2807 West County Road 75
Monticello, MN 55362

800.895.4999
xcelenergy.com

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U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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Monticello Nuclear Generating Plant
Docket Number 50-263
Renewed Facility Operating License No. DPR-22

License Amendment Request: Application for Technical Specification Change Regarding Risk-Informed Justification for the Relocation of Specific Surveillance Frequency Requirements to a Licensee Controlled Program

References:

1. Nuclear Energy Institute (NEI) 04-10, “Risk-Informed Technical Specification Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies,” Revision 1, dated April 2007 (ADAMS Accession No. ML071360456)

2. Technical Specifications Task Force (TSTF) Standard Technical Specifications (STS) Change TSTF-425, "Relocate Surveillance Frequencies to Licensee Control - Risk Informed Technical Specifications Task Force (RITSTF) Initiative 5b," Revision 3, dated March 18, 2009 (ADAMS Accession No. ML090850627)

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

Pursuant to 10 CFR 50.90, Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, requests to amend the renewed Facility Operating License DPR-22 to the Monticello Nuclear Generating Plant (MNGP). The proposed amendment would modify the MNGP Technical Specifications (TS) by relocating specific surveillance frequencies to a licensee-controlled program with implementation of NEI 04-10, “Risk-Informed Technical Specification Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies,” (Reference 1). The changes are consistent with NRC-approved Industry/TSTF STS change TSTF-425, "Relocate Surveillance Frequencies to Licensee Control - Risk Informed Technical Specifications

Task Force (RITSTF) Initiative 5b," Revision 3 (Reference 2). Federal Register "Notice of Availability of Technical Specification Improvement to Relocate Surveillance Frequencies to Licensee Control – Risk Informed Specification Task Force (RITSTF) Initiative 5b, Technical Specification Task Force - 425, Revision 3," (Reference 3), announced the availability of this TS improvement.

Attachment 1 provides a description of the proposed change, the requested confirmation of applicability, and plant-specific verifications. Attachment 2 provides documentation of Probabilistic Risk Assessment (PRA) technical adequacy. Attachment 3 provides the existing TS pages marked up to show the proposed change. Attachment 4 provides the proposed TS Bases changes. Attachment 5 provides a cross-reference between the TSTF-425 affected STS pages and the MNGP TS pages. Attachment 6 contains the Proposed No Significant Hazards Consideration.

NSPM requests approval of the proposed license amendment by January 2, 2019. Once approved, the amendment will be implemented within 120 days.

In accordance with 10 CFR 50.91, NSPM is notifying the State of Minnesota of this license amendment request by transmitting a copy of the letter and enclosure to the designated State Official.

Please contact Sara Scott, Licensing Manager, at 612-330-6698, if additional information or clarification is required.

Summary of Commitments

This letter makes no new commitments and no revisions to existing commitments.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on December 19, 2017.

Christopher R. Church
Site Vice President, Monticello Nuclear Generating Plant
Northern States Power Company - Minnesota

Attachments (6)

cc: Administrator, Region III, USNRC
Project Manager, Monticello Nuclear Generating Plant, USNRC
Resident Inspector, Monticello Nuclear Generating Plant, USNRC
State of Minnesota

ATTACHMENT 1

Monticello Nuclear Generating Plant

License Amendment Request:
Application for Technical Specification Change Regarding Risk-Informed Justification for the Relocation of Specific Surveillance Frequency Requirements to a Licensee Controlled Program

DESCRIPTION AND ASSESSMENT

1.0 DESCRIPTION

The proposed amendment would modify the Monticello Nuclear Generating Plant (MNGP) technical specifications (TS) by relocating specific surveillance frequencies to a licensee-controlled program with the adoption of Technical Specification Task Force (TSTF)-425, Revision 3, “Relocate Surveillance Frequencies to Licensee Control - Risk Informed Technical Specification Task Force (RITSTF) Initiative 5b,” (Reference 1). Additionally, the change would add a new program, the Surveillance Frequency Control Program (SFCP), to TS Section 5.0, Administrative Controls.

The changes are consistent with NRC approved Industry/TSTF Standard Technical Specification (STS) change TSTF-425. The Federal Register Notice published on July 6, 2009 (74 FR 31996) (Reference 2) announced the availability of this TS improvement.

2.0 ASSESSMENT

2.1 Applicability of Published Safety Evaluation

Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, has reviewed the safety evaluation (SE) dated July 6, 2009 (Reference 2). This review included a review of the NRC staff’s evaluation, TSTF-425, Revision 3, (Reference 1) and the requirements specified in Nuclear Energy Institute (NEI) 04-10, Revision 1 (Reference 3).

Attachment 2 includes NSPM documentation with regard to Probabilistic Risk Assessment (PRA) technical adequacy consistent with the requirements of Regulatory Guide 1.200, Revision 2 (Reference 4), Section 4.2, and describes any PRA models without NRC-endorsed standards, including documentation of the quality characteristics of those models in accordance with Regulatory Guide 1.200.

NSPM has concluded that the justifications presented in the TSTF proposal and the SE prepared by the NRC staff are applicable to the MNGP and justify this amendment to incorporate the changes to the MNGP TS.

2.2 Optional Changes and Variations

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

- Revised (clean) 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 license amendment requests that may affect some of the same TS pages. Providing only mark-ups of the proposed TS changes satisfies the requirements of 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," in that the mark-ups fully describe the changes desired. This is an administrative deviation from the NRC staff's model application dated July 6, 2009 (Reference 2) with no impact on the NRC staff's model SE 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. This deviation is consistent with many other industry applications adopting TSTF-425.

- The definition of STAGGERED TEST BASIS is being retained in MNGP TS Section 1.1, “Definitions,” because this terminology is used in Section 5.5, “Programs and Manuals,” Specification 5.5.13, "Control Room Envelope Habitability Program." Specification 5.5.13 is not affected by implementation of TSTF-425 and is not proposed to be changed. This is an administrative deviation from TSTF-425 with no impact on the NRC staff's model SE dated July 6, 2009 (Reference 2).

- The insert provided in TSTF-425 for the TS Bases (Insert 2) states, “The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.” In a letter dated April 14, 2010 (Reference 5), the NRC staff agreed that the insert applies to surveillance frequencies that are relocated and subsequently evaluated and changed in accordance with the SFCP, but does not apply to frequencies relocated to the SFCP, but not changed. Therefore, the insert for the Bases is revised to, “The Surveillance Frequency is controlled under the Surveillance Frequency Control Program” or “The Surveillance Frequencies are controlled under the Surveillance Frequency Control Program,” as appropriate. This is an administrative deviation from TSTF-425 with no impact on the NRC staff's model SE dated July 6, 2009 (Reference 2). The existing TS Bases information will be relocated to the licensee-controlled SFCP.

