to Specification 4.0.5.

d. By verifying the developed head of each low pressure safety injection pump at the flow test point is greater than or equal to the required developed head when tested pursuant to Specification 4.0.5.

e. By verifying the delivered flow of each charging pump at the required discharge pressure is greater than or equal to the required flow when tested pursuant to Specification 4.0.5.

f. At ~~least once per 18 months~~ by verifying each Emergency Core Cooling System 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.

g. At ~~least once per 18 months~~ by verifying each high pressure safety injection pump and low pressure safety injection pump starts automatically on an actual or simulated actuation signal.

the frequency specified in the Surveillance Frequency Control Program

h. At ~~least once per 18 months~~ by verifying each low pressure safety injection pump stops automatically on an actual or simulated actuation signal.

i. By verifying the correct position of each electrical and/or mechanical position stop for each injection valve in Table 4.5-1:

   1. Within 4 hours after completion of valve operations.

   2. At ~~least once per 18 months~~.

j. At ~~least once per 18 months~~ by verifying through visual inspection of the containment sump that each Emergency Core Cooling System subsystem suction inlet is not restricted by debris and the suction inlet strainers show no evidence of structural distress or abnormal corrosion.

k. At ~~least once per 18 months~~ by verifying the Shutdown Cooling System open permissive interlock prevents the Shutdown Cooling System inlet isolation valves from being opened with an actual or simulated Reactor Coolant System pressure signal of ≥ 300 psia.

the frequency specified in the Surveillance Frequency Control Program

EMERGENCY CORE COOLING SYSTEMS

REFUELING WATER STORAGE TANK

LIMITING CONDITION FOR OPERATION

3.5.4 The refueling water storage tank shall be OPERABLE with:

a. A minimum contained volume of 370,000 gallons of borated water,

b. A minimum boron concentration of 1720 ppm,

c. A minimum water temperature of 50°F when in MODES 1 and 2, and

d. A minimum water temperature of 35°F when in MODES 3 and 4.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the refueling water storage tank inoperable, restore tank to OPERABLE status within 1 hour or be in COLD SHUTDOWN within the next 30 hours.

SURVEILLANCE REQUIREMENTS

4.5.4 The RWST shall be demonstrated OPERABLE:

a. At ~~least once per 7 days~~ by:

1. Verifying the water level in the tank, and

2. Verifying the boron concentration of the water.

b. When in MODES 3 and 4, at ~~least once per 24 hours~~ by verifying the RWST temperature is ≥ 35°F when the RWST ambient air temperature is < 35°F.

c. When in MODES 1 and 2, at ~~least once per 24 hours~~ by verifying the RWST temperature is ≥ 50°F when the RWST ambient air temperature is < 50°F.

the frequency specified in the Surveillance Frequency Control Program

LIMITING CONDITION FOR OPERATION

3.5.5 The TSP baskets shall contain ≥282 ft^3 of active TSP.

APPLICABILITY: MODES 1, 2, and 3

ACTION:

With the quantity of TSP less than required, restore the TSP quantity within 72 hours, or be in MODE 3 within the next 6 hours and MODE 4 within the following 6 hours.

SURVEILLANCE REQUIREMENTS

4.5.5.1 Verify that the TSP baskets contain ≥282 ft^3 of TSP at ~~least once per 18 months~~.

4.5.5.2 Verify that a sample from the TSP baskets provides adequate pH adjustment of borated water at ~~least once per 18 months~~.

the frequency specified in the Surveillance Frequency Control Program

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

CONTAINMENT INTEGRITY

LIMITING CONDITION FOR OPERATION

3.6.1.1 Primary CONTAINMENT INTEGRITY shall be maintained.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Without primary CONTAINMENT INTEGRITY, restore CONTAINMENT INTEGRITY within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the next 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.1 Primary CONTAINMENT INTEGRITY shall be demonstrated:

a. At ~~least once per 31 days~~ by verifying that all penetrations(1) not capable of being closed by OPERABLE containment automatic isolation valves(2) and required to be closed during accident conditions are closed by valves, blind flanges, or deactivated automatic valves secured in their positions,(3) except for valves that are open under administrative control as permitted by Specification 3.6.3.1.

b. At ~~least once per 31 days~~ by verifying the equipment hatch is closed and sealed.

c. By verifying the containment air lock is in compliance with the requirements of Specification 3.6.1.3.

d. After each closing of a penetration subject to type B testing (except the containment air lock), if opened following a Type A or B test, by leak rate testing in accordance with the Containment Leakage Rate Testing Program.

e. By verifying Containment structural integrity in accordance with the Containment Tendon Surveillance Program.

the frequency specified in the Surveillance Frequency Control Program

(1) Except valves, blind flanges, and deactivated automatic valves which are located inside the containment and are locked, sealed, or otherwise secured in the closed position. These penetrations shall be verified closed prior to entering MODE 4 from MODE 5, if not performed within the previous 92 days.

(2) In MODE 4, the requirement for an OPERABLE containment automatic isolation valve system is satisfied by use of the containment isolation trip pushbuttons

(3) Isolation devices in high radiation areas may be verified by use of administrative means.

SURVEILLANCE REQUIREMENTS

4.6.1.3.1 Each containment air lock shall be demonstrated OPERABLE in accordance with the Containment Leakage Rate Testing Program. Containment air lock leakage test results shall be evaluated against the leakage limits of Technical Specification 3.6.1.2. (An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test) .

4.6.1.3.2 Each containment air lock shall be demonstrated OPERABLE ~~at least once per 24 months~~ by verifying that only one door in each air lock can be opened at a time.

the frequency specified in the Surveillance Frequency Control Program

INTERNAL PRESSURE

LIMITING CONDITION FOR OPERATION

3.6.1.4 Primary containment internal pressure shall be maintained between -12 inches Water Gauge and +1.0 PSIG.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the containment internal pressure in excess of or below the limits above, restore the internal pressure to within the limits within 1 hour or be in HOT STANDBY within the next 4 hours; go to COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.4 The primary containment internal pressure shall be determined to within the limits at ~~least once per 12 hours.~~

the frequency specified in the Surveillance Frequency Control Program

AIR TEMPERATURE

LIMITING CONDITION FOR OPERATION

3.6.1.5 Primary containment average air temperature shall not exceed 120°F.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the containment average air temperature > 120°F, reduce the average air temperature to within the limit within 8 hours, or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.5 The primary containment average air temperature shall be determined to be ≤ 120°F at ~~least once per 24 hours.~~

the frequency specified in the Surveillance Frequency Control Program

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT SPRAY AND COOLING SYSTEMS

LIMITING CONDITION FOR OPERATION

3.6.2.1 Two containment spray trains and two containment cooling trains, with each cooling train consisting of two containment air recirculation and cooling units, shall be OPERABLE.

APPLICABILITY: MODES 1, 2 and 3*.

ACTION:

Inoperable Equipment	Required ACTION
a. One containment spray train	a.1 Restore the inoperable containment spray train to OPERABLE status within 72 hours or be in HOT STANDBY within the next 6 hours and reduce pressurizer pressure to less than 1750 psia within the following 6 hours.
b. One containment cooling train	b.1 Restore the inoperable containment cooling train to OPERABLE status within 7 days or be in HOT SHUTDOWN within the next 12 hours.
c. One containment spray train AND One containment cooling train	c.1 Restore the inoperable containment spray train or the inoperable containment cooling train to OPERABLE status within 48 hours or be in HOT SHUTDOWN within the next 12 hours.
d. Two containment cooling trains	d.1 Restore at least one inoperable containment cooling train to OPERABLE status within 48 hours or be in HOT SHUTDOWN within the next 12 hours.
e. All other combinations	e.1 Enter LCO 3.0.3 immediately.

SURVEILLANCE REQUIREMENTS

4.6.2.1.1 Each containment spray train shall be demonstrated OPERABLE:

a. At ~~least once per 31 days by~~ verifying each containment spray manual, power operated, and automatic valve ~~in~~ the spray train flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.

the frequency specified in the Surveillance Frequency Control Program

* The Containment Spray System is not required to be OPERABLE in MODE 3 if pressurizer pressure is < 1750 psia.

the frequency specified in the Surveillance Frequency Control Program

b. By verifying the developed head of each containment spray pump at the flow test point is greater than or equal to the ~~required~~ developed head when tested pursuant to Specification 4.0.5.

c. At ~~least once per 18 months~~ by verifying 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.

d. At ~~least once per 18 months~~ by verifying each containment spray pump starts automatically on an actual or simulated actuation signal.

e. By verifying each spray nozzle is unobstructed following activities that could cause nozzle blockage.

4.6.2.1.2 Each containment air recirculation and cooling unit shall be demonstrated OPERABLE:

a. At ~~least once per 31 days~~ by operating each containment air recirculation and cooling unit in slow speed for ≥ 15 minutes.

b. At ~~least once per 31 days~~ by verifying each containment air recirculation and cooling unit cooling water flow rate is ≥ 500 gpm.

c. At ~~least once per 18 months~~ by verifying each containment air recirculation and cooling unit starts automatically on an actual or simulated actuation signal.

3/4.6.3 CONTAINMENT ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.6.3.1 Each containment isolation valve shall be OPERABLE.(1) (2)

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one or more of the isolation valve(s) inoperable, either:

a. Restore the inoperable valve(s) to OPERABLE status within 4 hours, or

b. Isolate the affected penetration(s) within 4 hours by use of a deactivated automatic valve(s) secured in the isolation position(s), or

c. Isolate the affected penetration(s) within 4 hours by use of a closed manual valve(s) or blind flange(s); or

d. Isolate the affected penetration that has only one containment isolation valve and a closed system within 72 hours by use of at least one closed and deactivated automatic valve, closed manual valve, or blind flange; or

e. Be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.6.3.1 Each containment isolation valve shall be demonstrated OPERABLE:

a. By verifying the isolation time of each power operated automatic containment isolation valve when tested pursuant to Specification 4.0.5.

b. At ~~least once per 18 months~~ the frequency specified in the Surveillance Frequency Control Program by verifying 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.

---

(1) Containment isolation valves may be opened on an intermittent basis under administrative controls.

(2) The provisions of this Specification in MODES 1, 2 and 3, are not applicable for main steam line isolation valves. However, provisions of Specification 3.7.1.5 are applicable for main steam line isolation valves.

CONTAINMENT VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.3.2 The containment purge supply and exhaust isolation valves shall be sealed closed.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one containment purge supply and/or one exhaust isolation valve open, close the open valve(s) within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.3.2 The containment purge supply and exhaust isolation valves shall be determined sealed closed at ~~least once per 31 days~~.

the frequency specified in the Surveillance Frequency Control Program

POST-INCIDENT RECIRCULATION SYSTEMS

LIMITING CONDITION FOR OPERATION

3.6.4.4 Two separate and independent post-incident recirculation systems shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTION:

With one post-incident recirculation system inoperable, restore the inoperable system to OPERABLE status within 30 days or be in HOT STANDBY within the next 12 hours.

SURVEILLANCE REQUIREMENTS

the frequency specified in the Surveillance Frequency Control Program

4.6.4.4 Each post-incident recirculation system shall be demonstrated OPERABLE at ~~least once per 92 days on a STAGGERED TEST BASIS~~ by:

a. Verifying that the system can be started on operator action in the control room, and

b. Verifying that the system operates for at least 15 minutes.

3/4.6.5 SECONDARY CONTAINMENT

ENCLOSURE BUILDING FILTRATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.5.1 Two separate and independent Enclosure Building Filtration Trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one Enclosure Building Filtration Train inoperable, restore the inoperable train to OPERABLE status within 7 days or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

the frequency specified in the Surveillance Frequency Control Program

4.6.5.1 Each Enclosure Building Filtration ~~Train~~ shall be demonstrated OPERABLE:

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

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

1. Verifying that the cleanup train satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the train flow rate is 9000 cfm ± 10%.

2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978.*

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

c. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978.*

d. At ~~least once per 18 months~~ by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is ≤ 2.6 inches Water Gauge while operating the train at a flow rate of 9000 cfm ± 10%.

2. Verifying that the train starts on an Enclosure Building Filtration Actuation Signal (EBFAS).

e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove greater than or equal to 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the train at a flow rate of 9000 cfm ± 10%.

the frequency specified in the Surveillance Frequency Control Program

* ASTM D3803-89 shall be used in place of ANSI N509-1976 as referenced in table 2 of Regulatory Guide 1.52. The laboratory test of charcoal should be conducted at a temperature of 30°C and a relative humidity of 95% within the tolerances specified by ASTM D3803-89. Additionally, the charcoal sample shall have a removal efficiency of ≥ 95%.

ENCLOSURE BUILDING

LIMITING CONDITION FOR OPERATION

3.6.5.2 The Enclosure Building shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the Enclosure Building inoperable, restore the Enclosure Building to OPERABLE status within 24 hours or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.2.1 OPERABILITY of the Enclosure Building shall be demonstrated at ~~least once per 31 days~~ by verifying that each access opening is closed except when the access opening is being used for normal transit entry and exit.

4.6.5.2.2. At ~~least once per 18 months~~ verify each Enclosure Building Filtration Train produces a negative pressure of greater than or equal to 0.25 inches W.G. in the Enclosure Building Filtration Region within 1 minute after an Enclosure Building Filtration Actuation Signal.

the frequency specified in the Surveillance Frequency Control Program

LIMITING CONDITION FOR OPERATION

ACTION: (Continued)

Inoperable Equipment	Required ACTION
e. Three auxiliary feedwater pumps in MODE 1, 2, or 3.	e. - - - - - - - - NOTE - - - - - - - - LCO 3.0.3 and all other LCO required ACTIONS requiring MODE changes are suspended until one AFW pump is restored to OPERABLE status. - Immediately initiate ACTION to restore one auxiliary feedwater pump to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.7.1.2 Each auxiliary feedwater pump shall be demonstrated OPERABLE:

a. At ~~least once per 31 days~~ by verifying each auxiliary feedwater manual, power operated, and automatic valve in each water flow path and in each steam supply flow path to the steam turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.

b. By verifying the developed head of each auxiliary feedwater pump at the flow test point is greater than or equal to the required developed head when tested pursuant to Specification 4.0.5. (Not required to be performed for the steam turbine driven auxiliary feedwater pump until 24 hours after reaching 800 psig in the steam generators. The provisions of Specification 4.0.4 are not applicable to the steam turbine driven auxiliary feedwater pump for entry into MODE 3.)

the frequency specified in the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (Continued)

c. At ~~least once per 18 months~~ by verifying each auxiliary feedwater automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position, as designed, on an actual or simulated actuation signal.

d. At ~~least once per 18 months~~ by verifying each auxiliary feedwater pump starts automatically, as designed, on an actual or simulated actuation signal.

e. By verifying the proper alignment of the required auxiliary feedwater flow paths by verifying flow from the condensate storage tank to each steam generator prior to entering MODE 2 whenever the unit has been in MODE 5, MODE 6, or defueled for a cumulative period of greater than 30 days.

the frequency specified in the Surveillance Frequency Control Program

CONDENSATE STORAGE TANK

LIMITING CONDITION FOR OPERATION

3.7.1.3 The condensate storage tank shall be OPERABLE with a minimum contained volume of 165,000 gallons.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

With less than 165,000 gallons of water in the condensate storage tank, within 4 hours either:

a. Restore the water volume to within the limit or be in HOT SHUTDOWN within the next 12 hours, or

b. Demonstrate the OPERABILITY of the fire water system as a backup supply to the auxiliary feedwater pumps and restore the condensate storage tank water volume to within its limits within 7 days or be in HOT SHUTDOWN within the next 12 hours.

SURVEILLANCE REQUIREMENTS

4.7.1.3 The condensate storage tank shall be demonstrated OPERABLE at ~~least once per 12 hours~~ by verifying the water level.

the frequency specified in the Surveillance Frequency Control Program

TABLE 4.7-2

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

TYPE OF MEASUREMENT AND ANALYSIS	MINIMUM FREQUENCY
1. Gross Activity Determination	~~3 times per 7 days~~ with a maximum time of 72 hours between samples.
2. Isotopic Analysis for DOSE EQUIVALENT I-131 Concentration	a) 1 per 31 days, whenever the gross activity determination indicates iodine concentrations greater than 10% of the allowable limit
	b) ~~1 per 6 months,~~ whenever the gross activity determination indicates iodine concentrations below 10% of the allowable limit.

At the frequency specified in the Surveillance Frequency Control Program

b. With two or more of the feedwater isolation components inoperable in the same flow path, either:

1. Restore the inoperable component(s) to OPERABLE status within 8 hours until ACTION 'a' applies, or

2. Isolate the affected flow path within 8 hours, and verify that the inoperable feedwater isolation components are closed or isolated/secured once per 7 days, or

3. Be in HOT SHUTDOWN within the next 12 hours.

SURVEILLANCE REQUIREMENTS

the frequency specified in the Surveillance Frequency Control Program

4.7.1.6 Each feedwater isolation valve/feedwater pump trip circuitry shall be demonstrated OPERABLE at ~~least once per 18 months~~ by:

a. Verifying that on 'A' main steam isolation test signal, each isolation valve actuates to its isolation position, and

b. Verifying that on 'B' main steam isolation test signal, each isolation valve actuates to its isolation position, and

c. Verifying that on 'A' main steam isolation test signal, each feedwater pump trip circuit actuates, and

d. Verifying that on 'B' main steam isolation test signal, each feedwater pump trip circuit actuates.

ATMOSPHERIC DUMP VALVES

LIMITING CONDITION FOR OPERATION

3.7.1.7 Each atmospheric dump valve line shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

a. With one atmospheric dump valve line inoperable, restore the inoperable line to OPERABLE status within 48 hours or be in MODE 3 within the next 6 hours and MODE 4 within the following 24 hours.

b. With more than one atmospheric dump valve line inoperable, restore one inoperable line to OPERABLE status within 1 hour or be in MODE 3 within the next 6 hours and MODE 4 within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.7.1.7 Verify the OPERABILITY of each atmospheric dump valve line by local manual operation of each valve in the flowpath through one complete cycle of operation at ~~least once per 18 months~~.

the frequency specified in the Surveillance Frequency Control Program

STEAM GENERATOR BLOWDOWN ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.7.1.8 Each steam generator blowdown isolation valve shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3

ACTION:

With one or more steam generator blowdown isolation valves inoperable, either:

a. Restore the inoperable valve(s) to OPERABLE status within 4 hours; or

b. Isolate the affected steam generator blowdown line within 4 hours; or

c. Be in MODE 3 within the next 6 hours and MODE 4 within the following 6 hours.

SURVEILLANCE REQUIREMENTS

4.7.1.8 Verify the closure time of each steam generator blowdown isolation valve is ≤ 10 seconds on an actual or simulated closure signal at ~~least once per 18 months~~.

the frequency specified in the Surveillance Frequency Control Program

3/4.7.3 REACTOR BUILDING CLOSED COOLING WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.3.1 Two reactor building closed cooling water loops shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one reactor building closed cooling water loop inoperable, restore the inoperable loop to OPERABLE status within 72 hours or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.7.3.1 Each reactor building closed cooling water loop shall be demonstrated OPERABLE:

a. At ~~least once per 31 days~~ by verifying each reactor building closed cooling water 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.

b. At ~~least once per 18 months~~ by verifying each reactor building closed cooling water 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.

c. At ~~least once per 18 months~~ by verifying each reactor building closed cooling water pump starts automatically on an actual or simulated actuation signal.

the frequency specified in the Surveillance Frequency Control Program

3/4.7.4 SERVICE WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.4.1 Two service water loops shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one service water loop inoperable, restore the inoperable loop to OPERABLE status within 72 hours or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.7.4.1 Each service water loop shall be demonstrated OPERABLE:

a. At ~~least once per 31 days~~ by verifying each service water 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.

b. At ~~least once per 18 months~~ by verifying each service water 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.

c. At ~~least once per 18 months~~ by verifying each service water pump starts automatically on an actual or simulated actuation signal.

the frequency specified in the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

the frequency specified in the Surveillance Frequency Control Program

4.7.6.1 Each Control Room Emergency Ventilation Train shall be demonstrated OPERABLE:

a. At ~~least once per 12 hours by verifying~~ that the control room air temperature is ≤ 100°F.

b. At ~~least once per 31 days on a STAGGERED TEST BASIS~~ by initiating from the control room, flow through the HEPA filters and charcoal absorber train and verifying that the train operates for at least 15 minutes.

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

1. Verifying that the cleanup train satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the train flow rate is 2500 cfm ± 10%.

2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accor-dance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revi-sion 2, March 1978.* The carbon sample shall have a removal efficiency of ≥ 95 percent.

3. Verifying a train flow rate of 2500 cfm ± 10% during train operation when tested in accordance with ANSI N510-1975.

d. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978.*

* ASTM D3803-89 shall be used in place of ANSI N509-1976 as referenced in table 2 of Regulatory Guide 1.52. The laboratory test of charcoal should be conducted at a temperature of 30°C and a relative humidity of 95% within the tolerances specified by ASTM D3803-89.

SURVEILLANCE REQUIREMENTS (Continued)

the frequency specified in the Surveillance Frequency Control Program

e. At ~~least once per 18 months~~ by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 3.4 inches Water Gauge while operating the train at a flow rate of 2500 cfm ± 10%.

2. Verifying that on a recirculation signal, with the Control Room Emergency Ventilation Train operating in the normal mode and the smoke purge mode, the train automatically switches into a recirculation mode of operation with flow through the HEPA filters and charcoal adsorber banks.

3/4.7.11 ULTIMATE HEAT SINK

LIMITING CONDITION FOR OPERATION

3.7.11 The ultimate heat sink shall be OPERABLE with a water temperature of less than or equal to 80°F.

APPLICABILITY: MODES 1, 2, 3, AND 4

ACTION:

With the UHS water temperature greater than 80°F, be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.11 The ultimate heat sink shall be determined OPERABLE:

a. At ~~least once per 24 hours~~ by verifying the water temperature to be within limits.

b. At least once per 6 hours by verifying the water temperature to be within limits when the water temperature exceeds 75°F.

the frequency specified in the Surveillance Frequency Control Program

ACTION (Continued)

Inoperable Equipment	Required ACTION
e. Two diesel generators	e.1 Perform Surveillance Requirement 4.8.1.1.1 for the offsite circuits within 1 hour and at least once per 8 hours thereafter. AND e.2 Restore one of the inoperable diesel generators to OPERABLE status within 2 hours or be in HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours. AND e.3 Following restoration of one diesel generator restore remaining inoperable diesel generator to OPERABLE status following the time requirements of ACTION Statement b above based on the initial loss of the remaining inoperable diesel generator.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Verify correct breaker alignment and indicated power available for each required offsite circuit at ~~least once per 24 hours~~.

the frequency specified in the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (Continued)

the frequency specified in the Surveillance Frequency Control Program

4.8.1.1.2 Each required diesel generator shall be demonstrated OPERABLE:*

a. At ~~least once per 31 days~~ by:

1. Verifying the fuel level in the fuel oil supply tank,

2.

> NOTES
>
> 1. A modified diesel generator start involving idling and gradual acceleration to synchronous speed may be used as recommended by the manufacturer. When modified start procedures are not used, the requirements of SR 4.8.1.1.2.d.1 must be met.
>
> 2. Performance of SR 4.8.1.1.2.d satisfies this Surveillance Requirement.

Verifying the diesel generator starts from standby conditions and achieves steady state voltage ≥ 3740 V and ≤ 4580 V, and Frequency ≥ 58.8 Hz and ≤ 61.2 Hz.

3.

> NOTES
>
> 1. Diesel generator loading may include gradual loading as recommended by the manufacturer.
>
> 2. Momentary transients outside the load range do not invalidate this test.
>
> 3. This test shall be conducted on only one diesel generator at a time.
>
> 4. This test shall be preceded by and immediately follow without shutdown a successful performance of SR 4.8.1.1.2.a.2, or SRs 4.8.1.1.2.d.1 and 4.8.1.1.2.d.2.
>
> 5. Performance of SR 4.8.1.1.2.d satisfies this Surveillance Requirement.

Verifying the diesel generator is synchronized and loaded, and operates for ≥ 60 minutes at a load ≥ 2475 kW and ≤ 2750 kW.

---

* All diesel starts may be preceded by an engine prelube period.

SURVEILLANCE REQUIREMENTS (Continued)

b. The diesel fuel oil supply shall be checked by:

1. Checking for and removing accumulated water from each fuel oil storage tank at ~~least once per 92 days~~.

2. Verifying 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.

c. At ~~least once per 18 months~~ by:

1. Deleted

2. the frequency specified in the Surveillance Frequency Control Program

NOTE

This surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.

Verifying that the automatic time delay sequencer is OPERABLE with the following settings:

Sequence Step	Time After Closing of Diesel Generator Output Breaker (Seconds)	
	Minimum	Maximum
1 (T_1)	1.5	2.2
2 (T_2)	T_1 + 5.5	8.4
3 (T_3)	T_2 + 5.5	14.6
4 (T_4)	T_3 + 5.5	20.8

SURVEILLANCE REQUIREMENT (Continued)

the frequency specified in the Surveillance Frequency Control Program

d. At ~~least once per 184 days~~ by:

1. Verifying the diesel starts from standby conditions and accelerates to ≥ 90% of rated speed and to ≥ 97% of rated voltage within 15 seconds after the start signal.

2. Verifying the generator achieves steady state voltage ≥ 3740 V and ≤ 4580 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.

3.

NOTES

1. Diesel generator loading may include gradual loading as recommended by the manufacturer.

2. Momentary transients outside the load range do not invalidate this test.

3. This test shall be conducted on only one diesel generator at a time.

4. This test shall be preceded by and immediately follow without shutdown a successful performance of SRs 4.8.1.1.2.d.1 and 4.8.1.1.2.d.2, or SR 4.8.1.1.2.a.2.

Verifying the diesel generator is synchronized and loaded, and operates for ≥ 60 minutes at a load ≥ 2475 kW and ≤ 2750 kW.

3/4 8.2 ONSITE POWER DISTRIBUTION SYSTEMS

A.C. DISTRIBUTION - OPERATING

LIMITING CONDITION FOR OPERATION

3.8.2.1 The following A.C. electrical busses shall be OPERABLE and energized from sources of power other than the diesel generators with tie breakers open between redundant busses:

4160	volt Emergency Bus # 24 C
4160	volt Emergency Bus #24 D
480	volt Emergency Load Center #22 E
480	volt Emergency Load Center #22 F
120	volt A.C. Vital Bus # VA-10
120	volt A.C. Vital Bus # VA-20
120	volt A.C. Vital Bus # VA-30
120	volt A.C. Vital Bus # VA-40

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With less than the above complement of A.C. busses OPERABLE, restore the inoperable bus and/ or associated load center to OPERABLE status within 8 hours or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.8.2.1 The specified A.C. busses shall be determined OPERABLE and energized from normal A.C. sources with tie breakers open between redundant busses at ~~least once per 7 days~~ by verifying correct breaker alignment and indicated power availability~~.~~

the frequency specified in the Surveillance Frequency Control Program

3/4.8.2 ONSITE POWER DISTRIBUTION SYSTEMS

A.C. DISTRIBUTION - OPERATING

LIMITING CONDITION FOR OPERATION (Continued)

3.8.2.1A Inverters 5 and 6 shall be OPERABLE and available for automatic transfer via static switches VS1 and VS2 to power busses VA-10 and VA-20, respectively.

APPLICABILITY: MODES 1, 2 & 3

ACTION:

a. With inverter 5 or 6 inoperable, restore the inverter to OPERABLE status within 7 days or be in HOT SHUTDOWN within the next 12 hours.

b. With inverter 5 or 6 unavailable for automatic transfer via static switch VS1 or VS2 to power bus VA-10 or VA-20, respectively, restore the automatic transfer capability within 7 days or be in HOT SHUTDOWN within the next 12 hours.

c. With inverters 5 and 6 inoperable or unavailable for automatic transfer via static switches VS1 and VS2 to power busses VA-10 and VA-20, respectively, restore the inverters to OPERABLE status or restore their automatic transfer capability within 7 days or be in HOT SHUTDOWN within the next 12 hours.

SURVEILLANCE REQUIREMENTS

4.8.2.1A

a. Verify correct inverter voltage, frequency, and alignment for automatic transfer via static switches VS1 and VS2 to power busses VA-10 and VA-20, respectively, at ~~least once per 7 days~~.

b. Verify that busses VA-10 and VA-20 automatically transfer to their alternate power sources, inverters 5 and 6, respectively, at ~~least once per refueling~~ during shutdown.

the frequency specified in the Surveillance Frequency Control Program

A.C. DISTRIBUTION - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.2.2 As a minimum, the following A.C. electrical busses shall be OPERABLE and energized from sources of power other than a diesel generator but aligned to an OPERABLE diesel generator:

1 - 4160 volt Emergency Bus

1 - 480 volt Emergency Load Center

2 - 120 volt A.C. Vital Busses

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above complement of A.C. busses OPERABLE and energized, suspend all operations involving CORE ALTERATIONS and positive reactivity additions that could result in loss of required SDM or boron concentration, and movement of recently irradiated fuel assemblies.

SURVEILLANCE REQUIREMENTS

4.8.2.2 The specified A.C. busses shall be determined OPERABLE and energized from normal A.C. sources at ~~least once per 7 days~~ by verifying correct breaker alignment and indicated power availability.

the frequency specified in the Surveillance Frequency Control Program

D.C. DISTRIBUTION - OPERATING

LIMITING CONDITION FOR OPERATION

3.8.2.3 125-volt D.C. bus Train A and 125-volt D.C. bus Train B electrical power subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one 125-volt D.C. bus train inoperable, restore the inoperable 125-volt D.C. bus train to OPERABLE status within 2 hours or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.8.2.3.1 Each 125-volt D.C. bus train shall be determined OPERABLE at ~~least once per 7 days~~ by verifying correct breaker alignment and indicated power availability.

4.8.2.3.2 Each 125-volt D.C. battery bank and charger of Train A and Train B shall be demonstrated OPERABLE:

a. By verifying at ~~least once per 7 days~~ that that the battery cell parameters meet Table 4.8-1 Category A limits.

b. By verifying at ~~least once per 92 days~~ the battery cell parameters meet Table 4.8-1 Category B limits.

the frequency specified in the Surveillance Frequency Control Program

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

1. The cells, cell plates and battery racks show no visual indication of physical damage or deterioration that could degrade battery performance,

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

3. The battery charger will supply at least 400 amperes at a minimum of 130 volts for at least 12 hours.

d. At ~~least once per 18 months~~, during shutdown, by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual emergency loads for 8 hours when the battery is subjected to a battery service test.

e. At ~~least once per 60 months~~, during shutdown, by verifying that the battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test. This performance discharge test may be performed in lieu of the battery service test.

the frequency specified in the Surveillance Frequency Control Program

D.C. DISTRIBUTION - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.2.4 One 125 - volt D.C. bus train electrical power subsystem shall be OPERABLE:

APPLICABILITY: MODES 5 and 6.

ACTION:

With no 125-volt D.C. bus trains OPERABLE, suspend all operations involving CORE ALTERATIONS and positive reactivity additions that could result in loss of required SDM or boron concentration, and movement of recently irradiated fuel assemblies.

SURVEILLANCE REQUIREMENTS

4.8.2.4.1 The above required 125-volt D.C. bus train shall be determined OPERABLE at ~~least once per 7 days~~ by verifying correct breaker alignment and indicated power availability.

4.8.2.4.2 The above required 125-volt D.C. bus train battery bank and charger shall be demonstrated OPERABLE per Surveillance Requirement 4.8.2.3.2.

the frequency specified in the Surveillance Frequency Control Program

D.C. DISTRIBUTION SYSTEMS (TURBINE BATTERY) — OPERATING

LIMITING CONDITION FOR OPERATION

3.8.2.5 The Turbine Battery 125-volt D.C. electrical power subsystem shall be OPERABLE.

APPLICABILITY: MODES 1, 2 & 3

ACTION:

a. With the Turbine Battery 125-volt D.C. electrical power subsystem inoperable, restore the subsystem to OPERABLE status within 7 days or be in HOT SHUTDOWN within the next 12 hours.

the frequency specified in the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

4.8.2.5.1 Verify 125-volt D.C. bus 201D is OPERABLE at ~~least once per 7 days.~~

4.8.2.5.2 125-volt D.C. battery bank 201D shall be demonstrated OPERABLE:

a. By verifying at ~~least once per 7 days~~ that the battery cell parameters meet Table 4.8-2 Category A limits.

b. By verifying ~~at least once per 92 days~~ the battery cell parameters meet Table 4.8-2 Category B limits.

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

1. The cells, cell plates, and battery racks show no visual indication of physical damage or deterioration that could degrade battery performance, and

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

d. At ~~least once per 18 months,~~ during shutdown, by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual loads for 1 hour when the battery is subjected to a battery service test.

e. At ~~least once per 60 months,~~ during shutdown, by verifying that the battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test. This performance discharge test may be performed in lieu of the battery service test.

3/4.9 REFUELING OPERATIONS

3/4.9.1 BORON CONCENTRATIONS

LIMITING CONDITION FOR OPERATION

3.9.1 The boron concentration of all filled portions of the Reactor Coolant System and the refueling canal shall be maintained sufficient to ensure that the more restrictive of following reactivity conditions is met:

a. Either a K_{eff} of 0.95 or less, or

b. A boron concentration of greater than or equal to 1720 ppm.

APPLICABILITY: MODE 6.

NOTE
Only applicable to the refueling canal when connected to the Reactor Coolant System

ACTION:

With the requirements of the above specification not satisfied, within 15 minutes suspend all operations involving CORE ALTERATIONS and positive reactivity additions and initiate and continue boration at greater than or equal to 40 gpm of boric acid solution at or greater than the required refueling water storage tank concentration (ppm) until K_{eff} is reduced to less than or equal to 0.95 or the boron concentration is restored to greater than or equal to 1720 ppm, whichever is the more restrictive.

SURVEILLANCE REQUIREMENTS

4.9.1.1 The more restrictive of the above two reactivity conditions shall be determined prior to:

a. Removing or unbolting the reactor vessel head, and

b. Withdrawal of any CEA in excess of 3 feet from its fully inserted position within the reactor pressure vessel.

4.9.1.2 The boron concentration of all filled portions of the reactor coolant system and the refueling canal shall be determined by chemical analysis at ~~least once per 72 hours.~~ the frequency specified in the Surveillance Frequency Control Program

4.9.1.3 Deleted

LIMITING CONDITION FOR OPERATION

3.9.2 Two source range neutron flux monitors shall be OPERABLE, each with continuous visual indication in the control room and one with audible indication in the containment, and control room.

APPLICABILITY: MODE 6.

ACTION:

a. With one of the above required monitors inoperable, immediately suspend all operations involving CORE ALTERATIONS and operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.

b. With both of the above required monitors inoperable, immediately initiate action to restore one monitor to OPERABLE status. Additionally, determine that the boron concentration of the Reactor Coolant System satisfies the requirements of LCO 3.9.1 within 4 hours and at least once per 12 hours thereafter.

SURVEILLANCE REQUIREMENTS.

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

a. Deleted

b. A CHANNEL CALIBRATION at ~~least once per 18 months*~~

c. A CHANNEL CHECK and verification of audible counts at ~~least once per 12 hours.~~

the frequency specified in the Surveillance Frequency Control Program

* Neutron detectors are excluded from CHANNEL CALIBRATION.

SURVEILLANCE REQUIREMENTS

4.9.4.1 Verify each required containment penetration is in the required status at ~~least once per 7 days~~.

4.9.4.2 Deleted

the frequency specified in the Surveillance Frequency Control Program

SHUTDOWN COOLING AND COOLANT CIRCULATION - HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

ACTION:

With no shutdown cooling train OPERABLE or in operation, perform the following actions:

a. Immediately suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1 and the loading of irradiated fuel assemblies in the core; and

b. Immediately initate action to restore one shutdown cooling train to OPERABLE status and operation; and

c. Within 4 hours place the containment penetrations in the following status:

   1. Close the equipment door and secure with at least four bolts; and

   2. Close at least one personnel airlock door; and

   3. Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be closed with a manual or automatic isolation valve, blind flange, or equivalent.

SURVEILLANCE REQUIREMENTS

4.9.8.1 One shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate greater than or equal to 1000 gpm at ~~least once per 12 hours~~.

the frequency specified in the Surveillance Frequency Control Program

LIMITING CONDITION FOR OPERATION (continued)

c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be closed with a manual or automatic isolation valve, blind flange, or equivalent.

SURVEILLANCE REQUIREMENTS

the frequency specified in the Surveillance Frequency Control Program

4.9.8.2.1 One shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate greater than or equal to 1000 gpm at ~~least once per 12 hours~~.

4.9.8.2.2 The required shutdown cooling pump, if not in operation, shall be determined OPERABLE ~~once per 7 days~~ by verifying correct breaker alignment and indicated power available.

at the frequency specified in the Surveillance Frequency Control Program

REFUELING OPERATIONS

WATER LEVEL - REACTOR VESSEL

LIMITING CONDITION FOR OPERATION

3.9.11 As a minimum, 23.0 feet of water shall be maintained over the top of the 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.