- Attachment 5 provides a cross-reference between the NUREG-1433 (Reference 8) Surveillance Requirements (SRs) included in TSTF-425 versus MNGP TS SRs included in this amendment request. Attachment 5 includes a summary description of the referenced TSTF-425 TS SRs, which is being provided for information purposes only and is not intended to be a verbatim description of the TS SR. This cross-reference highlights the following:

  - TS SRs included in TSTF-425 and corresponding MNGP TS SRs with differing TS SR numbers;
  - TS SRs included in TSTF-425 that are not contained in the MNGP TS; and

- MNGP plant-specific TS SRs that are not contained in the TSTF-425 TS SRs and, therefore, are not included in the TSTF-425 mark-ups.

Regarding the above bullets, the MNGP TS SRs with numbering that differs from the corresponding TSTF-425 TS SRs are administrative deviations from TSTF-425 with no impact on the NRC's model SE dated July 6, 2009 (Reference 2). For the TSTF-425 TS SRs that are not contained in the MNGP TS, the corresponding mark-ups included in TSTF-425 for these TS SRs are not applicable to MNGP. This is also an administrative deviation from TSTF-425 with no impact on the NRC's model SE dated July 6, 2009 (Reference 2). Lastly, the MNGP TS include plant-specific TS SRs that are not contained in NUREG-1433 and, therefore, are not included in the NUREG-1433 markups provided in TSTF-425. NSPM has determined that the relocation of the frequencies for these MNGP plant-specific TS SRs is consistent with the intent of TSTF-425, Revision 3, and with the NRC staff's model SE dated July 6, 2009 (Reference 2), including the scope exclusions identified in Section 1.0, "Introduction," of the model SE because the plant-specific TS SRs involve fixed periodic frequencies. Changes to the frequencies for these plant-specific TS SRs would be controlled under the SFCP.

The SFCP provides the necessary administrative controls to require that Surveillances related to testing, calibration and inspection are conducted at a frequency to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met. Changes to frequencies in the SFCP would be evaluated using the NRC approved methodology and probabilistic risk guidelines contained in NEI 04-10, “Risk-Informed Technical Specification Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies,” Revision 1 (Reference 3). Reference 4 was approved by NRC letter, “Final Safety Evaluation for Nuclear Energy Institute (NEI) Topical Report (TR) 04-10, Revision 1, “Risk-Informed Technical Specification Initiative 5b, “Risk–Informed Method for Control of Surveillance Frequencies” (TAC No. MD6111),” dated September 19, 2007 (Reference 7).

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 systems, components, and structures (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 Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decision-making: Technical Specifications," dated August 1998 (Reference 6), relative to changes in surveillance frequencies. Therefore, the proposed relocation of the MNGP plant-specific TS SR frequencies is consistent with TSTF-425 and with the NRC staff's model SE dated July 6, 2009 (Reference 2).

- SR 3.1.2.1 is included within the scope of this submittal but was not included in TSTF-425, Revision 3. The frequency of TS SR 3.1.2.1 is encompassed by the intent of TSTF-425 and, therefore, is within the scope of the NRC model SE (Reference 2). The NUREG-1433 markups within TSTF-425 include a similar core exposure based SR frequency (i.e., TS SR 3.3.1.1.6). During the NRC review of TSTF-425, Revision 1, a Request for Additional Information (RAI) response (Reference 9) from the TSTF specifically identified frequencies based on core exposure to be within the scope of TSTF-425 and NEI 04-10. In addition, on May 24, 2017, the NRC approved a similar SR frequency relocation for the Brunswick TSTF-425 License Amendment (Reference 10).

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration

Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, has reviewed the proposed No Significant Hazards Consideration (NSHC) determination published in the Federal Register dated July 6, 2009 (74 FR 31996). NSPM has concluded that the proposed NSHC presented in the Federal Register notice is applicable to the Monticello Nuclear Generating Plant (MNGP) and is provided as an attachment to this amendment request, which satisfies the requirements of 10 CFR 50.91(a).

4.0 ENVIRONMENTAL CONSIDERATION

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

5.0 REFERENCES

1. Technical Specification Task Force (TSTF)-425, “Relocate Surveillance Frequencies to Licensee Control - Risk Informed Technical Specification Task Force (RITSTF) Initiative 5b,” Revision 3, dated March 18, 2009 (ADAMS Accession No. ML090850642)

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

3. NEI 04-10, “Risk-Informed Technical Specification Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies,” Revision 1, April 2007 (ADAMS Accession No. ML071360456)

4. Regulatory Guide 1.200, “An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results in Risk-Informed Activities,” Revision 2, March 2009 (ADAMS Accession No. ML090410014)

5. NRC letter to Technical Specifications Task Force, “Notification of Issue with NRC-Approved Technical Specifications Task Force (TSTF) Traveler TSTF-425, Revision 3, ‘Relocate Surveillance Frequencies to Licensee Control – RITSTF Initiative 5b,’” dated April 14, 2010 (ADAMS Accession No. ML100990099)

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

7. NRC letter, “Final Safety Evaluation for Nuclear Energy Institute (NEI) Topical Report (TR) 04-10, Revision 1, “Risk-Informed Technical Specification Initiative 5b, “Risk-Informed Method for Control of Surveillance Frequencies” (TAC No. MD6111),” dated September 19, 2007 (ADAMS Accession No. ML072570267)

8. NUREG-1433, “Standard Technical Specifications - General Electric BWR/4 Plants,” Revision 4, Volumes 1 and 2, April 2012 (ADAMS Accession Nos. ML12104A192 and ML12104A193)

9. Technical Specification Task Force letter, “Response to NRC Request for Additional information Regarding TSTF-425, Revision 1, ‘Relocate Surveillance Frequencies to Licensee Control – RITSTF Initiative 5b,’ dated October 2, 2007,” dated January 17, 2008 (ADAMS Accession No. ML080280272)

10. NRC letter, “Brunswick Steam Electric Plant, Units 1 and 2 – Issuance of Amendments Regarding Request to Relocate Specific Surveillance Frequencies to a Licensee Controlled Program (CAC No. MF7206 and MF7207),” dated May 24, 2017 (ADAMS Accession No. ML17096A129)

ATTACHMENT 2

Monticello Nuclear Generating Plant

License Amendment Request:
Application for Technical Specification Change Regarding Risk-Informed Justification for the Relocation of Specific Surveillance Frequency Requirements to a Licensee Controlled Program

DOCUMENTATION OF PROBABILISTIC RISK ASSESSMENT (PRA) TECHNICAL ADEQUACY

(27 pages to follow)

TABLE OF CONTENTS

1.0 **Overview**

The implementation of the Surveillance Frequency Control Program (also referred to as Technical Specifications Initiative 5b) at the Monticello Nuclear Generating Plant, (MNGP) will follow the guidance provided by Nuclear Energy Institute (NEI) in NEI 04-10, Revision 1 [Reference 6.1] in evaluating proposed surveillance test interval (STI; also referred to as "surveillance frequency") changes. The following steps of the risk-informed STI revision process are common to proposed changes to all STIs within the proposed licensee-controlled program.