ACTION:

With the water level less than that specified above, immediately suspend CORE ALTERATIONS and immediately suspend movement of irradiated fuel assemblies within containment.

SURVEILLANCE REQUIREMENTS

4.9.11 The water level shall be determined to be within its minimum depth at ~~least once per 24 hours.~~

the frequency specified in the Surveillance Frequency Control Program

STORAGE POOL WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.12 As a minimum, 23 feet of water shall be maintained over the top of irradiated fuel assemblies seated in the storage racks.

APPLICABILITY: WHENEVER IRRADIATED FUEL ASSEMBLIES ARE IN THE STORAGE POOL.

ACTION:

With the requirement of the specification not satisfied, suspend all movement of fuel and spent fuel pool platform crane operations with loads in the fuel storage areas.

SURVEILLANCE REQUIREMENTS

4.9.12 The water level in the storage pool shall be determined to be within its minimum depth at ~~least once per 7 days~~ when irradiated fuel assemblies are in the fuel storage pool.

the frequency specified in the Surveillance Frequency Control Program

LIMITING CONDITION FOR OPERATION

3.9.16 All fuel within a distance L from the center of the spent fuel pool cask laydown area shall have decayed for at least 90 days. The distance L equals the major dimension of the shielded cask.

APPLICABILITY: Whenever a shielded cask is on the refueling floor.

ACTION:

With the requirements of the above specification not satisfied, do not move a shielded cask to the refueling floor. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.16 The decay time of all fuel within a distance L from the center of the spent fuel pool cask laydown area shall be determined to be ≥ 90 days within 24 hours prior to moving a shielded cask to the refueling floor and at ~~least once per 72 hours~~ thereafter.

the frequency specified in the Surveillance Frequency Control Program

SPENT FUEL POOL BORON CONCENTRATION

LIMITING CONDITION FOR OPERATION

3.9.17 The boron concentration in the spent fuel pool shall be greater than or equal to 1720 parts per million (ppm).

APPLICABILITY: Whenever any fuel assembly or consolidated fuel storage box, is stored in the spent fuel pool.

ACTION:

With the boron concentration less than 1720 ppm, suspend the movement of all fuel, consolidated fuel storage boxes, and shielded casks, and immediately initiate action to restore the spent fuel pool boron concentration to within its limit.

The provisions of specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.17 Verify that the boron concentration is greater than or equal to 1720 ppm ~~every 7 days~~, and within 24 hours prior to the initial movement of a fuel assembly or consolidated fuel storage box in the Spent Fuel Pool, or shielded cask over the cask laydown ~~area.~~

at the frequency specified in the Surveillance Frequency Control Program

SPECIAL TEST EXCEPTIONS

GROUP HEIGHT AND INSERTION LIMITS

LIMITING CONDITION FOR OPERATION

3.10.2 The requirements of Specifications 3.1.1.4, 3.1.3.1, 3.1.3.5, 3.1.3.6, 3.2.3 and 3.2.4 may be suspended during the performance of PHYSICS TESTS provided:

a. The THERMAL POWER is restricted to the test power plateau which shall not exceed 85% of RATED THERMAL POWER, and

b. The limits of Specification 3.2.1 are maintained and determined as specified in Specification 4.10.2 below.

APPLICABILITY: MODES 1 and 2.

ACTION:

With any of the limits of Specification 3.2.1 being exceeded while the requirements of Specifications 3.1.1.4, 3.1.3.1, 3.1.3.5, 3.1.3.6, 3.2.3 and 3.2.4 are suspended, immediately:

a. Reduce THERMAL POWER sufficiently to satisfy the requirements of Specification 3.2.1 or

b. Be in HOT STANDBY within 2 hours.

SURVEILLANCE REQUIREMENTS

4.10.2.1 The THERMAL POWER shall be determined at ~~least once per hour~~ during PHYSICS TESTS in which the requirements of Specifications 3.1.1.4, 3.1.3.1, 3.1.3.5, 3.1.3.6, 3.2.3 or 3.2.4 are suspended and shall be verified to be within the test power plateau.

4.10.2.2 The linear heat rate shall be determined to be within the limits of Specification 3.2.1 by monitoring it continuously with the Incore Detector Monitoring System pursuant to the requirements of Specifications 4.2.1.3 during PHYSICS TESTS above 5% of RATED THERMAL POWER in which the requirements of Specifications 3.1.1.4, 3.1.3.1, 3.1.3.5, 3.1.3.6, 3.2.3 or 3.2.4 are suspended.

the frequency specified in the Surveillance Frequency Control Program

6.27 CONTROL ROOM ENVELOPE HABITABILITY PROGRAM (Continued)

e. The quantitative limits on unfiltered air inleakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air inleakage measured by the testing described in paragraph c. The unfiltered air inleakage limit for radiological challenges is the inleakage flow rate assumed in the licensing basis analyses of DBA consequences. Unfiltered air inleakage limits for hazardous chemicals must ensure that exposure of CRE occupants to these hazards will be within the assumptions in the licensing basis.

f. The provisions of Surveillance Requirement 4.0.2 are applicable to the frequencies for assessing CRE habitability and determining CRE unfiltered inleakage as required by paragraph c.

6.28 SNUBBER EXAMINATION, TESTING, AND SERVICE LIFE MONITORING PROGRAM

This program conforms to the examination, testing, and service life monitoring for dynamic restraints (snubbers) in accordance with 10 CFR 50.55a inservice inspection (ISI) requirements for supports. The program shall be in accordance with the following:

a. This program shall meet 10 CFR 50.55a(g) ISI requirements for supports.

b. The program shall meet the requirements for ISI of supports set forth in subsequent editions of the Code of Record and addenda of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (BPV) Code and the ASME Code for Operation and Maintenance of Nuclear Power Plants (OM Code) that are incorporated by reference in 10 CFR 50.55a(b), subject to its limitations and modifications, and subject to Commission approval.

c. The program shall, as allowed by 10 CFR 50.55a(b)(3)(v), meet Subsection ISTA, "General Requirements" and Subsection ISTD, "Preservice and Inservice Examination and Testing of Dynamic Restraints (Snubbers) in Light-Water Reactor Nuclear Power Plants" in lieu of Section XI of the ASME BPV Code ISI requirements for snubbers, or meet authorized alternatives pursuant to 10 CFR 50.55a(a)(3).

d. The 120-month program updates shall be made in accordance with 10 CFR 50.55a (including 10 CFR 50.55a(b)(3)(v)) subject to the limitations and modifications listed therein.

INSERT 1

INSERT 1

6.29 SURVEILLANCE FREQUENCY CONTROL PROGRAM

This program provides controls for surveillance frequencies. The program shall ensure that surveillance requirements specified in the technical specification 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 4.0.2 and 4.0.3 are applicable to the frequencies established in the Surveillance Frequency Control Program.

ATTACHMENT 4

Cross-References NUREG-1432 to MPS2 TS Surveillance Frequencies Removed

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 2

TS Section Title/ Surveillance Description*	TSTF 425	MPS2
Shutdown Margin		
Verify SDM in Modes 3, 4, and 5	SR 3.1.1.1	SR 4.1.1.1
Reactivity Balance		
Verify Core Reactivity $\pm$1%	SR 3.1.2.1	SR 4.1.1.2
CEA Alignment		
Verify Rod Position Within Alignment	SR 3.1.4.1	SR 4.1.3.1.1
Verify Rod Motion Inhibit	SR 3.1.4.2	SR 4.1.3.1.4.b
Verify CEA Deviation Circuit	SR 3.1.4.3	SR 4.1.3.1.3
Verify CEA Freedom of Movement	SR 3.1.4.4	SR 4.1.3.1.2
Perform Channel Functional Test of Reed Switch	SR 3.1.4.5	---
Perform CEA drop time with $T_{avg} \geq$ 515°F and all RCPs operating prior to reactor criticality	---	*SR 4.1.3.4.c*
Position Indication Channels		
Verify Pulse Counter Within 6 Steps of Reed Switch Counters	---	*SR 4.1.3.3*
Shutdown CEA Insertion Limits		
Verify CEAs Withdrawn	SR 3.1.5.1	SR 4.1.3.5
Regulating CEA Insertion Limits		
Verify Regulating CEAs Within Limits	SR 3.1.6.1	SR 4.1.3.6.1
Verify Accumulated Time With Regulated CEA Below Limit	SR 3.1.6.2	SR 4.1.3.6.2
Verify PDIL Alarm Circuit	SR 3.1.6.3	SR 4.1.3.6.3
Control Rod Drive Mechanisms		
Verify Mechanisms are De-Energized	---	*SR 4 1.3.7*
Special Test Exceptions - SDM		
Verify Each CEA Not Inserted is Within the Acceptance Criteria for Negative Reactivity Addition	SR 3.1.7.1	---
Special Test Exceptions – Modes 1 and 2		
Verify Thermal Power $\leq$ Test Power Plateau	SR 3.1.8.1	SR 4.10.2.1
Linear Heat Rate		
Verify ASI Alarm Setpoints Within Limits of COLR	SR 3.2.1.1	SR 4.2.1.2.b
Verify Incore Local Power Density Alarms	SR 3.2.1.2	SR 4.2.1.3.a
Verify Local Incore Power Density Setpoints are Within Limits of COLR	SR 3.2.1.3	SR 4.2.1.3.b
Verify CEAs are Withdrawn $\geq$ Long Term Steady State Insertion Limits	---	*SR 4.2.1.2.a*
F^T_{xy} Limits		
Verify the Value of F^T_{xy}	SR 3.2.2.1	---
F^T_r Limits		
Verify the Value of F^T_r	SR 3.2.3.1	SR 4.2.3.2.b
T_q Limits		
Verify T_q is Within Limits	SR 3.2.4.1	SR 4.2.4.1

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TS Section Title/ Surveillance Description*	TSTF 425	MPS2
DNB Margin		
Verify Cold Leg Temperature, Pressurizer Pressure, and RCS Flow Rate	---	*SR 4.2.6.1*
Axial Shape Index (ASI)		
Verify ASI is Within Limits	SR 3.2.5.1	SR 4.2.6.1
RPS Instrumentation - Operating		
Perform Channel Check	SR 3.3.1.1	Table 4.3-1 Functional Units (FU)s 2 through 9, and 11
Perform Calibration (Heat Balance Only)	SR 3.3.1.2	Table 4.3-1 FU 2.a
Calibrate Power Range Excore Channels Using Incore	SR 3.3.1.3	Table 4.3-1 FU 2.a
Perform Channel Functional Test of Each Channel	SR 3.3.1.4	Table 4.3-1 FUs 2 through 9
Perform Channel Calibration of Excore Channels	SR 3.3.1.5	---
Perform Channel Calibration of Each Channel Including Auto Bypass Removal Function	SR 3.3.1.8	4.3.1.1.2 and Table 4.3-1 FUs 2 through 11
Verify Response Time	SR 3.3.1.9	SR 4.3.1.1.3
RPS Instrumentation - Shutdown		
Perform Channel Check – Wide Range Power Channel	SR 3.3.2.1	Table 4.3-1 FU 11
Perform Channel Functional Test – Power Rate of Change	SR 3.3.2.2	---
Perform Channel Functional Test – Auto Bypass Removal Function	SR 3.3.2.3	---
Perform Channel Calibration, Including Bypass Removal Function	SR 3.3.2.4	---
RPS Logic and Trip Initiation		
Perform Channel Functional Test of Each RTCB Channel	SR 3.3.3.1	Table 4.3-1 Channel FU 15
Perform Channel Functional Test of Each Logic Channel	SR 3.3.3.2	Table 4.3-1 Channel FUs 13 and 14
Perform Channel Functional Test, Including Verification of UV and Shunt Trips of Each RTCB Channel	SR 3.3.3.4	Table 4.3-1 Channel FU 15
ESFAS Instrumentation		
Perform a Channel Check	SR 3.3.4.1	Table 4.3-2 Channel Check Column - FUs 1.b & c, 2.b, 3.c & d, 4.b & c, 5 c & d, 6.b, 9.b, and 10.a
Perform Channel Functional Test	SR 3.3.4.2	Table 4.3-2 Channel Functional Test Column- FUs 1.b&c, 2.b, 3.c & d, 4.b & c, 5.c & d, 6.b, 9.b, and 10.a

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TS Section Title/ Surveillance Description*	TSTF 425	MPS2
Perform Channel Calibration of Each Channel, including Bypass Removal Functions	SR 3.3.4.4	Table 4.3-2 Channel Calibration Column FUs 1.b & c, 2.b, 3.c & d, 4.b & c, 5.c & d, 6.b, , 9.b, and 10.a SR 4.3.2.1.2
Verify Response Time	SR 3.3.4.5	SR 4.3.2.1.3
ESFAS Logic and Manual Trip		
Perform Channel Functional Test - Logic Channels	SR 3.3.5.1	Table 4.3-2 Channel Functional Test Column - FUs 1.d, 2.c, 3.e, 4.d, 5.e, 6.c, & 9.c
Perform Channel Functional Test on Each Manual Trip Function	SR 3.3.5.2	Table 4.3-2 Channel Functional Test Column - FUs 1.a,, 2.a , 3.a & b, 4.a, 5.a & b, 6.a, and 9.a
DG LOVS		
Perform Channel Check	SR 3.3.6.1	Table 4.3-2 Channel Check Column – FUs 8.a & b
Perform Channel Functional Test	SR 3.3.6.2	Table 4.3-2 Channel Functional Test Column - FUs 8.a & b
Perform Channel Calibration	SR 3.3.6.3	Table 4.3-2 Channel Calibration Column – FUs 8.a & b
ESFAS Sensor Cabinet Power Supply Drawers		
Verify the Power Supply are Energized by Visual Inspection of Indication Lamps	---	*SR 4.3.2.2.1*
Verify the Sensor Cabinet Power Supply Auctioneering Circuit	---	*SR 4.3.2.2.2*
Containment Purge Isolation Signal (CPIS)		
Perform Channel Check	SR 3.3.7.1	---
Perform Channel Functional Test Each Rad Monitor	SR 3.3.7.2	---
Perform Channel Functional Test CPIS Actuation Logic Channel	SR 3.3.7.3	---
Perform Channel Calibration	SR 3.3.7.4	---
Perform Channel Functional Test	SR 3.3.7.5	---
Verify CPIS Response Time - Rad Monitor Channels	SR 3.3.7.6	---
Control Room Isolation System (CRIS)		
Perform Channel Check on Control Room Radiation Monitor	SR 3.3.8.1	Table 4.3-3 Channel Check Column – FU 1.b
Perform Channel Functional Test - Radiation Monitor Channels	SR 3.3.8.2	Table 4.3-3 Channel Functional Test Column – FU 1.b
Perform Channel Functional Test - Actuation Logic	SR 3.3.8.3	---
Perform Channel Calibration - Rad Monitor Channels	SR 3.3.8.4	Table 4.3-3 Channel Calibration Column – FU 1.b
Perform Channel Functional Test - Manual Trip Channel	SR 3.3.8.5	---

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TS Section Title/ Surveillance Description*	TSTF 425	MPS2
Verify Response Time	SR 3.3.8.6	SR 4.3.3.1.3
CVSC Isolation Signal		
Perform Channel Check	SR 3.3.9.1	Note1
Perform Channel Functional Test – CVCS Isolation Channel	SR 3.3.9.2	Note1
Perform Channel Calibration – CVCS Isolation Pressure Indicating Channel	SR 3.3.9.3	Note1
Shield Building Filtration Actuation Signal		
Perform Channel Functional Test - Auto Actuation Channel	SR 3.3.10.1	Table 4.3-2 Channel Functional Test Column FUs 5.c & d & e
Perform Channel Functional Test – SBFAS Manual Trip Channel	SR 3.3.10.2	Table 4.3-2 Channel Functional Test Column FUs 5.a & b
PAM Instrumentation		
Perform Channel Check - Normalized Energized Inst.	SR 3.3.11.1	SR 4.3.3.8
Perform Channel Calibration	SR 3.3.11.2	SR 4.3.3.8
Remote Shutdown System		
Perform Channel Check	SR 3.3.12.1	SR 4.3.3.5
Verify Each Control Circuit and Transfer Switch Can Perform its Intended function	SR 3.3.12.2	---
Perform Channel Calibration Each Instrument Channel	SR 3.3.12.3	SR 4.3.3.5
Perform Channel Functional Test Rx Trip Circuit Breaker Open/Close Indication	SR 3.3.12.4	---
Power Monitor Channels		
Perform Channel Check	SR 3.3.13.1	---
Perform Channel Functional Test	SR 3.3.13.2	---
Perform Channel Calibration	SR 3.3.13.3	---
RCS Pressure, Temperature, and Flow (DNB) Limits		
Verify Pressurizer Pressure	SR 3.4.1.1	---
Verify RCS Cold Leg Temperature	SR 3.4.1.2	---
Verify RCS Total Flow Rate	SR 3.4.1.3	---
Verify by Precision Heat Balance – RCS Total Flow	SR 3.4.1.4	---
RCS Minimum Temperature for Criticality		
Verify RCS T_{avg} in Each Loop	SR 3.4.2.1	SR 4.1.1.5
RCS P/T Limits		
Verify RCS Pressure, Temperature, and H/U and C/D Rates	SR 3.4.3.1	SR 4.4.9.1a
RCS Loops Modes 1 and 2		
Verify Each Loop in Operation	SR 3.4.4.1	SR 4.4.1.1
RCS Loops Mode 3		
Verify One Loop in Operation	SR 3.4.5.1	SR 4.4.1.2.2
Verify Secondary Side Water Level in Each S/G	SR 3.4.5.2	SR 4.4.1.2.3