- Each proposed STI revision is reviewed to determine whether there are any commitments made to the NRC that may prohibit changing the interval. If there are no related commitments, or the commitments may be changed using a commitment change process based on NRC endorsed guidance, then evaluation of the STI revision would proceed. If a commitment exists and the commitment change process does not permit the change without NRC approval, then the proposed STI revision cannot be implemented. Only after receiving NRC approval to change the commitment could the proposed STI revision proceed.
- A qualitative analysis is performed for each proposed STI revision that involves several considerations as explained in NEI 04-10, Revision 1.
- Each proposed STI revision is reviewed by an expert panel, referred to as the Integrated Decisionmaking Panel (IDP), which is normally the same panel as is used for Maintenance Rule implementation, but with the addition of specialists with experience in surveillance tests and system or component reliability. If the IDP approves the STI revision, the change is documented, implemented, and available for future audits by the NRC. If the IDP does not approve the STI revision, the STI value is left unchanged.
- Performance monitoring is conducted as recommended by the IDP. In some cases, no additional monitoring may be necessary beyond that already conducted under the Maintenance Rule. The performance monitoring helps to confirm that no failure mechanisms related to the revised test interval become important enough to alter the information provided for the justification of the interval changes.
- The IDP is responsible for periodic review of performance monitoring results. If it is determined that the time interval between successive performances of a surveillance test is a factor in the unsatisfactory performances of the surveillance, the IDP will adjust the STI as needed to provide reasonable assurance of continued satisfactory performance.
- In addition to the above steps, the Probabilistic Risk Assessment (PRA) is used, when possible, to quantify the effect of a proposed individual STI revision compared to acceptance criteria in NEI 04-10, Revision 1. Neither the current

MNGP PRA models nor the industry generic failure data, for which they are based upon, distinguish between the time-related failure contribution (i.e.; the standby time-related failure rate) and the cyclic demand-related failure contribution (i.e., the demand stress failure probability) for standby component failure modes (e.g., NUREG/CR-6928 [Reference 6.2] assumes these failures are on a demand basis). Since this distinction is not made, Xcel Energy, in accordance with NEI 04-10, Revision 1, will assume that all failures are time-related in calculating the risk impact of a proposed STI adjustment, to obtain the maximum test-limited risk contribution. If a further breakdown of failure probability is required to remove conservatism from the risk impact calculation of a proposed surveillance frequency change, it shall be justified through data and/or engineering analyses. Furthermore, Xcel Energy will abide by the cautionary sentence in NEI 04-10, Revision 1, Step 8, third paragraph, which states, "...caution should be taken in dividing the failure probability into time-related and cyclic demand-related contributions because the test-limited risk can be underestimated when only part of the failure rate is considered as being time-related while this may not be the case." Also, the cumulative impact of all risk-informed STI revisions on all applicable PRA evaluations (i.e., internal events, external events and shutdown) is compared to the risk acceptance criteria as delineated in NEI 04-10, Revision 1. For those cases where the STI cannot be modeled in the plant PRA (or where a particular PRA model does not exist for a given hazard group), a qualitative or bounding analysis is performed to provide justification for the acceptability of the proposed test interval change.

The NEI 04-10, Revision 1 methodology utilizes the guidance provided in Regulatory Guide (RG) 1.200, “An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities.” [Reference 6.3]. The guidance in RG 1.200 indicates that the following steps should be followed when performing PRA assessments:

1. Identify the pieces of the PRA used to support the application.

- Identify structures, systems, and components (SSCs), operational characteristics affected by the application and how these are implemented in the PRA model.
- A definition of the acceptance criteria used for the application.

2. Identify the scope of risk contributors addressed by the PRA model.

- If not full scope (i.e., internal events, external events, all modes), identify appropriate compensatory measures or provide bounding arguments to address the risk contributors not addressed by the PRA model.

3. Summarize the risk assessment methodology used to assess the risk of the application.

- Include how the PRA model was modified to appropriately model the risk impact of the change request.

4. Demonstrate the Technical Adequacy of the PRA.

- Identify plant changes (design or operational practices) that have been incorporated at the site, but are not yet in the PRA model and justify why the change does not impact the PRA results used to support the application.
- Document peer review findings and observations that are applicable to the parts of the PRA required for the application, and for those that have not yet been addressed justify why the significant contributors would not be impacted.
- Document that the parts of the PRA used in the decision are consistent with applicable standards endorsed by the Regulatory Guide (currently, RG 1.200, Revision 2). Provide justification to show that where specific requirements in the standard are not adequately met, it will not unduly impact the results.
- Identify key assumptions and approximations relevant to the results used in the decision-making process.

Item 1 satisfies the requirements of RG 1.200, Revision 2, Section 3.2: “Identification of Pieces of a PRA Used to Support the Application.” Item 2 satisfies the requirements of RG 1.200, Revision 2, Section 3.1: “Scope of Risk Contributors Addressed by the PRA Model.” Item 3 satisfies one of the requirements of RG 1.200, Revision 2, Section 4.2: “Licensee Submittal Documentation.” Item 4 satisfies the requirements of RG 1.200, Revision 2, Section 3.3: “Demonstration of Technical Adequacy of the PRA”, and the remaining requirements of RG 1.200, Revision 2, Section 4.2.

Because of the broad scope of potential Technical Specifications Initiative 5b applications and the fact that the risk assessment details will differ from application to application, each of the issues encompassed in Items 1 through 3 above will be addressed during the preparation of each individual PRA assessment made in support of the individual STI change requests. The purpose of the remaining portion of this attachment is to address the requirements identified in Item 4 above.

2.0 Technical Adequacy of the PRA Model

Xcel Energy maintains both an internal events PRA model and a fire PRA model for MNGP. The current version of the internal events model is Revision 3.4 and the current version of the fire PRA model is Revision 4.0. These PRA models are highly detailed and include a wide variety of initiating events, modeled systems, operator actions, and

common cause events. The PRA quantification process used is based on the large linked fault tree methodology, which is a well-known and accepted methodology in the industry. The models are maintained and quantified using the EPRI Risk & Reliability suite of software programs.

Xcel Energy employs a multi-faceted, structured approach in establishing and maintaining the technical adequacy and plant fidelity of the PRA models for its nuclear generation sites. This approach includes a proceduralized PRA maintenance and update process, as well as the use of independent peer reviews. The following information describes this approach as it applies to the MNGP PRA.

2.1 PRA Maintenance and Update

The Xcel Energy risk management process ensures that the applicable PRA model is an accurate reflection of the as-built and as-operated plants. This process includes a governing Corporate Directive (CD 5.7, "Probabilistic Risk Assessment Standard" [Reference 6.4]) and subordinate implementing procedures. The Xcel Energy PRA maintenance and upgrade process is described in the following procedures:

- FP-PE-PRA-01, “PRA Change Database Use and Application Guide” [Reference 6.5], which addresses the following elements:
    - Identifies and tracks ongoing evaluation of plant changes and collecting new information including identified errors in the PRA model, Peer Review Findings and suggestions.
    - Qualification of PRA personnel
    - Documentation of disposition of PRA impacts (PRA Change Database)
- FP-PE-PRA-02, “PRA Guideline for Model Maintenance and Update” [Reference 6.6], which addresses the following elements:
    - Maintenance and upgrade of the PRA to be consistent with the as-built, as-operated plant, including closure of peer review findings
    - Consideration of the cumulative impact of pending changes on the PRA
    - Impact of plant changes on the PRA models
    - Control of software used for the PRA models
    - Documentation of the PRA Maintenance and Upgrade process

The overall model update process, including FP-PE-PRA-01 and FP-PE-PRA-02, defines the process for implementing regularly scheduled and interim PRA model updates, for tracking issues identified as potentially affecting the PRA models (e.g.,

due to changes in the plant, errors or limitations identified in the model, industry operating experience), and for controlling the model and associated computer files.

To ensure that the current PRA model remains an accurate reflection of the as-built, as-operated plants, the following activities are routinely performed:

- Design changes and procedure changes are reviewed for their impact on the PRA model.
- New engineering calculations and revisions to existing calculations are reviewed for their impact on the PRA model.
- Maintenance unavailabilities are captured, and their impact on core damage frequency (CDF) is assessed.
- Plant specific initiating event frequencies, failure rates, and maintenance unavailabilities are updated, typically every two refueling cycles.

In accordance with this guidance, regularly scheduled PRA model updates occur typically every two refueling cycles with more frequent updates occurring based on the risk significance of permanent changes, initiating events, and failure data such that the PRA continues to adequately represent the as-built, as-operated plant.

2.2 Plant Changes Not Yet Incorporated Into the PRA Models

A PRA Change Form (an electronic record stored in the PRA Change Database, governed by procedure FP-PE-PRA-01) is created for all issues that are identified that could impact the PRA model. Each open PRA Change Form documents details of each identified issue (including those plant changes that could impact the PRA model), evaluates the risk impact of that specific issue, and identifies affected PRA systems, analyses, and risk-informed applications.

As part of the PRA evaluation for each STI change request, a review of open items in the PRA Change Database is performed for applicability and an assessment of the impact on the results of the application is made prior to presenting the results of the risk analysis to the IDP. If a non-trivial impact is expected, then performance of additional sensitivity studies or PRA model changes to confirm the impact on the risk analysis is included.

2.3 Applicability of Peer Review Findings and Observations (F&Os)

2.3.1 History of Monticello Internal Events PRA Development

The Monticello internal events PRA was initially developed in support of the Independent Plant Examination (IPE) requirements. Since that time, various PRA updates and enhancements have been performed to improve the technical adequacy of the PRA. The current version of the internal events PRA is Revision 3.4 [Reference 6.7].

The MNGP PRA was Peer Reviewed in April 2013 applying the NEI 05-04, "Process for Performing Internal Events PRA Peer Reviews Using the ASME/ANS PRA Standard," [Reference 6.8] process, the ASME PRA Standard [Reference 6.9] and RG 1.200, Revision 2. The purpose of this review was to provide a method for establishing the technical adequacy of the PRA for the spectrum of potential risk-informed plant licensing applications for which the PRA may be used. The 2013 MNGP PRA Peer Review was a full-scope review of the Technical Elements of the internal events and internal flood, at-power PRA.

The ASME PRA Standard has 325 individual Supporting Requirements (SRs) for the Internal Events At-Power PRA (Part 2), and Internal Flood At-Power PRA (Part 3). The MNGP Peer Review [Reference 6.10] included all of these SRs. Twelve of the SRs were judged to be not applicable. Of the remaining 313 ASME PRA Standard SRs, 93 percent were determined to be supportive of Capability Category II or greater. Twenty-two (22) Finding-level Facts and Observations (F&Os) were written by the peer review team that indicated where improvements needed to be made to meet Capability Category II for the remaining SRs. Subsequent to the peer review, Xcel Energy implemented PRA model and documentation changes to address these F&Os.

A Findings Closure Review was completed in October 2017 in accordance with the process documented in Appendix X to NEI 05-04 [Reference 6.11], as well as the requirements published in the ASME PRA Standard (RA-Sa-2009) and RG 1.200, Revision 2. This findings closure review was performed by the BWR Owners Group [Reference 6.12] and determined that each of the 22 findings have now been closed. Consequently, all applicable ASME PRA Standard SRs are now judged to be met at the Capability Category II level.

2.3.2 History of Monticello Fire PRA Development

The Monticello Fire Probabilistic Risk Assessment (FPRA) was developed using the guidance provided by NUREG/CR-6850 [Reference 6.13]. The fire PRA is built upon the internal events PRA which was modified to capture the effects of fire. The current version of the fire PRA model is Revision 4.0 [Reference 6.14].

The FPRA Peer Review was performed in March, 2015, applying the NEI 07-12, "Fire Probabilistic Risk Assessment (FPRA) Peer Review Process Guidelines," [Reference 6.15] process, the ASME PRA Standard (ASME/ANS RA-Sa-2009) and RG 1.200, Revision 2. The purpose of this review was to establish the technical adequacy of the FPRA for the spectrum of potential risk-informed plant licensing applications for which the FPRA may be used. The 2015 MNGP FPRA Peer Review was a full-scope review of all of the Technical Elements of the MNGP at-power January 2015, Revision 1a, Fire PRA against all Technical Elements in Section 4 of the ASME/ANS Combined PRA Standard, including the referenced internal events SRs in Section 2.

The Fire PRA Section of the ASME PRA Standard has 182 individual SRs, and references 237 individual SRs in the internal events PRA section of the Standard; the MNGP Fire PRA Peer Review [Reference 6.16] included all of the SRs and all applicable reference SRs. For the assessment of the reviewed ASME PRA Standard SRs, 102 unique F&Os were generated by the Peer Review team, 73 were peer review Findings, 28 were Suggestions, and one was considered a best practice. There were no "Unreviewed Analysis Methods" identified during the review.