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TS Section Title/ Surveillance Description*	TSTF 425	MPS2
Verify Correct Breaker Alignment and Indicated Power Available to Each Required Pump	SR 3.4.5.3	SR 4.4.1.2.1
RCS Loops Mode 4		
Verify One Loop in Operation	SR 3.4.6.1	SR 4.4.1.3.3
Verify Secondary Side Water Level in Each S/G	SR 3.4.6.2	SR 4.4.1.3.2
Verify Correct Breaker Alignment and Indicated Power Available to Each Required Pump	SR 3.4.6.3	SR 4.4.1.3.1
RCS Loops Mode 5, Loops Filled		
Verify Required SDC Train in Operation	SR 3.4.7.1	SR 4.4.1.4.3
Verify Secondary Side Water Level in Each S/G	SR 3.4.7.2	SR 4.4.1.4.2
Verify Correct Breaker alignment and Indicated Power Available to Each Required SDC Pump	SR 3.4.7.3	SR 4.4.1.4.1
RCS Loops Mode 5, Loops Not Filled		
Verify Required SDC Train in Operation	SR 3.4.8.1	SR 4.4.1.5.2
Verify Correct Breaker Alignment and Indicated Power Available to Each Required SDC Pump	SR 3.4.8.2	SR 4.4.1.5.1
Reactor Coolant Pumps		
Verify Two RCPs Motor Circuit Breaker are Disconnected from Their Power Supply	---	SR 4.4.1.6
Pressurizer		
Verify Water Level	SR 3.4.9.1	SR 4.4.4.1
Verify Capacity of Required Pressurizer Heaters	SR 3.4.9.2	SR 4.4.4.2
Verify Required Pressurizer Heaters Capable of Being Powered from Emergency Bus.	SR 3.4.9.3	---
Pressurizer PORV		
Perform a Complete Cycle of Each Block valve	SR 3.4.11.1	SR 4.4.3.2
Perform a Complete Cycle of Each PORV	SR 3.4.11.2	SR 4.4.3.1.c
Perform a Complete Cycle of Each Solenoid Air Control Valve and Check Valve on the Accumulators	SR 3.4.11.3	---
Verify PORVs and Block Valves are Capable of Being Powered from Emergency Power	SR 3.4.11.4	---
Perform a Channel Functional Test	---	SR 4.4.3.1.a
Perform a Channel Calibration	---	SR 4.4.3.1.b
LTOP System		
Verify a Maximum of One HPSI Pump is Capable of Injecting into the RCS	SR 3.4.12.1	SR 4.4.9.3.3
Verify a Maximum of One Charging Pump is Capable of Injecting into the RCS	SR 3.4.12.2	SR 4.4.9.3.2
Verify Each SIT is Isolated	SR 3.4.12.3	---
Verify Required RCS Vent ≥[1.3] Square Inches Open	SR 3.4.12.4	SR 4.4.9.3.4
Verify PORV Block Valve is Open for Each Required PORV	SR 3.4.12.5	SR 4.4.9.3.1.c
Perform Channel Functional Test on PORV	SR 3.4.12.6	SR 4.4.9.3.1.a

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TS Section Title/ Surveillance Description*	TSTF 425	MPS2
Perform Channel Calibration on Each Required PORV Actuation Channel	SR 3.4.12.7	SR 4.4.9.3.1.b
RCS Operational Leakage		
Verify RCS Operational Leakage	SR 3.4.13.1	SR 4.4.6.2.1
Verify ≤150 GPD Through Any One SG Leakage	SR 3.4.13.2	SR 4.4.6.2.2
RCS PIV Leakage		
Verify Leakage from Each is ≤ 0.5 gpm	SR 3.4.14.1	---
Verify SDC Autoclosure Interlock Prevents Opening	SR 3.4.14.2	---
Verify SDC Autoclosure Interlock Auto Close	SR 3.4.14.3	---
RCS Leakage Detection Instrumentation		
Perform Channel Check Containment Atmosphere Radiation Monitor	SR 3.4.15.1	SR 4.3.3.1.1/SR 4.4.6.1.a
Perform Channel Functional Test Containment Atmosphere Rad Monitor	SR 3.4.15.2	SR 4.3.3.1.1/ SR 4.4.6.1.a
Perform Channel Calibration Containment Sump Monitor	SR 3.4.15.3	SR 4.4.6.1.b
Perform Channel Calibration Containment Atmosphere Radioactivity Monitor	SR 3.4.15.4	SR 4.3.3.1.1/ SR 4.4.6.1.a
Perform Channel Calibration Containment Air Cooler	SR 3.4.15.5	---
RCS Specific Activity		
Verify RCS Gross Specific Activity	SR 3.4.16.1	---
Verify RCS Dose Equivalent 1-131	SR 3.4.16.2	SR 4.4.8.2
Determine E Bar	SR 3.4.16.3	---
Verify Xe-133 ≤ 1100μCi/gm	---	SR 4.4.8.1
RCS Loops Test Exceptions		
Verify Thermal Power < 5%	SR 3.4.17.1	---
Safety Injection Tanks		
Verify SIT Isolation Valve Open	SR 3.5.1.1	SR 4.5.1.a
Verify Borated Water Volume	SR 3.5.1.2	SR 4.5.1.b
Verify N^2 Pressure	SR 3.5.1.3	SR 4.5.1.c
Verify Boron Concentration	SR 3.5.1.4	SR 4.5.1.d
Verify Power Removed from Isolation Valve	SR 3.5.1.5	SR 4.5.1.e
ECCS – Operating		
Verify Valve are in Position and Power Removed	SR 3.5.2.1	SR 4.5.2.b
Verify Valve Position	SR 3.5.2.2	SR 4.5.2.a
Verify Piping Full of Water	SR 3.5.2.3	---
Verify Automatic Valve Actuation	SR 3.5.2.6	SR 4.5.2.f
Verify ECCS Pump Starts Automatically	SR 3.5.2.7	SR 4.5.2.g
Verify LPSI Pump Stops on Actuation Signal	SR 3.5.2.8	SR 4.5.2.h
Verify Throttle Valve Position	SR 3.5.2.9	SR 4.5.2.i.2
Verify by Inspection, Each ECCS Train Sump Suction is Not Restricted	SR 3.5.2.10	SR 4.5.2.j

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TS Section Title/ Surveillance Description*	TSTF 425	MPS2
Verify SDC Open Permissive Interlocks Prevent SDC Inlet Isolation Valves From Being Opened on RCS pressures ≥ 300	---	SR 4.5.2.k
RWT		
Verify Water Temperature	SR 3.5.4.1	SR 4.5.4.b & c
Verify Water Volume	SR 3.5.4.2	SR 4.5.4.a.1
Verify Boron Concentration	SR 3.5.4.3	SR 4.5.4.a.2
Trisodium Phosphate		
Verify TSP Baskets Contain > 291 ft^3	SR 3.5.5.1	SR 4.5.5.1
Verify Sample of TSP Baskets Provide Adequate pH	SR 3.5.5.2	SR 4.5.5.2
Containment Air Locks		
Verify Only One Door Can be Opened at a Time	SR 3.6.2.2	SR 4.6.1.3.2
Verify the Equipment Hatch is Closed and Sealed	---	SR 4.6.1.1.b
Containment Isolation Valves		
Verify 42" Purge Valves Sealed Closed	SR 3.6.3.1	SR 4.6.3.2
Verify 8" Purge Valves Closed	SR 3.6.3.2	---
Verify Valves Outside Containment in Correct Position	SR 3.6.3.3	SR 4.6.1.1.a
Verify Isolation Time of Automatic Power Operated Valves	SR 3.6.3.5	---
Perform Leak Rate Test of Purge Valves	SR 3.6.3.6	---
Verify Automatic Valves Actuate to Correct Position	SR 3.6.3.7	SR 4.6.3.1.b
Verify Purge Valves Blocked Closed	SR 3.6.3.8	---
Containment Pressure		
Verify Pressure	SR 3.6.4.1	SR 4.6.1.4
Containment Air Temperature		
Verify Average Air Temperature	SR 3.6.5.1	SR 4.6.1.5
Containment Spray and Cooling Systems		
Verify Valve Position	SR 3.6.6A.1	SR 4.6.2.1.1.a
Operate Each Cooling Train Fan	SR 3.6.6A.2	SR 4.6.2.1.2.a
Verify Each Cooling Train Cooling Water Flow Rate ≥ [2000] GPM to Each Fan	SR 3.6.6A.3	SR 4.6.2.1.2.b
Verify Spray Piping Full of Water	SR 3.6.6A.4	---
Verify Automatic Valves Actuate on Signal	SR 3.6.6A.6	SR 4.6.2.1.1.c
Verify Pump Start on Actuation Signal	SR 3.6.6A.7	SR 4.6.2.1.1.d
Verify Cooling Train Start on Actuation Signal	SR 3.6.6A.8	SR 4.6.2.1.2.c
Verify Spray Nozzle is Unobstructed	SR	SR 4.6.2.1.1.e

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TS Section Title/ Surveillance Description*	TSTF 425	MPS2
	3.6.6A.9	
Spray Additive System		
Verify Valve Position	SR 3.6.7.1	Note 1
Verify Tank Solution Volume	SR 3.6.7.2	Note 1
Verify Tank Solution Concentration	SR 3.6.7.3	Note 1
Verify Actuation - Each Flow Path Valve	SR 3.6.7.5	Note 1
Verify Spray Additive Flow Rate	SR 3.6.7.6	Note 1
Shield Building Exhaust Air Cleanup System (SBEACS)		
Operate Each Train with Heaters on for ≥ 15 minutes	SR 3.6.8.1	SR 4.6.5.1
Verify Actuation on Signal	SR 3.6.8.3	SR 4.6.5.1.d.2
Verify Filter Bypass can be Opened	SR 3.6.8.4	---
Verify System Flow Rate	SR 3.6.8.5	SR 4.6.5.1.b.3
Verify Pressure Drop Across Filter Banks	---	SR 4.6.5.1.d.1
Hydrogen Mixing System (HMS)		
Operate Each Train for ≥ 15 minutes	SR 3.6.9.1	SR 4.6.4.4.b
Verify Each Train's Flow Rate on Slow Speed	SR 3.6.9.2	---
Verify Each Train Starts Automatically	SR 3.6.9.3	---
Verify Each Train Starts Manually from the Control Room	---	SR 4.6.4.4.a
Iodine Cleanup System		
Operate Each Train with Heaters on for ≥ 15 minutes	SR 3.6.10.1	Note 1
Verify Train Actuation	SR 3.6.10.3	Note 1
Verify Filter Bypass Operation	SR 3.6.10.4	Note 1
Shield Building		
Verify Annulus Negative Pressure	SR 3.6.11.1	---
Verify One Access Door in Each Access is Closed	SR 3.6.11.2	SR 4.6.5.2.1
Verify Building can be Maintained at a Negative Pressure > -0.25 inch Water Gauge with One Train	SR 3.6.11.4	SR 4.6.5.2.2
Main Steam Isolation Valves		
Verify Valves Actuate on Signal	SR 3.7.2.2	Table 4.3-2, FU 4d
MFIVs and MFRVs		
Verify Valves Actuate	SR 3.7.3.2	SR 4.7.1.6.a & b
Verify Feedwater Pump Trip on MS Isolation Signal	---	SR 4.7.1.6.c & d
Atmospheric Dump Valves –		
Verify Dump Valves Cycle	SR 3.7.4.1	SR 4.7.1.7
Verify Block Valves Cycle	SR 3.7.4.2	---
Steam Generator Blowdown Isolation Valves		
Verify Valve Closure Time	---	SR 4.7.1.8
AFW		
Verify Valve Position	SR 3.7.5.1	SR 4.7.1.2.a
Verify Automatic Valve Actuation	SR 3.7.5.3	SR 4.7.1.2.c

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TS Section Title/ Surveillance Description*	TSTF 425	MPS2
Verify Automatic Pump Actuation	SR 3.7.5.4	SR 4.7.1.2.d
Condensate Storage Tank		
Verify Level of CST	SR 3.7.6.1	SR 4.7.1.3
Component Cooling		
Verify Valve Position	SR 3.7.7.1	SR 4.7.3.1.a
Verify Automatic Valve Actuation	SR 3.7.7.2	SR 4.7.3.1.b
Verify Automatic Pump Actuation	SR 3.7.7.3	SR 4.7.3.1.c
Service Water		
Verify Valve Position	SR 3.7.8.1	SR 4.7.4.1.a
Verify Automatic Valve Actuation	SR 3.7.8.2	SR 4.7.4.1.b
Verify Automatic Pump Actuation	SR 3.7.8.3	SR 4.7.4.1.c
Ultimate Heat Sink		
Verify Water Level	SR 3.7.9.1	---
Verify Water Temperature	SR 3.7.9.2	SR 4.7.11.a
Operate Each Cooling Tower	SR 3.7.9.3	---
Essential Chilled Water		
Verify Valve Position	SR 3.7.10.1	Note 1
Verify Automatic Actuation of Components	SR 3.7.10.2	Note 1
CR Emergency Air Cleanup System		
Operate Train with Heaters on for $\geq$ 15 minutes	SR 3.7.11.1	SR 4.7.6.1.b
Verify Train Actuation Actual or Simulated Signal	SR 3.7.11.3	---
Verify Manual Train Actuation	---	SR 4.7.6.1.b
Verify Envelope Pressurization	SR 3.7.11.4	--
Verify Pressure Drop Across Filter Assembly	---	SR 4.7.6.1.e.1
Verify Actuation to Recirculation Mode	---	SR 4.7.6.1.e.2
CREATCS		
Verify Train Capacity	SR 3.7.12.1	----
Verify Control Room Temperature is Within Limit	---	SR 4.7.6.1.a
ECCS PREACS		
Operate Heaters	SR 3.7.13.1	Note 1
Verify Train Actuation Actual or Simulated Signal	SR 3.13.3	Note 1
Verify Envelope Negative Pressure	SR 3.13.4	Note 1
Verify Bypass Damper can be Opened	SR 3.13.5	Note 1
Fuel Building Air Cleanup		
Operate Heaters	SR 3.7.14.1	Note 1
Verify Automatic Train Actuation	SR 3.7.14.3	Note 1
Verify Envelope Negative Pressure	SR 3.7.14.4	Note 1
Verify Bypass Damper Can be Opened	SR 3.7.14.5	Note 1
Penetration Room Air Cleanup System –		

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TS Section Title/ Surveillance Description*	TSTF 425	MPS2
Operate Heaters	SR 3.7.15.1	Note 1
Verify Automatic Train Actuation	SR 3.7.15.3	Note 1
Verify Envelope Pressurization	SR 3.7.15.4	Note 1
Verify Bypass Damper Closure	SR 3.7.15.5	Note 1
Fuel Storage Pool Water Level		
Verify Water Level	SR 3.7.16.1	SR 4.9.12
Fuel Storage Pool Boron		
Verify Boron Concentration	SR 3.7.17.1	SR 4.9.17
Secondary Specific Activity		
Verify Secondary Activity	SR 3.7.19.1	SR 4.7.1.4
AC Sources –Operating		
Verify Breaker Alignment Offsite Circuits	SR 3.8.1.1	SR 4.8.1.1.1
Verify EDG Starts - Achieves Voltage & Frequency	SR 3.8.1.2	SR 4.8.1.1.2.a.2
Synchronize and Load for > 60 Minutes Every 31 days	SR 3.8.1.3	SR 4.8.1.1.2.a.3
Verify Day Tank Level	SR 3.8.1.4	SR 4.8.1.1.2.a.1
Remove Accumulate Water from Day Tank	SR 3.8.1.5	SR 4.8.1.1.2.b.1
Verify Operation of Transfer Pump	SR 3.8.1.6	---
Verify EDG Starts – Achieves Voltage & Frequency in 10 Seconds -184 days	SR 3.8.1.7	SR 4.8.1.1.2.d.1, 2 & 3
Verify Manual Transfer of AC power Sources – Offsite Sources	SR 3.8.1.8	---
Verify Largest Load Rejection	SR 3.8.1.9	SR 4.8.1.1.2.c.3
Verify EDG Does Not Trip with Load Rejection	SR 3.8.1.10	SR 4.8.1.1.2.c.4
Verify De-energize, Load Shed and Re-energize Emergency Bus with Loss of Offsite Power	SR 3.8.1.11	SR 4.8.1.1.2.c.7
Verify EDG Start on ESF Signal	SR 3.8.1.12	SR 4.8.1.1.2.c.8
Verify EDG Noncritical Trips are Bypassed	SR 3.8.1.13	SR 4.8.1.1.2.c.6
Run EDG for 24 Hours	SR 3.8.1.14	---
Verify EDG Starts Post Operation – Achieves Voltage & Frequency	SR 3.8.1.15	SR 4.8.1.1.2.c.9
Verify EDG Synchronizes w/ Offsite Power and Transfers Load	SR 3.8.1.16	---
Verify Test Mode is Overrode on ESF Signal	SR 3.8.1.17	---
Verify Load Sequencers are within Design Tolerance	SR 3.8.1.18	SR 4.8.1.1.2.c.2
Verify EDG Start on Loss of Offsite Power with ESF	SR 3.8.1.19	SR 4.8.1.1.2.c.5
Verify When Started Simultaneously Each EDGs Reach Rated Voltage and Frequency	SR 3.8.1.20	---
Diesel FO and Starting Air		
Verify FO Storage Tank Volume	SR 3.8.3.1	SR 4.8.1.1.2.a.1
Verify Lube Oil Inventory	SR 3.8.3.2	---

Note 1 – This system is not included in the MPS2 design or TS.
--- Surveillance not included in STS or MPS2 TSs
*Italicized text denotes MPS2-specific surveillances

TS Section Title/ Surveillance Description*	TSTF 425	MPS2
Verify EDG Start Air Receive Pressure	SR 3.8.3.4	---
Check and Remove Accumulate Water from FO Tank	SR 3.8.3.5	SR 4.8.1.1.2.b.1
DC Sources Operating		
Verify Battery Terminal Voltage	SR 3.8.4.1	---
Verify Station Battery Chargers Capable of Supplying [x]Amp for [y]Hours	SR 3.8.4.2	SR 4.8.2.3.2.c.3
Perform Battery Service Test	SR 3.8.4.3	SR 4.8.2.3.2.d
Battery Parameters		
Verify Each Battery Float Current is ≤ [2] amps.	SR 3.8.6.1	---
Verify Each Battery Pilot Cell Voltage is ≥[2.07] V	SR 3.8.6.2	SR 4.8.2.3.2.a
Verify Each Battery Cell Electrolyte Level is ≥ to Minimum Design Limits	SR 3.8.6.3	SR 4.8.2.3.2.a
Verify Each Battery Pilot Cell Temperature ≥ to Minimum Design Limits	SR 3.8.6.4	---
Verify Each Battery Connected Cell Voltage is≥[2.07] V.	SR 3.8.6.5	SR 4.8.2.3.2.b
Verify Station and EDG Battery Capacity - >80% After Performance Test	SR 3.8.6.6	SR 4.8.2.3.2.e
Physical Inspection of Cell Plates and Battery Racks	---	SR 4.8.2.3.2.c.1
Physical Inspection of Terminal Connections	---	SR 4.8.2.3.2.c.2
Verify the Battery Charger Supply ≥ 400 amps for 12 hrs	---	SR 4.8.2.3.2.c.3
Inverters - Operating		
Verify Correct Inverter Voltage & Alignment to Required AC Vital Buses	SR 3.8.7.1	SR 4.8.2.1A.a
Verify Busses Auto Transfer to Alternate Power Supply	---	SR 4.8.2.1A.b
Inverters - Shutdown		
Verify Correct Inverter Voltage & Alignment to Required AC Vital Buses	SR 3.8.8.1	---
Distribution System – Operating		
Verify Correct Breaker Alignments and Voltage to AC, DC, and AC Vital Bus Electrical Power Distribution Subsystems	SR 3.8.9.1	SR 4.8.2.1/SR 4.8.2.3.1
Distribution System – Shutdown		
Verify Correct Breaker Alignments and Voltage to AC, DC, and AC Vital Bus Electrical Power Distribution Subsystems	SR 3.8.10.1	SR 4.8.2.2/SR 4.8.2.4.1
DC Distribution System (Turbine Battery) - Operating		
Verify the 125-volt DC Bus is Operable	---	SR 4.8.2.5.1
Verify 125-V DC Battery Bank Meet Cat A Cell Parameters	---	SR 4.8.2.5.2.a
Verify 125-V DC Battery Bank Meet Cat B Cell Parameters	---	SR 4.8.2.5.2.b
Verify Cells, Cell Plates, Racks, Terminal Connections are not Damaged and Free of Corrosion	---	SR 4.8.2.5.2.c
Perform a Battery Service Test	---	SR 4.8.2.5.2.d
Perform a Performance Discharge Test	---	SR 4.8.2.5.2.e