In Revision 4.0 of the Monticello Fire PRA Model, enhanced fire modeling methods (heat soak) were added. To support the incorporation of these new methods in the PRA, a focused-scope peer review was performed against high level requirements FSS-C, FSS-D, FSS-G, and FSS-H for Capability Category II in December 2016 [Reference 6.17]. This focused-scope peer review resulted in 2 additional “Finding” F&Os. Therefore, the Revision 4.0 model had a total of 75 open Finding F&Os as a result of the two peer reviews.

A Findings Closure Review was conducted in October 2017 in accordance with the process documented in Appendix X to NEI 07-12 [Reference 6.11], as well as the requirements published in the ASME PRA Standard (RA-Sa-2009) and RG 1.200, Revision 2. This findings closure review was performed by ENERCON Services, Inc. [Reference 6.18] and determined that 61 of the 75 findings have

now been closed. The open FPRA peer review findings are further discussed in Section 2.3.3 below.

The evaluation of other external events (including seismic events) is discussed in Section 3.0.

2.3.3 Evaluation of Open Finding F&Os

As determined by the F&O finding closure review performed on the MNGP internal events PRA model, there are no remaining open finding-level F&Os. Consequently, the internal events and internal flooding PRA models can be used to evaluate STI changes without further consideration of the impacts of previously-open finding-level F&Os.

Table 2-1 lists the fourteen remaining open finding-level F&Os for the fire PRA model. The table indicates the relevant Supporting Requirements (SRs) from the ASME/ANS PRA Standard that each F&O pertains to, the F&O number, the F&O text, a summary of the actions taken to address each F&O's concerns, and an evaluation of what, if any impact, there may be to the assessment of STIs under the NEI 04-10 process. Because the fire PRA SRs refer to a number of the internal events PRA SRs, Table 2-1 lists some internal events SRs. The listing of these SRs here pertains solely to model changes/documentation developed in support of the Fire PRA.

2.4 Consistency with Applicable PRA Standards

As indicated above there has been one full-scope peer review conducted on the current internal events PRA model and one full-scope and one focused scope peer review conducted on the fire PRA model. As a result of Finding Closure Reviews, all internal events "finding" F&Os are now considered to be closed and 61 of the 75 fire PRA "finding" F&Os are now considered to be closed.

Each open fire PRA F&O will be reviewed as part of each STI change assessment that is performed and an assessment of the impact on the results of the application will be made prior to presenting the results of the risk analysis to the IDP. If a non-trivial impact is expected, then this may include the performance of additional sensitivity studies or PRA model changes to confirm the impact on the risk analysis.

The MNGP Internal Events and Fire PRA models are considered to be compliant with RG 1.200, Revision 2 for the scope of this application, and meet Capability Category II or above in the ASME/ANS PRA Standard (RA-Sa-2009). The MNGP

PRA models are capable of supporting all risk-informed applications requiring Capability Category I or II.

2.5 Identification of Key Assumptions

The overall Technical Specifications Initiative 5b process is a risk-informed process with the PRA model results providing one of the inputs to the IDP to determine if an STI change is acceptable. The NEI 04-10 methodology recognizes that a key area of uncertainty for this application is the standby failure rate utilized in the determination of the STI extension impact. Therefore, the methodology requires the performance of selected sensitivity studies on the standby failure rate of the component(s) of interest for the STI assessment.

The results of the standby failure rate sensitivity study plus the results of any additional sensitivity studies identified during the performance of the reviews as outlined in Section 2.2 above for each STI change assessment will be documented and included in the results of the risk analysis that are presented to the IDP. This will include, for each STI change assessment, additional sensitivity studies that are identified through a review of identified gaps to Capability Category II and a review of identified sources of uncertainty as required by NEI 04-10, Steps 5 and 14.

3.0 <u>External Events Considerations</u>

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

Monticello has a state-of-the-art Fire PRA model (peer reviewed against the current revision of the PRA Standard and RG 1.200, Revision 2). This Fire PRA model is based on the internal events model and is also of sufficient quality to support PRA applications. Any STI-related parameter changes evaluated by the internal events model can also be evaluated using the fire model. Therefore, a quantitative evaluation of delta-CDF and delta-LERF can be performed for fire hazards.

External hazards were evaluated in the MNGP Individual Plant Examination of External Events (IPEEE) submittal in response to the NRC IPEEE Program (Generic Letter 88-20, Supplement 4) [Reference 6.19]. The IPEEE Program was a one-time review of external hazard risk and was limited in its purpose to the identification of potential plant

vulnerabilities and the understanding of associated severe accident risks. A Seismic Margins Assessment (SMA) was performed for MNGP with screening of Structures. Systems and Components (SSC) capacity at 0.3g. SSCs impacted by frequency changes under the SFCP, therefore, will be assessed against the Seismic Margins Analysis and evaluated in accordance with NEI 04-10 bounding or qualitative analysis guidance, as appropriate.

The IPEEE assessment of other external events at Monticello shows that there is no external event (other than internal fires and seismic events) that may be a safety concern to the Monticello plant. No vulnerabilities were identified. These hazards were determined in the MNGP IPEEE to be negligible contributors to overall plant risk.

As stated earlier, the NEI 04-10 methodology allows for STI change evaluations to be performed in the absence of quantifiable PRA models for all external hazards (high winds or tornados, external flooding, and other external hazards). Therefore, in performing the assessments for these other hazard groups, a qualitative or a bounding approach will be utilized. This approach is consistent with the accepted NEI 04-10 methodology.

4.0 Shutdown Events Considerations

MNGP does not maintain a shutdown PRA model. Consistent with the NEI 04-10, Revision 1 guidance, qualitative information must be developed that supports the acceptability of the STI change with respect to the shutdown risk or it must be screened as not having an impact on the CDF and large early release frequency (LERF) metrics.

MNGP operates under a shutdown risk management program to support implementation of NUMARC 91-06 [Reference 6.21]. The shutdown risk management implementing procedure, FP-OP-ROM-02 [Reference 6.22], provides guidelines for outage risk management which focuses on proper planning, conservative decision making, maintaining defense in depth, and controlling key safety functions. MNGP will use the shutdown risk management program procedures to assess shutdown risk for proposed surveillance frequency changes.

5.0 Summary

The Monticello PRA models are sufficiently robust and suitable for use in risk-informed processes such as the Surveillance Frequency Control Program. The peer reviews that have been conducted and the resolution of findings from those reviews demonstrate

that the pieces of the PRA have been performed in a technically correct manner. Xcel Energy procedures are in place for controlling and updating the models, when appropriate, and for assuring that the model represents the as-built, as-operated plant. Also, in addition to the standard set of sensitivity studies required per the NEI 04-10 methodology, open items for changes at the site and remaining gaps to specific requirements in the ASME/ANS PRA standard will be reviewed to determine which, if any, would merit application-specific sensitivity studies in the presentation of the application results. The conclusion, therefore, is that the MNGP PRA model is acceptable to be used as the basis for risk-informed applications including Risk-Informed Technical Specifications (RITS) Initiative 5b.