Note 1 – This system is not included in the MPS2 design or TS.
--- Surveillance not included in STS or MPS2 TSs
*Italicized text denotes MPS2-specific surveillances

TS Section Title/ Surveillance Description*	TSTF 425	MPS2
Boron Concentration		
Verify Boron Concentration is Within the Limit Specified in COLR	SR 3.9.1.1	SR 4.9.1.2
Nuclear Instrumentation		
Perform Channel Check	SR 3.9.2.1	SR 4.9.2.c
Perform Channel Calibration	SR 3.9.2.2	SR 4.9.2.b
Containment Penetrations		
Verify Each Required Containment Penetration is in the Required Status	SR 3.9.3.1	SR 4.9.4.1
Verify Each Required Containment Purge and Exhaust Valve Actuates to the Isolation Position on an Actuated or Simulated Actuation Signal	SR 3.9.3.2	---
SDC and Coolant Circulation - High Water Level		
Verify One Loop is in Operation and Circulating Reactor Coolant at a Flow Rate of > [2200] gpm	SR 3.9.4.1	SR 4.9.8.1
SDC and Coolant Circulation - Low Water Level		
Verify One Loop is in Operation and Circulating Reactor Coolant at a flow rate of > [2800] gpm	SR 3.9.5.1	SR 4.9.8.2.1
Verify Correct Breaker Alignment and Indicated Power Available to the Required SDC Pump that is Not in Operation	SR 3.9.5.2	SR 4.9.8.2.2
Refueling Cavity Water Level		
Verify Refueling Cavity Water Level is $\geq$23 ft Above the Top of Reactor Vessel Flange	SR 3.9.6.1	SR 4.9.11
Shielded Cask		
Verify the Decay Time of Fuel in the Vicinity of the Cask Lay Down Area	---	SR 4.9.16

Note 1 – This system is not included in the MPS2 design or TS.
--- Surveillance not included in STS or MPS2 TSs
*Italicized text denotes MPS2-specific surveillances

ATTACHMENT 5

Significant Hazards Consideration Determination

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 2

PROPOSED NO SIGNIFICANT HAZARDS CONSIDERATION

This amendment request involves the adoption of approved changes to the standard technical specifications (STS) for Combustion Engineering Pressurized Water Reactors (NUREG-1432), to allow relocation of specific technical specification (TS) surveillance frequencies to a licensee-controlled program. The proposed changes are described in Technical Specification Task Force (TSTF) Traveler, TSTF-425, Revision 3 (ADAMS Accession No. ML090850642), "Relocate Surveillance Frequencies to Licensee Control - RITSTF Initiative 5b" and are described in the Notice of Availability published in the Federal Register on July 6, 2009 (74 FR 31996).

The proposed changes are consistent with NRC-approved Industry/TSTF Traveler, TSTF-425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control-RITSTF Initiative 5b." The proposed changes relocate surveillance frequencies to a licensee-controlled program, the Surveillance Frequency Control Program (SFCP). The changes are applicable to licensees using probabilistic risk guidelines contained in NRC-approved NEI 04-10, "Risk-Informed Technical Specifications Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies," (ADAMS Accession No. 071360456). In addition, administrative/editorial deviations of the TSTF-425 inserts and the existing TS wording are being proposed to fit the Millstone Power Station Unit 2 TS format.

Basis for proposed no significant hazards consideration: As required by 10 CFR 50.91 (a), DNC's analysis of the issue of no significant hazards consideration is presented below:

1. Do the proposed changes involve a significant increase in the probability or consequences of any accident previously evaluated?

Response: No.

The proposed changes relocate the specified frequencies for periodic surveillance requirements to licensee control under a new Surveillance Frequency Control Program. Surveillance frequencies are not an initiator to any accident previously evaluated. As a result, the probability of any accident previously evaluated is not significantly increased. The systems and components required by the TSs for which the surveillance frequencies are relocated are still required to be operable, meet the acceptance criteria for the surveillance requirements, and be capable of performing any mitigation function assumed in the accident analysis. As a result, the consequences of any accident previously evaluated are not significantly increased.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Do the proposed changes create the possibility of a new or different kind of accident from any previously evaluated?

Response: No.

No new or different accidents result from utilizing the proposed changes. The changes do not involve a physical alteration of the plant (i.e., no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. In addition, the changes do not impose any new or different requirements. The changes do not alter assumptions made in the safety analysis. The proposed changes are consistent with the safety analysis assumptions and current plant operating practice.

Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Do the proposed changes involve a significant reduction in the margin of safety?

Response: No.

The design, operation, testing methods, and acceptance criteria for systems, structures, and components, specified in applicable codes and standards (or alternatives approved for use by the NRC) will continue to be met as described in the plant licensing basis (including the final safety analysis report and bases to TS), since these are not affected by changes to the surveillance frequencies. Similarly, there is no impact to safety analysis acceptance criteria as described in the plant licensing basis. To evaluate a change in the relocated surveillance frequency, DNC will perform a probabilistic risk evaluation using the guidance contained in NRC approved NEI 04-10, Rev. 1, in accordance with the Surveillance Frequency Control Program. NEI 04-10, Rev. 1, methodology provides reasonable acceptance guidelines and methods for evaluating the risk increase of proposed changes to surveillance frequencies consistent with Regulatory Guide 1.177.

Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Based upon the reasoning presented above, DNC concludes that the requested changes do not involve a significant hazards consideration as set forth in 10 CFR 50.92(c), Issuance of Amendment.

ATTACHMENT 6

Marked-Up Technical Specifications Bases Changes

(For Information Only)

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 2

Insert 2a

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

Insert 2b

These surveillance frequencies are controlled under the Surveillance Frequency Control Program.

3/4.1.3 MOVEABLE CONTROL ASSEMBLIES (Continued)

The CEA motion inhibit permits CEA motion within the requirements of LCO 3.1.3.6, "Regulating Control Element Assembly (CEA) Insertion Limits," and the CEA deviation circuit prevents regulating CEAs from being misaligned from other CEAs in the group. With the CEA motion inhibit inoperable, a time of 6 hours is allowed for restoring the CEA motion inhibit to OPERABLE status, or placing and maintaining the CEA drive switch in either the "off" or "manual" position, fully withdrawing all CEAs in group 7 to < 5% insertion. Placing the CEA drive switch in the "off" or "manual" position ensures the CEAs will not move in response to Reactor Regulating System automatic motion commands. Withdrawal of the CEAs to the positions required in the Required ACTION B.2 ensures that core perturbations in local burnup, peaking factors, and SHUTDOWN MARGIN will not be more adverse than the Conditions assumed in the safety analyses and LCO setpoint determination. Required ACTION B.2 is modified by a Note indicating that performing this Required ACTION is not required when in conflict with Required ACTIONS A.1 or C.1.

Continued operation is not allowed in the case of more than one CEA misaligned from any other CEA in its group by ≥ 20 steps, or one or more CEAs untrippable. This is because these cases are indicative of a loss of SHUTDOWN MARGIN and power distribution changes, and a loss of safety function, respectively.

OPERABILITY of the CEA position indicators (Specification 3.1.3.3) is required to determine CEA positions and thereby ensure compliance with the CEA alignment and insertion limits and ensures proper operation of the CEA Motion Inhibit and CEA deviation block circuit. The CEA "Full In" and "Full Out" limit Position Indicator channels provide an additional independent means for determining the CEA positions when the CEAs are at either their fully inserted or fully withdrawn positions. Therefore, the ACTION statements applicable to inoperable CEA position indicators permit continued operations when the positions of CEAs with inoperable position indicators can be verified by the "Full In" or "Full Out" limit Position Indicator channels.

at the frequency specified in the Surveillance Frequency Control Program

CEA positions and OPERABILITY of the CEA position indicators are required to be verified ~~on a nominal basis of once per 12 hours~~ with more frequent verifications required if an automatic monitoring channel is inoperable. ~~These verification frequencies are adequate for assuring that the applicable LCO's are satisfied.~~

Insert 2a

The maximum CEA drop time permitted by Specification 3.1.3.4 is the assumed CEA drop time used in the accident analyses. Measurement with T_{avg} ≥ 515°F and with all reactor coolant pumps operating ensures that the measured drop times will be representative of insertion times experienced during a reactor trip at operating conditions.

by the ACTION statements since these additional restrictions provide adequate provisions to assure that the assumptions used in establishing the Linear Heat Rate, Thermal Margin/Low Pressure and Local Power Density - High LCOs and LSSS setpoints remain valid. An AZIMUTHAL POWER TILT > 0.10 is not expected and if it should occur, subsequent operation would be restricted to only those operations required to identify the cause of this unexpected tilt.

Core power distribution is a concern any time the reactor is critical. The Total Integrated Radial Peaking Factor - F^T_r LCO, however, is only applicable in MODE 1 above 20% of RATED THERMAL POWER. The reasons that this LCO is not applicable below 20% of RATED THERMAL POWER are:

a. Data from the incore detectors are used for determining the measured radial peaking factors. Technical Specification 3.2.3 is not applicable below 20% of RATED THERMAL POWER because the accuracy of the neutron flux information from the incore detectors is not reliable at THERMAL POWER < 20% RATED THERMAL POWER.

b. When core power is below 20% of RATED THERMAL POWER, the core is operating well below its thermal limits, and the Local Power Density (fuel pellet melting) and Thermal Margin/Low Pressure (DNB) trips are highly conservative.

The surveillance requirements for verifying that F^T_r and T_q are within their limits provide assurance that the actual values of F^T_r and T_q do not exceed the assumed values. Verifying F^T_r after each fuel loading prior to exceeding 70% of RATED THERMAL POWER provides additional assurance that the core was properly loaded.

Insert 2b

3/4.2.6 DNB MARGIN

The limitations provided in this specification ensure that the assumed margins to DNB are maintained. The limiting values of the parameters in this specification are those assumed as the initial conditions in the accident and transient analyses; therefore, operation must be maintained within the specified limits for the accident and transient analyses to remain valid.

3/4.3.1 AND 3/4.3.2 PROTECTIVE AND ENGINEERED SAFETY FEATURES (ESF) INSTRUMENTATION

The OPERABILITY of the protective and ESF instrumentation systems and bypasses ensure that 1) the associated ESF action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof exceeds its setpoint, 2) the specified coincidence logic is maintained, 3) sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance, and 4) sufficient system functional capability is available for protective and ESF purposes from diverse parameters.

The OPERABILITY of these systems is required to provide the overall reliability, redundance and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these systems is consistent with the assumptions used in the accident analyses.

ACTION Statement 2 of Tables 3.3-1 and 3.3-3 requires an inoperable Reactor Protection System (RPS) or Engineered Safety Feature Actuation System (ESFAS) channel to be placed in the bypassed or tripped condition within 1 hour. The inoperable channel may remain in the bypassed condition for a maximum of 48 hours. While in the bypassed condition, the affected functional unit trip coincidence will be 2 out of 3. After 48 hours, the channel must either be declared OPERABLE, or placed in the tripped condition. If the channel is placed in the tripped condition, the affected functional unit trip coincidence will become 1 out of 3. One additional channel may be removed from service for up to 48 hours, provided one of the inoperable channels is placed in the tripped condition.

Plant operation with an inoperable pressurizer high pressure reactor protection channel in the tripped condition is restricted because of the potential inadvertent opening of both pressurizer power operated relief valves (PORVs) if a second pressurizer high pressure reactor protection channel failed while the first channel was in the tripped condition. This plant operating restriction is contained in the Technical Requirements Manual.

The reactor trip switchgear consists of eight reactor trip circuit breakers, which are operated in four sets of two breakers (four channels). Each of the four trip legs consists of two reactor trip circuit breakers in series. The two reactor trip circuit breakers within a trip leg are actuated by separate initiation circuits. For example, if a breaker receives an open signal in trip leg A, an identical breaker in trip leg B will also receive an open signal. This arrangement ensures that power is interrupted to both Control Element Drive Mechanism buses, thus preventing a trip of only half of the control element assemblies (a half trip). Any one inoperable breaker in a channel will make the entire channel inoperable.

The surveillance requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. ~~The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability.~~ Insert 2b

The surveillance testing verifies OPERABILITY of the RPS by overlap testing of the four interconnected modules: measurement channels, bistable trip units, RPS logic, and reactor trip circuit breakers. When testing the measurement channels or bistable trip units that provide an automatic reactor trip function, the associated RPS channel will be removed from service,

3/4.3.1 AND 3/4.3.2 PROTECTIVE AND ENGINEERED SAFETY FEATURES (ESF) INSTRUMENTATION (continued)

ACTION Statement 8 applies to two inoperable automatic bypass removal channels. If the bypass removal channels cannot be restored to OPERABLE status, the associated RPS channel may be considered OPERABLE only if the bypass is not in effect. Otherwise, the affected RPS channels must be declared inoperable, and the bypass either removed or the bypass removal channel repaired. Also, ACTION Statement 8 provides for the restoration of the one affected automatic trip channel to OPERABLE status within the allowed outage time specified under ACTION Statement 2.

ACTION Statements 7 and 8 contain the term "disable the bypass channel." Compliance with ACTION Statements 7 or 8 is met by placing or verifying the Zero Mode Bypass Switch(es) in "Off." No further action (i.e., key removal, periodic verification, etc.) is required. These switches are administratively controlled via station procedures; therefore the requirements of ACTION Statements 7 and 8 are continuously met.

periodically

SR 4.3.1.1.2 and SR 4.3.2.1.2 specify a CHANNEL FUNCTIONAL TEST of the bypass function and automatic bypass removal once within 92 days prior to each reactor startup. The total bypass function shall be demonstrated OPERABLE ~~at least once per 18 months~~ during CHANNEL CALIBRATION testing of each channel affected by bypass operation. The CHANNEL FUNCTIONAL TEST is similar to the CHANNEL FUNCTIONAL TESTS already required by SR 4.3.1.1.1 and SR 4.3.2.1.1, except the CHANNEL FUNCTIONAL TEST is applicable only to bypass functions and is performed once within 92 days prior to each startup. The MPS2 RPS is an analog system while the design of the MPS2 ESFAS includes both an analog portion and a digital portion. With respect to the analog portion of the systems, a successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other TS tests at least once per refueling interval with applicable extensions. Proper operation of bypass permissives is critical during plant startup because the bypasses must be in place to allow startup operation and must be removed at the appropriate points during power ascent to enable certain reactor trips. Consequently, the appropriate time to verify bypass removal function OPERABILITY is just prior to startup. The allowance to conduct this test within 92 days of startup is based on the reliability analysis presented in topical report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation," which is referenced in NUREG-1432 and is applicable to MPS2. Once the operating bypasses are removed, the bypasses must not fail in such a way that the associated trip function gets inadvertently bypassed. This feature is verified by the trip function CHANNEL FUNCTIONAL TESTS SR 4.3.1.1.1 and SR 4.3.2.1.1. Therefore, further testing of the bypass function after startup is unnecessary.

Insert 2a

3/4.3.1 AND 3/4.3.2 PROTECTIVE AND ENGINEERED SAFETY FEATURES (ESF) INSTRUMENTATION (continued)

The ESFAS includes four sensor subsystems and two actuation subsystems for each of the functional units identified in Table 3.3-3. Each sensor subsystem includes measurement channels and bistable trip units. Each of the four sensor subsystem channels monitors redundant and independent process measurement channels. Each sensor is monitored by at least one bistable. The bistable associated with each ESFAS Function will trip when the monitored variable exceeds the trip setpoint. When tripped, the sensor subsystems provide outputs to the two actuation subsystems.

The two independent actuation subsystems each compare the four associated sensor subsystem outputs. If a trip occurs in two or more sensor subsystem channels, the two-out-of-four automatic actuation logic will initiate one train of ESFAS. An Automatic Test Inserter (ATI), for which the automatic actuation logic OPERABILITY requirements of this specification do not apply, provides automatic test capability for both the sensor subsystems and the actuation subsystems.

The provisions of Specification 4.0.4 are not applicable for the CHANNEL FUNCTIONAL TEST of the Engineered Safety Feature Actuation System automatic actuation logic associated with Pressurizer Pressure Safety Injection, Pressurizer Pressure Containment Isolation, Steam Generator Pressure Main Steam Line Isolation, and Pressurizer Pressure Enclosure Building Filtration for entry into MODE 3 or other specified conditions. After entering MODE 3, pressurizer pressure and steam generator pressure will be increased and the blocks of the ESF actuations on low pressurizer pressure and low steam generator pressure will be automatically removed. After the blocks have been removed, the CHANNEL FUNCTIONAL TEST of the ESF automatic actuation logic can be performed. The CHANNEL FUNCTIONAL TEST of the ESF automatic actuation logic must be performed within 12 hours after establishing the appropriate plant conditions, and prior to entry into MODE 2.

periodic

The measurement of response time ~~at the specified frequencies~~ provides assurance that the protective and ESF action function associated with each channel is completed within the time limit assumed in the accident analyses. No credit was taken in the analyses for those channels with response times indicated as not applicable. The Reactor Protective and Engineered Safety Feature response times are contained in the Millstone Unit No. 2 Technical Requirements Manual. Changes to the Technical Requirements Manual require a 10CFR50.59 review as well as a review by the Site Operations Review Committee.

Insert 2b

various methods. These methods include, but are not limited to, placing the NORMAL/ISOLATE switch at the associated Bottle Up Panel in the "ISOLATE" position or pulling the control power fuses for the associated PORV control circuit.

Although the block valve may be designated inoperable, it may be able to be manually opened and closed and in this manner can be used to perform its function. Block valve inoperability may be due to seat leakage, instrumentation problems, or other causes that do not prevent manual use and do not create a possibility for a small break LOCA. This condition is only intended to permit operation of the plant for a limited period of time. The block valve should normally be available to allow PORV operation for automatic mitigation of overpressure events. The block valves must be returned to OPERABLE status prior to entering MODE 3 after a refueling outage.

If more than one PORV is inoperable and not capable of being manually cycled, it is necessary to either restore at least one valve within the completion time of 1 hour or isolate the flow path by closing and removing the power to the associated block valve and cooldown the RCS to MODE 4.

SURVEILLANCE REQUIREMENT 4.4.3.1.C requires operating each PORV through one complete cycle of full travel at conditions representative of MODES 3 or 4. This is normally performed in MODE 3 or 4 as the unit is descending in power to commence a refueling outage. This test will normally be a static test, whereby a PORV will be exposed to MODE 3 or 4 temperatures, the block valve closed, and the PORV tested to verify it strokes through one complete cycle of full travel. PORV cycling demonstrates its function. ~~The Frequency of 18 months is based on a typical refueling cycle and industry accepted practice~~. SURVEILLANCE REQUIREMENT 4.4.3.1.C is consistent with the NRC staff position outlined in Generic Letter 90-06, which requires that the ~~18-month~~ PORV stroke test be performed at conditions representative of MODE 3 or 4. Testing in the manner described is also consistent with the guidance in NUREG 1482, "Guidelines for Inservice Testing at Nuclear Power Plants," Section 4.2.10, that describes the PORVs function during reactor startup and shutdown to protect the reactor vessel and coolant system from low-temperature overpressurization conditions, and indicates they should be exercised before system conditions warrant vessel protection. If post maintenance retest is warranted, the affected valve(s) will be stroked under ambient conditions while in Mode 5, 6, or defueled. A Hot Functional Test is required to be performed in MODE 4 prior to entry into MODE 3. The actual stroke time in the open and close direction will be measured, recorded and compared to the test results obtained during pre-installation testing to assess acceptability of the affected valve(s). Insert 2a

SURVEILLANCE REQUIREMENT 4.4.3.2 verifies that a block valve(s) can be closed if necessary. This SURVEILLANCE REQUIREMENT is not required to be performed with the block valve(s) closed in accordance with the ACTIONS of TS 3.4.3. Opening the block valve(s) in this condition increases the risk of an unisolable leak from the RCS since the PORV(s) is already inoperable.

3/4.4.6 REACTOR COOLANT SYSTEM LEAKAGE

3/4.4.6.2 REACTOR COOLANT SYSTEM OPERATIONAL LEAKAGE

SURVEILLANCE REQUIREMENTS (Continued)

The ~~Surveillance Frequency of 72 hours~~ frequency specified in the Surveillance Frequency Control Program is a reasonable interval to trend primary to secondary LEAKAGE and recognizes the importance of early leakage detection in the prevention of accidents. The primary to secondary LEAKAGE is determined using continuous process radiation monitors or radiochemical grab sampling in accordance with the EPRI guidelines (Reference 5).

BACKGROUND

Components that contain or transport the coolant to or from the reactor core make up the reactor coolant system (RCS). Component joints are made by welding, bolting, rolling, or pressure loading, and valves isolate connecting systems from the RCS.

During plant life, the joint and valve interfaces can produce varying amounts of reactor coolant LEAKAGE, through either normal operational wear or mechanical deterioration. The purpose of the RCS Operational LEAKAGE LCO is to limit system operation in the presence of LEAKAGE from these sources to amounts that do not compromise safety. This LCO specifies the types and amounts of LEAKAGE.

10 CFR 50, Appendix A, GDC 30 (Reference 1), requires means for detecting and, to the extent practical, identifying the source of reactor coolant LEAKAGE. Regulatory Guide 1.45 (Reference 2) describes acceptable methods for selecting leakage detection systems.

The safety significance of RCS LEAKAGE varies widely depending on its source, rate, and duration. Therefore, detecting and monitoring reactor coolant LEAKAGE into the containment area is necessary. Quickly separating the IDENTIFIED LEAKAGE from the UNIDENTIFIED LEAKAGE is necessary to provide quantitative information to the operators, allowing them to take corrective action should a leak occur detrimental to the safety of the facility and the public.

A limited amount of leakage inside containment is expected from auxiliary systems that cannot be made 100% leaktight. Leakage from these systems should be detected, located, and isolated from the containment atmosphere, if possible, to not interfere with RCS LEAKAGE detection.

This LCO deals with protection of the reactor coolant pressure boundary (RCPB) from degradation and the core from inadequate cooling, in addition to preventing the accident analysis radiation release assumptions from being exceeded. The consequences of violating this LCO include the possibility of a loss of coolant accident (LOCA).

3/4.4.8 SPECIFIC ACTIVITY (continued)

ACTIONS (continued)

d.

With the RCS DOSE EQUIVALENT XE-133 greater than the LCO limit, DOSE EQUIVALENT XE-133 must be restored to within limit within 48 hours. The allowed completion time of 48 hours is acceptable since it is expected that, if there were a noble gas spike, the normal coolant noble gas concentration would be restored within this time period. Also, there is a low probability of a SLB or SGTR occurring during this time period.

A statement in ACTION d. indicates the provisions of LCO 3.0.4 are not applicable. This exception to LCO 3.0.4 permits entry into the applicable MODE(S), relying on ACTION d. while the DOSE EQUIVALENT XE-133 LCO is not met. This exception is acceptable due to the significant conservatism incorporated into the RCS specific activity limit, the low probability of an event which is limiting due to exceeding this limit, and the ability to restore transient-specific activity excursions while the plant remains at, or proceeds to, POWER OPERATION.

e.

If the required action and completion time of ACTION d. is not met, the reactor must be brought to HOT STANDBY (MODE 3) within 6 hours and COLD SHUTDOWN (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

4.4.8.1

Surveillance Requirement 4.4.8.1 requires performing a gamma isotopic analysis as a measure of the noble gas specific activity of the reactor coolant ~~at least once every 7 days~~. This measurement is the sum of the degassed gamma activities and the gaseous gamma activities in the sample taken. This Surveillance Requirement provides an indication of any increase in the noble gas specific activity. Insert 2a

Trending the results of this Surveillance Requirement allows proper remedial action to be taken before reaching the LCO limit under normal operating conditions. ~~The surveillance 7 day frequency considers the low probability of a gross fuel failure during this time.~~

3/4.4.8 SPECIFIC ACTIVITY (continued)

SURVEILLANCE REQUIREMENTS (continued)

4.4.8.1 (continued)

Due to the inherent difficulty in detecting Kr-85 in a reactor coolant sample due to masking from radioisotopes with similar decay energies, such as F-18 and I-134, it is acceptable to include the minimum detectable activity for Kr-85 in the Surveillance Requirement 4.4.8.1 calculation. If a specific noble gas nuclide listed in the definition of DOSE EQUIVALENT XE-133 is not detected, it should be assumed to be present at the minimum detectable activity.

A Note modifies the Surveillance Requirement to allow entry into and operation in MODE 4, MODE 3, and MODE 2 prior to performing the Surveillance Requirement. This allows the Surveillance Requirement to be performed in those MODES, prior to entering MODE 1.

4.4.8.2 frequency specified in the Surveillance Frequency Control Program

This Surveillance Requirement is performed to ensure iodine specific activity remains within the LCO limit during normal operation and following fast power changes when iodine spiking is more apt to occur. The ~~14 day frequency~~ is adequate to trend changes in the iodine activity level~~,~~ ~~considering noble gas activity is monitored every 7 days~~. The frequency of 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 iodine spike initiation; samples at other times would provide inaccurate results.

The Note modifies this Surveillance Requirement to allow entry into and operation in MODE 4, MODE 3, and MODE 2 prior to performing the Surveillance Requirement. This allows the Surveillance Requirement to be performed in those MODES, prior to entering MODE 1.

REFERENCES

1. 10 CFR 50.67.
2. Standard Review Plan (SRP) Section 15.0.1 "Radiological Consequence Analyses Using Alternate Source Terms."
3. FSAR, Section 14.1.5.
4. FSAR, Section 14.6.3.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS (continued)

Surveillance Requirement 4.5.2.a verifies the correct alignment for manual, power operated, and automatic valves in the ECCS flow paths to provide assurance that the proper flow paths will exist for ECCS operation. This surveillance does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves 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 automatically repositions 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 mispositioned are in the correct position. ~~The 31 day frequency is appropriate because the valves are operated under procedural control and an improper valve position would only affect a single train. This frequency has been shown to be acceptable through operating experience.~~

Surveillance Requirement 4.5.2.b verifies proper valve position to ensure 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 removing power to the valve operator ensures that the valves cannot be inadvertently misaligned or change position as the result of an active failure. ~~A 31 day frequency is considered reasonable in view of other administrative controls ensuring that a mispositioned valve is an unlikely possibility.~~

Insert 2a

Surveillance Requirements 4.5.2.c and 4.5.2.d, which address periodic surveillance testing of the ECCS pumps (high pressure and low pressure safety injection pumps) to detect gross degradation caused by impeller structural damage or other hydraulic component problems, is required by the ASME Code for Operation and Maintenance of Nuclear Power Plants (ASME OM Code). This type of testing may be accomplished by measuring the pump developed head at only one point of the pump characteristic curve. 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 unit safety analysis. The surveillance requirements are specified in the Inservice Testing Program. The ASME OM Code provides the activities and frequencies necessary to satisfy the requirements.

Surveillance Requirement 4.5.2.e, which addresses periodic surveillance testing of the charging pumps to detect gross degradation caused by hydraulic component problems, is required by the ASME OM Code. For positive displacement pumps, this type of testing may be accomplished by comparing the measured pump flow, discharge pressure and vibration to their respective acceptance criteria. Acceptance criteria are verified to bound the assumptions utilized in accident analyses. 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 point is greater than or equal to the performance assumed for mitigation of the beyond design basis events. The surveillance requirements are specified in the Inservice Testing Program. The ASME OM Code provides the activities and frequencies necessary to satisfy the requirements.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS (continued)

Surveillance Requirements 4.5.2.f, 4.5.2.g, and 4.5.2.h demonstrate that each automatic ECCS flow path valve actuates to the required position on an actual or simulated actuation signal (SIAS or SRAS), that each ECCS pump starts on receipt of an actual or simulated actuation signal (SIAS), and that the LPSI pumps stop on receipt of an actual or simulated actuation signal (SRAS). 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 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 the Engineered Safety Feature Actuation System (ESFAS) ~~testing~~, and equipment performance is monitored as part of the Inservice Testing Program.

Insert 2a

Surveillance Requirement 4.5.2.i verifies the high and low pressure safety injection valves listed in Table 4.5-1 will align to the required positions on an SIAS for proper ECCS performance. The safety injection valves have stops to position them properly so that flow is restricted to a ruptured cold leg, ensuring that the other cold legs receive at least the required minimum flow. ~~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 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.~~

Surveillance Requirement 4.5.2.j addresses periodic inspection of the containment sump to ensure that it is unrestricted and stays in proper operating condition. ~~The 18 month frequency is based on the need to perform this surveillance under the conditions that apply during an outage, and the need to have access to the location. This frequency is sufficient to detect abnormal degradation and is confirmed by operating experience.~~

Surveillance Requirement 4.5.2.k verifies that the Shutdown Cooling (SDC) System open permissive interlock is OPERABLE to ensure the SDC suction isolation valves are prevented from being remotely opened when RCS pressure is at or above the SDC suction design pressure of 300 psia. The suction piping of the SDC pumps (low pressure safety injection pumps) is the SDC component with the limiting design pressure rating. The interlock provides assurance that double isolation of the SDC System from the RCS is preserved whenever RCS pressure is at or above the design pressure. ~~The 18 month frequency is based on the need to perform this surveillance under the conditions that apply during an outage. The 18 month frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.~~

3/4.5.5 TRISODIUM PHOSPHATE (TSP) (continued)

APPLICABILITY

In MODES 1, 2, and 3, the RCS is at elevated temperature and pressure, providing an energy potential for a LOCA. The potential for a LOCA results in a need for the ability to control the pH of the recirculated coolant.

In MODES 4, 5, and 6, the potential for a LOCA is reduced or nonexistent, and TSP is not required.

ACTIONS

If it is discovered that the TSP in the containment building sump is not within limits, action must be taken to restore the TSP to within limits. During plant operation the containment sump is not accessible and corrections may not be possible.

The completion time of 72 hours is allowed for restoring the TSP within limits because 72 hours is the same time allowed for restoration of other ECCS components.

If the TSP cannot be restored within limits within the 72 hour completion time, the plant must be brought to a MODE in which the LCO does not apply. The specified completion times for reaching MODES 3 and 4 were chosen to allow reaching the specified conditions from full power in an orderly manner without challenging plant systems.

SURVEILLANCE REQUIREMENTS

Surveillance Requirement 4.5.5.1

This periodic surveillance

Periodic determination of the volume of TSP in containment must be performed due to the possibility of leaking valves and components in the containment building that could cause dissolution of the TSP during normal operation. ~~A frequency of 18 months~~ is required to determine visually that a minimum of 282 cubic feet is contained in the TSP baskets. This requirement ensures that there is an adequate volume of TSP to adjust the pH of the post LOCA sump solution to a value ≥ 7.0.

Insert 2a

~~The periodic verification is required every 18 months, since access to the TSP baskets is only feasible during outages, and normal fuel cycles are scheduled for 18 months. Operating experience has shown this surveillance frequency acceptable due to the margin in the volume of TSP placed in the containment building.~~

3/4.5.5 TRISODIUM PHOSPHATE (TSP) (continued)

Surveillance Requirement 4.5.5.2

Testing must be performed to ensure the solubility and buffering ability of the TSP after exposure to the containment environment. Passing this test verifies the TSP is active and provides assurance that the stored TSP will dissolve in borated water at postulated post-LOCA temperatures. This test is performed by submerging a sample of 0.6662 ± 0.0266 grams of TSP from one of the baskets in containment in 250 ± 10 milliliters of water at a boron concentration of 2482 ± 20 ppm, and a temperature of 77 ± 5°F. Without agitation, the solution is allowed to stand for four hours. The liquid is then decanted, mixed, and the pH measured. The pH must be ≥ 7.0. The TSP sample weight is based on the minimum required TSP mass of 12,042 pounds, which at the manufactured density corresponds to the minimum volume of 223 ft^3 (The minimum Technical Specification requirement of 282 ft^3 is based on 223 ft^3 of TSP for boric acid neutralization and 59 ft^3 of TSP for neutralization of hydrochloric and nitric acids.), and the maximum sump water volume (at 77°F) following a LOCA of 2,046,441 liters, normalized to buffer a 250 ± 10 milliliter sample. The boron concentration of the test water is representative of the maximum possible concentration in the sump following a LOCA. Agitation of the test solution is prohibited during TSP dissolution since an adequate standard for the agitation intensity cannot be specified. The dissolution time of four hours is necessary to allow time for the dissolved TSP to naturally diffuse through the sample solution. In the containment sump following a LOCA, rapid mixing will occur, significantly decreasing the actual amount of time before the required pH is achieved. The solution is decanted after the four hour period to remove any undissolved TSP prior to mixing and pH measurement. Mixing is necessary for proper operation of the pH instrument.

Insert 2a

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

3/4.6.2.1 CONTAINMENT SPRAY AND COOLING SYSTEMS

The OPERABILITY of the containment spray system ensures that containment depressurization and cooling capability will be available in the event of a LOCA. The pressure reduction and resultant lower containment leakage rate are consistent with the assumptions used in the accident analyses.

The OPERABILITY of the containment cooling system ensures that 1) the containment air temperature will be maintained within limits during normal operation, and 2) adequate heat removal capacity is available when operated in conjunction with the containment spray system during post-LOCA conditions.

To be OPERABLE, the two trains of the containment spray system shall be capable of taking a suction from the refueling water storage tank on a containment spray actuation signal and automatically transferring suction to the containment sump on a sump recirculation actuation signal. Each containment spray train flow path from the containment sump shall be via an OPERABLE shutdown cooling heat exchanger.

The containment cooling system consists of two containment cooling trains. Each containment cooling train has two containment air recirculation and cooling units. For the purpose of applying the appropriate ACTION statement, the loss of a single containment air recirculation and cooling unit will make the respective containment cooling train inoperable.

Either the containment spray system or the containment cooling system is sufficient to mitigate a loss of coolant accident. The containment spray system is more effective than the containment cooling system in reducing the temperature of superheated steam inside containment following a main steam line break. Because of this, the containment spray system is required to mitigate a main steam line break accident inside containment. In addition, the containment spray system provides a mechanism for removing iodine from the containment atmosphere. Therefore, at least one train of containment spray is required to be OPERABLE when pressurizer pressure is ≥ 1750 psia, and the allowed outage time for one train of containment spray reflects the dual function of containment spray for heat removal and iodine removal.

Surveillance Requirement 4.6.2.1.1.a verifies the correct alignment for manual, power operated, and automatic valves in the Containment Spray System flow paths to provide assurance that the proper flow paths will exist for containment spray operation. This surveillance does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves 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 automatically repositions 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 mispositioned are in the correct position. ~~The 31 day frequency is appropriate because the valves are operated under procedural control and an improper valve position would only affect a single train. This frequency has been shown to be acceptable through operating experience.~~

Insert 2a

3/4.6.2.1 CONTAINMENT SPRAY AND COOLING SYSTEMS (Continued)

Surveillance Requirement 4.6.2.1.1.b, which addresses periodic surveillance testing of the containment spray pumps to detect gross degradation caused by impeller structural damage or other hydraulic component problems, is required by the ASME OM Code. This type of testing may be accomplished by measuring the pump developed head at only one point of the pump characteristic curve. 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 unit safety analysis. The surveillance requirements are specified in the Inservice Testing Program. The ASME OM Code provides the activities and frequencies necessary to satisfy the requirements.

Insert 2b

Surveillance Requirements 4.6.2.1.1.c and 4.6.2.1.1.d demonstrate that each automatic containment spray valve actuates to the required position on an actual or simulated actuation signal (CSAS or SRAS), and that each containment spray pump starts on receipt of an actual or simulated actuation signal (CSAS). 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 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 the Engineered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program.