6.0 References

6.1 NEI 04-10, Revision 1, "Risk-Informed Technical Specifications Initiative 5b: Risk-Informed Method for Control of Surveillance Frequencies," Nuclear Energy Institute, April 2007.
6.2 NUREG/CR-6928, "Industry-Average Performance for Components and Initiating Events at U.S. Commercial Nuclear Power Plants," US Nuclear Regulatory Commission, February 2007.
6.3 Regulatory Guide 1.200, "An Approach For Determining The Technical Adequacy Of Probabilistic Risk Assessment Results For Risk-Informed Activities," Revision 2, March 2009.
6.4 CD 5.7, "Probabilistic Risk Assessment Standard," Xcel Energy Corporate Directive, Revision 5, June 2015.
6.5 FP-PE-PRA-01, "PRA Change Database Use and Application Guide," Xcel Energy Nuclear Department Fleet Procedure, Revision 9, October 2017.
6.6 FP-PE-PRA-02, "PRA Guideline for Model Maintenance and Update," Xcel Energy Nuclear Department Fleet Procedure, Revision 15, January 2017.
6.7 PRA-MT-QU, "Quantification Notebook," Xcel Energy, Revision 3.4c, December 2017.
6.8 NEI 05-04, "Process for Performing PRA Peer Reviews Using the ASME PRA Standard (Internal Events)," Revision 3, November 2009.
6.9 ASME/ANS RA-Sa-2009, "Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications," American Society of Mechanical Engineers, 2009.
6.10 PRA-CALC-13-007, "Monticello Internal Events PRA Peer Review Report," Xcel Energy, Revision 0, June 2016.
6.11 NEI 05-04/07-12/12-06 Appendix X, "Close Out of Facts and Observations (F&Os)," Nuclear Energy Institute, February 2017.

6.12 PRA-CALC-17-016, “MNGP Internal Events F&O Closure Report,” Xcel Energy, Revision 0, October 2017.
6.13 NUREG/CR-6850, “EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities,” US Nuclear Regulatory Commission, September 2005, and Supplement 1, September 2010.
6.14 FPRA-MT-FQ, “Fire PRA Quantification Notebook,” Xcel Energy, Revision 4a, September 2017.
6.15 NEI 07-12, “Fire Probabilistic Risk Assessment (FPRA) Peer Review Process Guidelines,” Nuclear Energy Institute, Revision 1, June 2010.
6.16 PRA-CALC-15-001, “Monticello Fire PRA Peer Review Report," Xcel Energy, Revision 0, April 2015.
6.17 PRA-CALC-16-008, “Fire PRA Focused Scope Peer Review Report," Xcel Energy, Revision 0, January 2017.
6.18 PRA-CALC-17-019, MNGP Fire PRA F&O Closure Report, Xcel Energy, Revision 0, November 2017.
6.19 Letter from W.J. Hill (Northern States Power Company) to US Nuclear Regulatory Commission, “Submittal of Monticello Individual Plant Examination of External Events (IPEEE) Report, Revision 1; Seismic Analysis, Revision 0 and Internal Fires Analysis,” Revision 1 (TACM83644), November 20, 1995.
6.20 Letter L-MT-14-045. “MNGP Seismic Hazard & Screening Report (CEUS Sites), Response to NRC Request for Information Pursuant to Title 10 of Code of Federal Regulations 50.54(f) Regarding Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident,” Xcel Energy, May 2014.
6.21 NUMARC 91-06, “Guidelines for Industry Actions to Assess Shutdown Management,” Nuclear Energy Institute, December 1991.
6.22 FP-OP-ROM-02, “Shutdown Safety Management Program,” Xcel Energy Fleet Operations Procedure, Revision 9, September 2017.

Table 2-1
MNGP Open Fire PRA Peer Review Findings

F&O Number	SR	Peer Review Finding	Resolution	Impact on Application
Finding 2-1	PP-B3, PP-C3	***From 2015 Full Scope Fire PRA Peer Review:*** The requirement for this Supporting Requirement (SR) is to JUSTIFY credited spatial separation. This section does not provide the required justification. The documentation should include an evaluation that establishes why the separation provided by "space" will ensure that the adverse effects of fire will be substantially contained in each of the adjacent Physical Analysis Units (PAUs).	The fire PRA model was revised to evaluate spatially-separated fire areas in the multi-compartment analysis with the barrier failure probabilities set to 1.0. The F&O finding closure review team determined that the revised approach was acceptable. However, several isolated errors were identified where barrier probabilities were set to lower values. A documentation discrepancy was also identified. These will be corrected in a future update	The effect of these isolated errors is unlikely to impact the STI change evaluations. The risk impacts of the incorrect barrier failure probabilities would be assessed, if needed, on a case-by-case basis.
Finding 2-5	IGN-A7	***From 2015 Full Scope Fire PRA Peer Review:*** Section 5.6 discusses the apportionment of generic transient fire ignition frequencies and the development of the influencing factors for each area. The influencing factors were assigned by the Fire PRA analysts based on engineering judgment and a set of rules documented in Section 5.6.2 of the Ignition Frequency Notebook. Assignment of these values resulted in a comparatively low result. Based on the information contained in the Fire Modeling Database the influencing factors average as follows: Maintenance 1.7; Occupancy 2.2; and Storage 1.8. It's typically assumed that these factors will produce an average value,	A comprehensive review of the influence factors was conducted in response to this F&O including a review by plant personnel. The maintenance influence factors were adjusted based on this review. The F&O finding closure review determined that the revised factors were acceptable. However, better justification of application of a "very low" factor in two compartments needs to be provided.	This is a documentation issue and has no impacts on quantitative results. Therefore it will have no impact on STI evaluations.