Surveillance Requirement 4.6.2.1.1.e requires verification that each spray nozzle is unobstructed following maintenance that could cause nozzle blockage. Normal plant operation and maintenance activities are not expected to trigger performance of this surveillance requirement. However, activities, such as an inadvertent spray actuation that causes fluid flow through the nozzles, a major configuration change, or a loss of foreign material control when working within the respective system boundary may require surveillance performance. An evaluation, based on the specific situation, will determine the appropriate method (e.g., visual inspection, air or smoke flow test) to verify no nozzle obstruction.

Surveillance Requirement 4.6.2.1.2.a demonstrates that each containment air recirculation and cooling unit can be operated in slow speed for $\geq$ 15 minutes to ensure OPERABILITY and that all associated controls are functioning properly. It also ensures fan or motor failure can be detected and corrective action taken. ~~The 31 day frequency considers the known reliability of the fan units and controls, the two train redundancy available, and the low probability of a significant degradation of the containment air recirculation and cooling unit occurring between surveillances. This frequency has been shown to be acceptable through operating experience.~~

Insert 2a

3/4.6.2.1 CONTAINMENT SPRAY AND COOLING SYSTEMS (Continued)

Surveillance Requirement 4.6.2.1.2.b demonstrates a cooling water flow rate of ≥ 500 gpm to each containment air recirculation and cooling unit to provide assurance a cooling water flow path through the cooling unit is available. ~~The 31 day frequency considers 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. This frequency has been shown to be acceptable through operating experience.~~ Insert 2a

Surveillance Requirement 4.6.2.1.2.c demonstrates that each containment air recirculation and cooling unit starts on receipt of an actual or simulated actuation signal (SIAS). ~~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 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 the Engineered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program.

3/4.6.3 CONTAINMENT ISOLATION VALVES

The Technical Requirements Manual contains the list of containment isolation valves (except the containment air lock and equipment hatch). Any changes to this list will be reviewed under 10CFR50.59 and approved by the committee(s) as described in the QAP Topical Report.

The OPERABILITY of the containment isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment. Containment isolation within the time limits specified ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a LOCA.

The containment isolation valves are used to close all fluid (liquid and gas) penetrations not required for operation of the engineered safety feature systems, to prevent the leakage of radioactive materials to the environment. The fluid penetrations which may require isolation after an accident are categorized as Type P, O, or N. The penetration types for each containment isolation valve are listed in FSAR Table 5.2-11, Containment Structure Isolation Valve Information.

Type P penetrations are lines that connect to the reactor coolant pressure boundary (Criterion 55 of 10CFR50, Appendix A). These lines are provided with two containment isolation valves, one inside containment, and one outside containment.

Type O penetrations are lines that are open to the containment internal atmosphere (Criterion 56 of 10CFR50, Appendix A). These lines are provided with two containment isolation valves, one inside containment, and one outside containment.

3/4.6.3 CONTAINMENT ISOLATION VALVES (continued)

Type N penetrations are lines that neither connect to the reactor coolant pressure boundary nor are open to the containment internal atmosphere, but do form a closed system within the containment structure (Criterion 57 of 10CFR50, Appendix A). These lines are provided with single containment isolation valves outside containment. These valves are either remotely operated or locked closed manual valves.

With one or more penetration flow paths with one containment isolation valve inoperable, the inoperable valve must be restored to OPERABLE status or the affected penetration flow path must be isolated. The method of isolation must include 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, a closed manual valve, and a blind flange. A check valve may not be used to isolate the affected penetration.

If the containment isolation valve on a closed system becomes inoperable, the remaining barrier is a closed system since a closed system is an acceptable alternative to an automatic valve. However, ACTIONS must still be taken to meet Technical Specification ACTION 3.6.3.1.d and the valve, not normally considered as a containment isolation valve, and closest to the containment wall should be put into the closed position. No leak testing of the alternate valve is necessary to satisfy the ACTION statement. Placing the manual valve in the closed position sufficiently deactivates the penetration for Technical Specification compliance. Closed system isolation valves applicable to Technical Specification ACTION 3.6.3.1.d are included in FSAR Table 5.2-11, and are the isolation valves for those penetrations credited as General Design Criteria 57, (Type N penetrations). The specified time (i.e., 72 hours) of Technical Specification ACTION 3.6.3.1.d is reasonable, considering the relative stability of the closed system (hence, reliability) to act as a penetration isolation boundary and the relative importance of supporting containment OPERABILITY during MODES 1, 2, 3, and 4. In the event the affected penetration is isolated in accordance with 3.6.3.1.d, the affected penetration flow path must be verified to be isolated on a periodic basis, (Surveillance Requirement 4.6.1.1.a). This is necessary to assure leak tightness of containment and that containment penetrations requiring isolation following an accident are isolated~~.~~ ~~The frequency of once per 31 days in this surveillance for verifying that each affected penetration flow path is isolated is appropriate considering the valves are operated under administrative controls and the probability of their misalignment is low.~~

Insert 2a

For the purposes of meeting this LCO, neither the containment isolation valve, nor any alternate valve on a closed system have a leakage limit associated with valve OPERABILITY.

3/4.6.4 COMBUSTIBLE GAS CONTROL

Insert 2a

Surveillance Requirement 4.6.3.1.b demonstrate that each automatic containment isolation valve actuates to the isolation position on an actual or simulated containment isolation signal [containment isolation actuation signal (CIAS) or containment high radiation actuation signal (containment purge valves only)]. 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 transients if the surveillance was 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 the Engineered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program.

The OPERABILITY of the equipment and systems required for control of hydrogen gas ensures that this equipment will be available to maintain the hydrogen concentration within containment below its flammable limit during post-LOCA conditions.

The post-incident recirculation systems are provided to ensure adequate mixing of the containment atmosphere following a LOCA. This mixing action will prevent localized accumulations of hydrogen from exceeding the flammable limit.

3/4.6.5 SECONDARY CONTAINMENT

3/4.6.5.1 ENCLOSURE BUILDING FILTRATION SYSTEM

The OPERABILITY of the Enclosure Building Filtration System ensures that containment leakage occurring during LOCA conditions into the annulus will be filtered through the HEPA filters and charcoal adsorber trains prior to discharge to the atmosphere. This requirement is necessary to meet the assumptions used in the accident analyses and limit the SITE BOUNDARY radiation doses to within the limits of 10 CFR 50.67 during LOCA conditions.

The laboratory testing requirement for the charcoal sample to have a removal efficiency of ≥ 95% is more conservative than the elemental and organic iodine removal efficiencies of 90% and 70%, respectively, assumed in the DBA analyses for the EBFS charcoal adsorbers in the Millstone Unit 2 Final Safety Analysis Report. A removal efficiency acceptance criteria of ≥ 95% will ensure the charcoal has the capability to perform its intended safety function throughout the length of an operating cycle.

Surveillance Requirement 4.6.5.1.b.1 dictates the test frequency, method and acceptance criteria for the EBFS trains (cleanup trains). These criteria all originate in the Regulatory Position sections of Regulatory Guide 1.52, Rev. 2, March 1978 as discussed below:

Section C.5.a requires a visual inspection of the cleanup system be made before the following tests, in accordance with the provisions of section 5 of ANSI N510-1975:

- in-place air flow distribution test
- DOP test
- activated carbon adsorber section leak test

the frequency specified in the Surveillance Frequency Control Program

Section C.5.c requires the in-place Dioctyl phthalate (DOP) test for HEPA filters to ~~conform~~ to section 10 of ANSI N510-1975. The HEPA filters should be tested in place (1) initially, (2) at ~~least once per 18 months thereafter~~, and (3) following painting, fire, or chemical release in any ventilation zone communicating with the system. The testing is to confirm a penetration of less than or equal to 1%* at rated flow.

Section C.5.d requires the charcoal adsorber section to be leak tested with a gaseous halogenated hydrocarbon refrigerant, in accordance with section 12 of ANSI N510-1975 to ensure that bypass leakage through the adsorber section is less than or equal to 1%.** Adsorber leak testing should be conducted (1) initially, (2) at ~~least once per 18 months thereafter~~, (3) following removal of an adsorber sample for laboratory testing if the integrity of the adsorber

* Means that the HEPA filter will allow passage of less than or equal to 1% of the test concentration injected at the filter inlet from a standard DOP concentration injection.

** Means that the charcoal adsorber sections will allow passage of less than or equal to 1% of the injected test concentration around the charcoal adsorber sections.

3/4.7.1.2 AUXILIARY FEEDWATER PUMPS (Continued)

A Note limits the applicability of the inoperable equipment condition b. to when the unit has not entered MODE 2 following a REFUELING. Required ACTION b. allows one auxiliary feedwater pump to be inoperable for 7 days vice the 72 hour allowed outage time in required ACTION c. This longer allowed outage time is based on the reduced decay heat following REFUELING and prior to the reactor being critical.

With one of the auxiliary feedwater pumps inoperable in MODE 1, 2, or 3 for reasons other than ACTION a. or b., ACTION must be taken to restore the inoperable equipment to OPERABLE status within 72 hours. This includes the loss of both steam supply lines to the turbine-driven auxiliary feedwater pump. The 72 hour allowed outage time is reasonable, based on redundant capabilities afforded by the auxiliary feedwater system, time needed for repairs, and the low probability of a DBA occurring during this time period. Two auxiliary feedwater pumps and flow paths remain to supply feedwater to the steam generators.

If all three AFW pumps are inoperable in MODE 1, 2, or 3, the unit is in a seriously degraded condition with no safety related means for conducting a cooldown, and only limited means for conducting a cooldown with non-safety related equipment. In such a condition, the unit should not be perturbed by any action, including a power change that might result in a trip. The seriousness of this condition requires that action be started immediately to restore one AFW pump to OPERABLE status. Required ACTION e. is modified by a Note indicating that all required MODE changes or power reductions are suspended until one AFW pump is restored to OPERABLE status. In this case, LCO 3.0.3 is not applicable because it could force the unit into a less safe condition.

periodic

During ~~quarterly~~ surveillance testing of the turbine driven AFW pump, valve 2-CN-27A is closed and valve 2-CN-28 is opened to prevent overheating the water being circulated. In this configuration, the suction of the turbine driven AFW pump is aligned to the Condensate Storage Tank via the motor driven AFW pump suction flow path, and the pump minimum flow is directed to the Condensate Storage Tank by the turbine driven AFW pump suction path upstream of 2-CN-27A in the reverse direction. During this surveillance, the suction path to the motor driven AFW pump suction path remains OPERABLE, and the turbine driven AFW suction path is inoperable. In this situation, the ACTION requirements of Technical Specification 3.7.1.2 for one AFW pump are applicable.

Insert 2a

3/4.7.1.2 AUXILIARY FEEDWATER PUMPS (Continued)

Surveillance Requirement 4.7.1.2.a verifies the correct alignment for manual, power operated, and automatic valves in the Auxiliary Feedwater (AFW) System flow paths (water and steam) to provide assurance that the proper flow paths will exist for AFW operation. This surveillance does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves 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 automatically repositions 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 mispositioned are in the correct position. ~~The 31 day frequency is appropriate because the valves are operated under procedural control and an improper valve position would only affect a single train. This frequency has been shown to be acceptable through operating experience.~~ Insert 2a

Surveillance Requirement 4.7.1.2.b, which addresses periodic surveillance testing of the AFW pumps to detect gross degradation caused by impeller structural damage or other hydraulic component problems, is required by the ASME Code for Operations and Maintenance of Nuclear Power Plants (ASME OM Code). This type of testing may be accomplished by measuring the pump developed head at only one point of the pump characteristic curve. 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 unit safety analysis. The surveillance requirements are specified in the Inservice Testing Program. The ASME OM Code provides the activities and frequencies necessary to satisfy the requirements. This surveillance is modified to indicate that the test can be deferred for the steam driven AFW pump until suitable plant conditions are established. This deferral is required because steam pressure is not sufficient to perform the test until after MODE 3 is entered. Once the unit reaches 800 psig, 24 hours would be allowed for completing the surveillance. However, the test, if required, must be performed prior to entering MODE 2.

Surveillance Requirements 4.7.1.2.c and 4.7.1.2.d demonstrate that each automatic AFW valve actuates to the required position on an actual or simulated actuation signal (AFWAS) and that each AFW pump starts on receipt of an actual or simulated actuation signal (AFWAS). 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 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.~~ Insert 2a The actuation logic is tested as part of the Engineered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program. These surveillances do not apply to the steam driven AFW pump and associated valves which are not automatically actuated.

3/4.7.3 REACTOR BUILDING CLOSED COOLING WATER SYSTEM (Continued)

It is acceptable to operate with the RBCCW pump minimum flow valves (2-RB-107A, 2-RB-107B, 2-RB-107C), RBCCW pump sample valves (2-RB-56A, 2-RB-56B, and 2-RB-56C), and the RBCCW pump radiation monitor stop valves (2-RB-39, 2-RB-41,and 2-RB-43) open. An active single failure will not adversely impact both RBCCW loops with these valves open. In addition, protection against a passive single failure after the initiation of post-loss of coolant accident long term cooling is achieved by manually closing these accessible valves, as directed by the emergency operating procedures. In addition, operation with RBCCW chemical addition valves (2-RB-50A and 2-RB-50B) open during chemical addition evolutions is acceptable since these normally closed valves are opened to add chemicals to the RBCCW and then closed as directed by normal operating procedures. Therefore, operation with these valves open does not affect OPERABILITY of the RBCCW loops.

Surveillance Requirement 4.7.3.1.a verifies the correct alignment for manual, power operated, and automatic valves in the RBCCW System flow paths to provide assurance that the proper flow paths exist for RBCCW operation. This surveillance does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves 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 automatically repositions 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 mispositioned are in the correct position. ~~The 31 day frequency is appropriate because the valves are operated under procedural control and an improper valve position would only affect a single train. This frequency has been shown to be acceptable through operating experience.~~ Insert 2a

Surveillance Requirements 4.7.3.1.b and 4.7.3.1.c demonstrate that each automatic RBCCW valve actuates to the required position on an actual or simulated actuation signal and that each RBCCW pump starts on receipt of an actual or simulated actuation 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 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 the Engineered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program.

Insert 2b

3/4.7.4 SERVICE WATER SYSTEM

The OPERABILITY of the Service Water (SW) System ensures that sufficient cooling capacity is available for continued operation of vital components and Engineered Safety Feature equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the accident analyses.

3/4.7.4 SERVICE WATER SYSTEM (Continued)

determined to be inoperable should be the loop that results in the most adverse plant configuration with respect to the availability of accident mitigation equipment. Restoration of loop independence within the time constraints of the allowed outage time is required, or a plant shutdown is necessary.

Branch lines are supplied to isolation valves in the intake for lubrication to the circulating water pump bearings (2-SW-298 and 2-SW-299), and alternate supply connections (2-SW-84A, and 2-SW-84B). The flow restricting orifices in these lines ensure that safety related loads continue to receive minimum required flow during a LOCA (in which the lines remain intact), or during a seismic event (when the lines break) even with the valves open. Therefore, operation with these valves open does not affect OPERABILITY of the SW loops.

Surveillance Requirement 4.7.4.1.a verifies the correct alignment for manual, power operated, and automatic valves in the Service Water (SW) System flow paths to provide assurance that the proper flow paths exist for SW operation. This surveillance does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves 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 automatically repositions 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 mispositioned are in the correct position. ~~The 31 day frequency is appropriate because the valves are operated under procedural control and an improper valve position would only affect a single train. This frequency has been shown to be acceptable through operating experience.~~ Insert 2a

Surveillance Requirements 4.7.4.1.b and 4.7.4.1.c demonstrate that each automatic SW valve actuates to the required position on an actual or simulated actuation signal and that each SW pump starts on receipt of an actual or simulated actuation 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 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.~~ Insert 2b The actuation logic is tested as part of the Engineered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program.

3/4.7.5 DELETED

the frequency specified in the Surveillance Frequency Control Program

3/4.7.6 CONTROL ROOM EMERGENCY VENTILATION SYSTEM (Continued)

Section C.5.c requires the in-place Dioctyl phthalate (DOP) test for HEPA filters to conform to section 10 of ANSI N510-1975. The HEPA filters should be tested in place (1) initially, (2) at ~~least once per 18 months thereafter~~, and (3) following painting, fire, or chemical release in any ventilation zone communicating with the system. The testing is to confirm a penetration of less than or equal to 1%* at rated flow.

Section C.5.d requires the charcoal adsorber section to be leak tested with a gaseous halogenated hydrocarbon refrigerant, in accordance with section 12 of ANSI N510-1975 to ensure that bypass leakage through the adsorber section is less than or equal to 1%.** Adsorber leak testing should be conducted (1) initially, (2) at ~~least once per 18 months thereafter~~, (3) following removal of an adsorber sample for laboratory testing if the integrity of the adsorber section is affected, and (4) following painting, fire, or chemical release in any ventilation zone communicating with the system.

The ACTION requirements to immediately suspend various activities (CORE ALTERATIONS, irradiated fuel movement, etc.) do not preclude completion of the movement of a component to a safe position.

Technical Specification 3.7.6.1 provides the OPERABILITY requirements for the Control Room Emergency Ventilation Trains. If a Control Room Emergency Ventilation Train emergency power source or normal power source becomes inoperable in MODES 1, 2, 3, or 4 the requirements of Technical Specification 3.0.5 apply in determining the OPERABILITY of the affected Control Room Emergency Ventilation Train. If a Control Room Emergency Ventilation Train emergency power source or normal power source becomes inoperable in MODES 5 or 6 the guidance provided by Note "**" of this specification applies in determining the OPERABILITY of the affected Control Room Emergency Ventilation Train. If a Control Room Emergency Ventilation Train emergency power source or normal power source becomes inoperable while not in MODES 1, 2, 3, 4, 5, or 6 the requirements of Technical Specification 3.0.5 apply in determining the OPERABILITY of the affected Control Room Emergency Ventilation Train.

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* Means that the HEPA filter will allow passage of less than or equal to 1% of the test concentration injection at the filter inlet from a standard DOP concentration injection.

** Means that the charcoal adsorber sections will allow passage of less than or equal to 1% of the injected test concentration around the charcoal adsorber section.

3/4.7.11 ULTIMATE HEAT SINK (Continued)

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 SW System to operate for at least 30 days following the design basis LOCA without the loss of net positive suction head (NPSH), and without exceeding the maximum design temperature of the equipment served by the SW System. To meet this condition, the UHS temperature should not exceed 80°F during normal unit operation.

While the use of any supply side SW temperature indication is adequate to ensure compliance with the analysis assumptions, precision instruments installed at the inlet to the reactor building closed cooling water (RBCCW) heat exchangers will normally be used. Therefore, instrument uncertainty need not be factored into the surveillance acceptance criteria. All in-service instruments must be within the limit. If all of the precision instruments are out of service, alternative instruments that measure SW supply side temperature will be used. In this case, an appropriate instrument uncertainty will be subtracted from the acceptance criteria.

Since Long Island Sound temperature changes relatively slowly and in a predictable fashion according to the tides, it is acceptable to monitor this temperature ~~daily~~ at the frequency specified in the Surveillance Frequency Control Program when there is ample (>5°F) margin to the limit. When within 5°F of the limit, the temperature shall be monitored every 6 hours to ensure that tidal variations are appropriately captured.

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.

ACTION

If the UHS is 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 HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

The allowed outage 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.

~~The 31 day frequency for SR 4.8.1.1.2.a.2 is consistent with standard industry guidelines.~~

SR 4.8.1.1.2.a.3

This surveillance verifies that the diesel generators are capable of synchronizing with the offsite electrical system and accepting loads greater than or equal to the equivalent of the maximum expected accident loads. A minimum run time of 60 minutes is required to stabilize engine temperatures, while minimizing the time that the diesel generator is connected to the offsite source. Although no power factor requirements are established by this surveillance, the diesel generator 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 1.0 is an operational limitation.

This surveillance is modified by five 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. Similarly, momentary power factor transients above the limit will not invalidate the test. Note 3 indicates that this surveillance should be conducted on only one diesel generator at a time in order to avoid common cause failures that might result from offsite circuit or grid perturbations. Note 4 stipulates a prerequisite requirement for performance of this surveillance. A successful diesel generator start must precede this test to credit satisfactory performance. Note 5 states that SR 4.8.1.1.2.d, a more rigorous test, may be performed in lieu of 4.8.1.1.2.a.

Insert 2a

~~The 31 day frequency for SR 4.8.1.1.2.a.3 is consistent with standard industry guidelines.~~

SR 4.8.1.1.2.b.1

at the frequency specified in the Surveillance Frequency Control Program

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the three fuel storage tanks ~~once every 92 days~~ eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during EDG operation. Water may come from any of several sources, including condensation, rain water, contaminated fuel oil, and from breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. This surveillance is for preventative maintenance. The presence of water does not necessarily represent failure of this surveillance provided the accumulated water is removed during performance of the surveillance.

determination of total particulate concentration in the fuel oil and has a limit of 10 mg/l. It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing.

The frequency of this test takes into consideration fuel oil degradation trends that indicate that particulate concentration is unlikely to change significantly between surveillance intervals.

SR 4.8.1.1.2.c.2

Under accident and loss of offsite power conditions, loads are sequentially connected to the bus by the automatic load sequencer. The sequencing logic controls the permissive and starting signals to motor breakers to prevent overloading of the diesel generators due to high motor starting currents. The load sequence time interval tolerances ensure that sufficient time exists for the diesel generator to restore frequency and voltage prior to applying the next load and that safety analysis assumptions regarding Engineered Safety Features (ESF) equipment time delays are not violated.

~~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 surveillance when performed at the 18 month frequency. Therefore, the frequency is acceptable from a reliability standpoint.~~ Insert 2a

This surveillance is modified by a Note. The reason for the Note is that performing the surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the surveillance in MODE 1, 2, 3, or 4 is further amplified to allow the surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed surveillance, a successful surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and start up to determine that plant safety is maintained or enhanced when the surveillance is performed in MODE 1, 2, 3, or 4. Risk insights or deterministic methods may be used for this assessment.

SR 4.8.1.3.2.c.3

Each diesel generator 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 diesel generator load response characteristics and capability to reject the largest single load without exceeding a predetermined frequency limit. The single largest load for each diesel generator is identified in the FSAR (Tables 8.3-2 and 8.3-3).

This surveillance may be accomplished by either:

a. Tripping the diesel generator output breaker with the diesel generator 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 the equivalent of the single largest post-accident load with the diesel generator solely supplying the bus.

The time, voltage, and frequency tolerances specified in this surveillance are based on the response during load sequence intervals. The 2.2 seconds specified is equal to 40% of the 5.5 second load sequence interval associated with sequencing of the largest load (Safety Guide 9). The voltage and frequency specified are consistent with the design range of the equipment powered by the diesel generator. SR 4.8.1.1.2.c.3.a corresponds to the maximum frequency excursion, while SR 4.8.1.1.2.c.3.b and SR 4.8.1.1.2.c.3.c are steady state voltage and frequency values to which the system must recover following load rejection.

~~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 surveillance when performed at the 18 month frequency. Therefore, the frequency is acceptable from a reliability standpoint.~~ Insert 2a

This surveillance is modified by a Note to ensure that the diesel generator is tested under load conditions that are as close to design basis conditions as practical. When synchronized with offsite power, testing should be performed at a power factor of ≤ 0.9 lagging. This power factor is representative of the inductive loading a diesel generator would see based on the motor rating of the single largest load. It is within the adjustment capability of the Control Room Operator based on the use of reactive load indication to establish the desired power factor. Under certain conditions, however, the note allows the surveillance to be conducted at a power factor other than ≤ 0.9. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ 0.9 results in voltages on the emergency buses that are too high. Under these conditions, the power factor should be maintained as close as practicable to 0.9 while still maintaining acceptable voltage limits on the emergency buses. In other circumstances, the grid voltage may be such that the diesel generator excitation levels needed to obtain a power factor of 0.9 may not cause unacceptable voltages on the emergency buses, but the excitation levels are in excess of those recommended for the diesel generator. In such cases, the power factor shall be maintained as close as practicable to 0.9 lagging without exceeding the diesel generator excitation limits.

SR 4.8.1.1.2.c.4

This surveillance demonstrates the diesel generator capability to reject a rated load without overspeed tripping. A diesel generator rated 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 diesel generator experiences following a rated load rejection and verifies that the diesel generator will not trip upon loss of the load. While the diesel generator is not expected to experience this transient during an event, this response ensures that the diesel generator is not degraded for future application, including reconnection to the bus if the trip initiator can be corrected or isolated.

This surveillance is performed by tripping the diesel generator output breaker with the diesel generator carrying the required load while paralleled to offsite power.

~~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 surveillance when performed at the 18 month frequency. Therefore, the frequency is acceptable from a reliability standpoint.~~ Insert 2a

This surveillance is modified by a Note to ensure that the diesel generator is tested under load conditions that are as close to design basis conditions as practical. When synchronized with offsite power, testing should be performed at a power factor of ≤ 0.83 lagging. This power factor is representative of the inductive loading a diesel generator would see under design basis accident conditions. Under certain conditions, however, the note allows the surveillance to be conducted at a power factor other than ≤ 0.83. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ 0.83 results in voltages on the emergency buses that are too high. Under these conditions, the power factor should be maintained as close as practicable to 0.83 while still maintaining acceptable voltage limits on the emergency buses. In other circumstances, the grid voltage may be such that the diesel generator excitation levels needed to obtain a power factor of 0.83 may not cause unacceptable voltages on the emergency buses, but the excitation levels are in excess of those recommended for the diesel generator. In such cases, the power factor shall be maintained as close as practicable to 0.83 lagging without exceeding the diesel generator excitation limits.

SR 4.8.1.1.2.c.5

In the event of a design basis accident coincident with a loss of offsite power, the diesel generators 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 diesel generator operation during a loss of offsite power actuation test signal in conjunction with an ESF actuation signal, including shedding of the nonessential loads and energization of the emergency buses and respective loads from the diesel generator. It further demonstrates the capability of the diesel generator to automatically achieve the required voltage and speed (frequency) within the specified time. The diesel generator auto-start time of 15 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 has been achieved. The requirement to verify the connection of permanent and auto-connected loads is intended to satisfactorily show the relationship of these loads to the diesel generator loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the diesel generator system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

~~The 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 surveillance when performed at the 18 month frequency. Therefore, the frequency is acceptable from a reliability standpoint.~~ ← Insert 2a

For the purpose of this testing, the diesel generators must be started from a standby condition. Standby condition for a diesel generator means the diesel engine coolant and oil are being circulated and temperature is being maintained consistent with manufacturer recommendations.

This surveillance is modified by a Note. The reason for the Note is that performing the surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the surveillance in MODE 1 2, 3, or 4 is further amplified to allow portions of the surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial surveillance, a successful partial surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and start up to determine that plant safety is maintained or enhanced when portions of the surveillance are performed in MODE 1, 2, 3, or 4. Risk insights or deterministic methods may be used for the assessment.

SR 4.8.1.1.2.c.6

This surveillance demonstrates that diesel generator noncritical protective functions (e.g., high jacket water temperature) are bypassed on a loss of voltage signal concurrent with an ESF actuation test signal. During this time, the critical protective functions (engine overspeed, generator differential current, low lube oil pressure [2 out of 3 logic], and voltage restraint overcurrent) remain available to trip the diesel generator and/or output breaker to avert substantial damage to the diesel generator unit. An EDG Emergency Start Signal (Loss of Power signal or SIAS) bypasses the EDG mechanical trips in the EDG control circuit, except engine overspeed, and switches the low lube oil trip to a 2 of 3 coincidence. The loss of power to the emergency bus, based on supply breaker position (A302, A304, and A505 for Bus 24C; A410, A411, and A505 for Bus 24D), bypasses the EDG electrical trips in the breaker control circuit except generator differential current and voltage restraint over current. The noncritical trips are bypassed during design basis accidents and provide an alarm on an abnormal engine condition. This alarm provides the operator with sufficient time to react appropriately. The diesel generator availability to mitigate the design basis accident is more critical than protecting the engine against minor problems that are not immediately detrimental to emergency operation of the diesel generator.

~~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 surveillance when performed at the 18 month frequency. Therefore, the frequency is acceptable from a reliability standpoint~~. Insert 2a

This surveillance is modified by a Note. The reason for the Note is that performing the surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the surveillance in MODE 1, 2, 3, or 4 is further amplified to allow portions of the surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial surveillance, a successful partial surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the surveillance are performed in MODE 1, 2, 3, or 4. Risk insights or deterministic methods may be used for the assessment.

SR 4.8.1.1.2.c.7

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 diesel generator. It further demonstrates the capability of the diesel generator to automatically achieve the required voltage and speed (frequency) within the specified time. The diesel generator auto-start time of 15 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 has been achieved. The requirement to verify the connection and power supply of permanent and auto-connected loads is intended to satisfactorily show the relationship of these loads to the diesel generator loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the diesel generator system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

~~The 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 surveillance when performed at the 18 month frequency. Therefore, the frequency is acceptable from a reliability standpoint.~~ Insert 2a

This surveillance is modified by two Notes. The reason for Note 1 is that performing the surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the surveillance in MODE 1, 2, 3, or 4 is further amplified to allow portions of the surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial surveillance, a successful partial surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and start up to determine that plant safety is maintained or enhanced when portions of the surveillance are performed in MODE 1, 2, 3, or 4. Risk insights or deterministic methods may be used for the assessment.

Surveillance Note 2 specifies that the start of the diesel generator from a standby condition is not required if this surveillance is performed in conjunction with SR 4.8.1.1.2.c.5. Since this test is normally performed in conjunction with SR 4.8.1.1.2.c.5, the proposed note will exclude the requirement to start from a standby condition to minimize the time to perform this test. This will reduce shutdown risk since plant restoration, and subsequent equipment availability will occur sooner. In addition, it is not necessary to test the ability of the EDG to auto start from a standby condition for this test since that ability will have already been verified by SR 4.8.1.1.2.c.5, which will have just been performed if the note's exclusion is to be utilized. If this test is to be performed by itself, the EDG is required to start from a standby condition.

SR 4.8.1.1.2.c.8

This surveillance demonstrates that the diesel generator automatically starts and achieves the required voltage and speed (frequency) within the specified time (15 seconds) from the design basis actuation signal (Safety Injection Actuation Signal) and operates for ≥ 5 minutes. The 5 minute period provides sufficient time to demonstrate stability. Since the specified actuation signal (ESF signal without loss of offsite power) will not cause the emergency bus loads to be shed, and will not cause the diesel generator to load, the surveillance ensures that permanently connected loads and autoconnected loads remain energized from the offsite electrical power system (Unit 2 RSST or NSST, or Unit 3 RSST or NSST). In certain circumstances, many of these loads cannot actually be connected without undue hardship or potential for undesired operation. It is not necessary to verify all autoconnected loads remain connected. A representative sample is acceptable.

~~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 surveillance when performed at the 18 month frequency. Therefore, the frequency is acceptable from a reliability standpoint.~~

Insert 2a

For the purpose of this testing, the diesel generators must be started from a standby condition. Standby condition for a diesel generator means the diesel engine coolant and oil are being circulated and temperature is being maintained consistent with manufacturer recommendations.

SR 4.8.1.1.2.c.9

This surveillance demonstrates that the diesel engine can restart from a hot condition, such as subsequent to shutdown from a normal surveillance, and achieve the required voltage and speed within 15 seconds. The 15 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 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 surveillance when performed at the 18 month frequency. Therefore, the frequency is acceptable from a reliability standpoint.~~ Insert 2a

This surveillance is modified by a Note. The Note ensures that the test is performed with the diesel sufficiently hot. The load band is provided to avoid routine overloading of the diesel generator. Routine overloads may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain diesel generator OPERABILITY. The requirement that the diesel has operated for at least 1 hour at rated load conditions prior to performance of this surveillance is based on manufacturer recommendations for achieving hot conditions. Momentary transients due to changing bus loads do not invalidate this test.

SRs 4.8.1.1.2.d.1 and 4.8.1.1.2.d.2

SR 4.8.1.1.2.d.1 verifies that, at ~~a 184 day frequency~~ the frequency specified in the Surveillance Frequency Control Program, the diesel generator starts from standby conditions and achieves required voltage and speed (frequency) within 15 seconds. The 15 second start requirement supports the assumptions of the design basis LOCA analysis in the FSAR. Diesel generator voltage and speed will continue to increase to rated values, and then should stabilize. SR 4.8.1.1.2.d.2 verifies the ability of the diesel generator to achieve steady state voltage and frequency conditions. The time for voltage and speed (frequency) to stabilize is periodically monitored and the trend evaluated to identify degradation of governor or voltage regulator performance when besting in accordance with the requirements of this surveillance.

~~The 184 day frequency for this surveillance is a reduction in cold testing consistent with Generic Letter 84-15. This frequency provides adequate assurance of diesel generator OPERABILITY, while minimizing degradation resulting from testing.~~ Insert 2b In addition, SR 4.8.1.1.2.d may be performed in lieu of 4.8.1.1.2.a.

For the purpose of this testing, the diesel generators must be started from a standby condition. Standby condition for a diesel generator means the diesel engine coolant and oil are being circulated and temperature is being maintained consistent with manufacturer recommendations.

During performance of SR 4.8.1.1.2.d.1, the diesel generators shall be started by using one of the following signals:

1. Manual;
2. Simulated loss of offsite power in conjunction with a safety injection actuation signal;
3. Simulated safety injection actuation signal alone; or
4. Simulated loss of power alone.

SR 4.8.1.1.2.d.3

This surveillance verifies that the diesel generators are capable of synchronizing with the offsite electrical system and accepting loads greater than or equal to the equivalent of the maximum expected accident loads. A minimum run time of 60 minutes is required to stabilize engine temperatures, while minimizing the time that the diesel generator is connected to the offsite source. Although no power factor requirements are established by this surveillance, the diesel generator 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 1.0 is an operational limitation.

~~The 184 day frequency for this surveillance is a reduction in cold testing consistent with Generic Letter 84-15. This frequency provides adequate assurance of diesel generator OPERABILITY, while minimizing degradation resulting from testing.~~ Insert 2a

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. Similarly, momentary power factor transients above the limit will not invalidate the test. Note 3 indicates that this surveillance should be conducted on only one diesel generator at a time in order to avoid common cause failures that might result from offsite circuit or grid perturbations. Note 4 stipulates a prerequisite requirement for performance of this surveillance. A successful diesel generator start must precede this test to credit satisfactory performance.

3/4.9.16 SHIELDED CASK

The limitations of this specification ensure that in the event of a shielded cask drop accident the doses from ruptured fuel assemblies will be within the assumptions of the safety analyses.

3/4.9.17 SPENT FUEL POOL BORON CONCENTRATION

The limitations of this specification ensures that sufficient boron is present to maintain spent fuel pool $K_{eff} \leq 0.95$ under accident conditions.

Postulated accident conditions which could cause an increase in spent fuel pool reactivity are: a single dropped or mis-loaded fuel assembly, a single dropped or mis-loaded Consolidated Fuel Storage Box, or a shielded cask drop onto the storage racks. A spent fuel pool soluble boron concentration of 1400 ppm is sufficient to ensure $K_{eff} \leq 0.95$ under these postulated accident conditions. The required spent fuel pool soluble boron concentration of ≥ 1720 ppm conservatively bounds the required 1400 ppm. The ACTION statement ensure that if the soluble boron concentration falls below the required amount, that fuel movement or shielded cask movement is stopped, until the boron concentration is restored to within limits.

An additional basis of this LCO is to establish 1720 ppm as the minimum spent fuel pool soluble boron concentration which is sufficient to ensure that the design basis value of 600 ppm soluble boron is not reached due to a postulated spent fuel pool boron dilution event. As part of the spent fuel pool criticality design, a spent fuel soluble boron concentration of 600 ppm is sufficient to ensure $K_{eff} \leq 0.95$, provided all fuel is stored consistent with LCO requirements. By maintaining the spent fuel pool soluble boron concentration ≥ 1720 ppm, sufficient time is provided to allow the operators to detect a boron dilution event, and terminate the event, prior to the spent fuel pool being diluted below 600 ppm. In the unlikely event that the spent fuel pool soluble boron concentration is decreased to 0 ppm, K_{eff} will be maintained <1.00, provided all fuel is stored consistent with LCO requirements. The ACTION statement ensures that if the soluble boron concentration falls below the required amount, that immediate action is taken to restore the soluble boron concentration to within limits, and that fuel movement or shielded cask movement is stopped. Fuel movement and shielded cask movement is stopped to prevent the possibility of creating an accident condition at the same time that the minimum soluble boron is below limits for a potential boron dilution event.

periodic

The surveillance of the spent fuel pool boron concentration within 24 hours of fuel movement, consolidated fuel movement, or cask movement over the cask layout area, verifies that the boron concentration is within limits just prior to the movement. The ~~7-day~~ surveillance interval ~~frequency is sufficient since no deliberate major replenishment of pool water is expected to take place over this short period of time~~.

is controlled under the Surveillance Frequency Control Program