Table 2-1
MNGP Open Fire PRA Peer Review Findings

F&O Number	SR	Peer Review Finding	Resolution	Impact on Application
		i.e., Medium or 3, by definition. Based on the values stated it appears that the influencing factors may have been underestimated. To increase the accuracy and reliability it's suggested that these values be set or validated by plant operations and maintenance personnel. For example, numerous fire zones were assigned LOW maintenance factors including H2 Seal Oil/Condensate Pump Area, Turbine Condenser Area, Air Ejector Room, Admin Bldg. HVAC Room, Engineered Safety Features (ESF) Motor Control Center, 13.8 kV Switchgear Rooms, Reactor Core Isolation Cooling (RCIC) and High Pressure Coolant Injection (HPCI) Rooms, Diesel Fuel Oil Pump House, etc. as these zones contain pumps, motors, electrical equipment that would require maintenance. LOW storage factor was assigned in numerous fire zones including Lube Oil Storage Room, Contaminated Equipment Storage Area, etc. which appear to be defined storage areas in the plant. Additionally, there are only 13 fire zones that are assigned storage factors greater than LOW.		
Finding 3-6	PRM-B10	***From 2015 Full Scope Fire PRA Peer Review:*** The Fire PRA Plant Response Model (PRM)	Documentation and model changes were made to the fire PRA address this F&O. The F&O Closure review determined that the changes made	The effect of these isolated errors is unlikely to impact the STI change

Table 2-1
MNGP Open Fire PRA Peer Review Findings

F&O Number	SR	Peer Review Finding	Resolution	Impact on Application
		was not successfully modified to fail Structures, Systems and Components (SSCs) not selected in the Equipment Selection (ES) element. Representative examples of this include: 1. In the PRM notebook, the basis for exclusion of Multiple Spurious Operation (MSO) 5j is that 'Monticello does not credit operation of service water', however, service water is not failed in the logic model. 2. In section 3.2 of the PRM notebook, it states that use of the Fire Water System as a back-up to Low Pressure Coolant Injection (LPCI) is not credited, however, this is not failed in the model. 3. In both the ES notebook and PRM notebook, it is stated that Control Rod Drive (CRD) and Standby Liquid Control (SBLC) were not used in the fire PRA, however, these are not successfully failed in the model. They were failed by putting appropriate flags set to 1.0 in the model. However, basic events for SBLC components (L) and Human Failure Events (HFEs) appear in the results. Basic events for CRD pump random failures (J) also appear in the model, with random failure probabilities. If the systems are correctly FLAGGED out, there should not be random failures of these systems. If the correct component is flagged, the logical 1.0 should propagate to the top of the tree, eliminating all other random failures. The fact that random events for these systems appear in	largely address the issues identified in the F&O. However, there are still about ten component-level basic events that are not yet treated as "guaranteed failures" in the fire model. A sensitivity study was performed which demonstrated that inclusion of these events result in a change in CDF and LERF of 0.19% and 1.41%, respectively.	evaluations, as demonstrated by the base case sensitivity study. The risk impacts of the basic event errors would be assessed, if needed, on a case-by-case basis.

Table 2-1
MNGP Open Fire PRA Peer Review Findings

F&O Number	SR	Peer Review Finding	Resolution	Impact on Application
		cutsets indicate the correct basic event has not been chosen to be flagged. This particular example is not expected to be risk significant. 4. Individual components identified in Table D-1 of the ES notebook as not credited were not failed in the PRM [e.g.FPAP1AXXXR12-S - CONDENSATE PUMP P-1A FAILS TO RUN (SHORT TERM)] 5. Conversely - Basic events that were not failed in the model, yet were not included in table C-1 as credited [e.g., ABSLPCIAXG - LPCI MCC FAULT (MCC-133A)]		
Finding 4-11	FSS-D4	***From 2015 Full Scope Fire PRA Peer Review:*** An initial ambient temperature of 20°C was utilized in the fire modeling calculations for all MNGP fire zones. This ambient temperature does not appear to be appropriate for areas that are not temperature controlled such as the Turbine Building, Diesel Generator Building, and areas of the Reactor Building.	Validation studies of the three fire modeling models used in the fire PRA were performed. In each case, the model biases are dispositioned as reasonable for their use based upon Chapter 4 of NUREG-1934. The F&O closure review team found the validation studies to be appropriate for cases in which the ambient temperature is 20°C or less. Additional justification is required for plant areas which may have higher ambient temperatures.	If the assumption of a 20°C ambient temperature cannot be justified for certain plant areas, and the risk evaluations of specific STI changes could be impacted by this incorrect assumption, then sensitivity studies would be performed on a case by case basis.
Finding 4-20	FSS-C8	***From 2015 Full Scope Fire PRA Peer Review:*** Although the damage criteria for sensitive electronics is defined in the Single Compartment Analysis Notebook 016015-	The fire PRA Single Compartment Analyses have been updated to document the analysis associated with the treatment of sensitive electronics. The F&O closure review team determined that the methods	The effect of treatment of the main control board sensitive electronics is unlikely to impact the STI change evaluations. The risk

Table 2-1
MNGP Open Fire PRA Peer Review Findings

F&O Number	SR	Peer Review Finding	Resolution	Impact on Application
		RPT-06 and zones of influence (critical distances) are calculated in the Fire Modeling Database, there is no specific discussion of how specific sensitive electronics at Monticello are analyzed in the Fire PRA.	used for all areas other than the main control room are either in agreement with FAQ 13-0004 or conservative in comparison to the FAQ. However, additional verification and documentation of the main control board configuration for sensitive electronics was determined to be required by the F&O closure team to fully resolve this F&O.	impacts of the treatment of sensitive electronics would be assessed, if needed, on a case-by-case basis.
Finding 4-29	FSS-A1, FQ-A3	***From 2015 Full Scope Fire PRA Peer Review:*** Appendix E of the Single Compartment Analysis Notebook 016015-RPT-06 identifies that scenarios for cable fires caused by welding and cutting and self-ignited cable fires result in high total CDF contributions and further evaluation and refinement will be completed after risk reduction activities are completed. These scenarios are not currently quantified in the Fire PRA model.	For fire compartments resulting in CDF greater than 1E-08/year, the process in FAQ 13-0005 was applied for cable fires caused by welding. The Single Compartment Analysis notebook has been updated to document the process used to treat cable fires due to hotwork, self-ignited cable fires, and junction box fires. The F&O closure review team determined that the model changes were appropriate. However, the F&O remains open since the documentation of the process used should be enhanced.	This is a documentation issue and has no impacts on quantitative results. Therefore it will have no impact on STI evaluations.
Finding 4-33	FSS-A5	***From 2015 Full Scope Fire PRA Peer Review:*** Wall and corner effects are not accounted for in the FLASH-CAT modeling for heat release rate calculations that are used for the CFAST hot gas layer models.	Justification has been added to the fire PRA documentation to demonstrate that the FLASH-CAT analyses would bound as-built conditions. However, the F&O finding closure review team determined that the results may not be bounding for cable trays in wall or wall-corner locations. Verification	If the usage of FLASH-CAT cannot be justified for certain configurations, and the risk evaluations of specific STI changes could be impacted by incorrectly applying FLASH-CAT, then

Table 2-1
MNGP Open Fire PRA Peer Review Findings

F&O Number	SR	Peer Review Finding	Resolution	Impact on Application
			that FLASH-CAT results were not used for such configurations needs to be performed.	sensitivity studies would be performed on a case by case basis.
Finding 6-3	IGN-A1	***From 2015 Full Scope Fire PRA Peer Review:*** Battery Chargers have been counted as either Bin 10 or Bin 15 in the IGN (Ignition Frequency) development. It appears that well sealed low voltage panels (e.g. lighting panels) have been included in the bin 15 count that should be excluded.	Many of the battery chargers have been re-assigned to Bin 10 for ignition frequency determination, but some still need to be re-assigned to the correct bin. A sensitivity study shows that a change in CDF and LERF of -0.38% and -0.16%, respectively will result once the battery charger re-assignments are completed. The F&O closure team reviewed the battery charger re-binning. The team did not identify any specific issues with inappropriate counting of sealed low voltage panels. This F&O remains open since not all battery chargers have yet been re-assigned.	The effect of these isolated binning errors is unlikely to impact the STI change evaluations, as demonstrated by the base case sensitivity study. The risk impacts of the incorrect battery charger binning would be assessed, if needed, on a case-by-case basis.
Finding 6-9	DA-E2*, SY-A19*. PRM-B9, SY-A1*, SY-A16*, SY-A14*, SY-B9*, SY-B5*	***From 2015 Full Scope Fire PRA Peer Review:*** Common cause and test and maintenance, and pre-initiator human error basic events for Core Spray (CS) and Residual Heat Removal (RHR) are missing from the Alternate Shutdown (ASD) Logic. Additionally, the alternate shutdown modeling of core spray train B is also missing the failure mode for: 'CS Pump P-208B to run after the first hour.' Also, the	Common cause failure, test & maintenance, and pre-initiator basic events for core spray were added. RHR modeling under multiple gates for the various RHR functions were also added; however, the F&O closure review team identified that pump maintenance unavailability events needed to be added to some of the RHR fault tree logic. Power supplies were reviewed and	The effect of these isolated errors is unlikely to impact the STI change evaluations. The risk impacts of the missing RHR unavailability probabilities would be assessed, if needed, on a case-by-case basis.

Table 2-1
MNGP Open Fire PRA Peer Review Findings

F&O Number	SR	Peer Review Finding	Resolution	Impact on Application
		review found that power supplies for some of the active components were missing from the alternate shutdown logic.	added to the model as appropriate.	
Finding 6-11	SY-A2*, PRM-B9, SY-A1*, UNC-A2, DA-E2*	***From 2015 Full Scope Fire PRA Peer Review:*** Basic events added to the Fire PRA associated with the following failure modes have failure probabilities set to zero: • Uninterruptible Power Supply (UPS) panel fault • Circuit breaker fails to remain open • Circuit breaker fails to open • Fused disconnect switch, fuse spuriously fails • Transformer fault • CS pump fails to start • CS pump fails to run 1st hour • Motor-Operated Valve (MOV) fails to remain open • MOV fails to open • MOV fails to close • 125 VDC distribution panel fault • Air-Operated Valve (AOV) fails to remain closed • AOV fails to remain open • Level transmitter spurious operation • RHR Pump fails to run • RHR Pump fails to start • Solenoid valve fails to transfer	Many of the identified issues have been corrected with model changes. However, a number of "breaker fail to remain open" events and other miscellaneous events that require data have not yet been updated in the model.	The effect of these isolated errors is unlikely to impact the STI change evaluations. The risk impacts of the incorrect basic event probabilities would be assessed, if needed, on a case-by-case basis.
Finding 7-3	PRM-A4, PRM-C1,	***From 2015 Full Scope Fire PRA Peer Review:***	Corrections were made to the Feedwater (FW) level control logic.	The effect of these isolated errors is

Table 2-1
MNGP Open Fire PRA Peer Review Findings

F&O Number	SR	Peer Review Finding	Resolution	Impact on Application
	SY-A1*, PRM-B9	The purpose SR PRM-A4 is to confirm that the plant response model is constructed in such a manner that it reflects the failure of identified equipment due to the loss of the associated equipment selected cables. Based on the review by peers, the following issues were identified. These are based on limited time to review and are only examples. The fault tree modeling of essential cues for HFE HPI-CNTRLY is not correct. The cues are modeled under gate F-HEP-CNTRLML, and ANDed with the medium LOCA initiator IE_MLOCA 2.72E-4/yr (with no Fire PRA Initiating Event modeled there). The Fire PRA development team concurred that the cues modeling gate L- RPV-INSTR should be input into OR gate F020 (ORed with HPI-CNTRLY). Equipment Selection report 016015-RPT-03 Table B-2 identifies ADS-CHANNEL-A:Avail:Non-Spur and ADS-CHANNEL-B:Avail:Non-Spur low level pseudo functions and equipment dependencies. It was determined during Cable Selection (CS) that the cables were properly mapped to the Automatic Depressurization System (ADS) pseudo component. Equipment SV271A, C, and D are dependent on both ADS A and B channel cables. However,	Corrections were also made to the FRANX mapping and fault tree models to consider dependency on both ADS channels in the Alternate Shutdown logic. Corrections were made to the Main Steam Isolation Valve (MSIV) pseudo-component logic. A review of the pseudo-component and interlock modeling was performed and changes were incorporated into the model. However, the F&O finding closure review team identified some residual modeling issues with the HFE HPI-CNTRLY that is located in the FW level control logic which have not yet been corrected.	unlikely to impact the STI change evaluations. The risk impacts of the incorrect FW level control logic would be assessed, if needed, on a case-by-case basis.

Table 2-1
MNGP Open Fire PRA Peer Review Findings

F&O Number	SR	Peer Review Finding	Resolution	Impact on Application
		review of the FRANX database FPRA CDF 2-2 determined improper Component to basic event mapping was made to the PRM. ADS channel A is mapped to SV271A and ADS channel B is mapped to the remaining SV271C and D. A review of pseudo components MSIV-ISOL-A:Avail:Avail and LLS-DIV-B1:Avail:Non-Spur as identified in the ES procedure determined there was no modeling of the component to basic event relationship. From peer discussion it was determined that the noted pseudo-components were determined not required in the model following cut set review by the utility. In addition, there was no evidence that the interlocks on the cable selection data worksheets were reviewed and properly incorporated into the PRM.		
Finding 7-4	PRM-B1, SY-A1*, PRM-B9, PRM-C1, FQ-A2	***From 2015 Full Scope Fire PRA Peer Review:*** It is not clear if the internal events PRA initiating events and accident sequences applicable to two or more Safety Relief Valves (SRVs) open similar to Large LOCA (LLOCA) have been correctly applied. If it is deemed that opening of two or more SRVs does not need to mimic LLOCA, then provisions for a new initiating event, success criteria and accident sequence is	The fire PRA model has been updated to use an adjusted Large LOCA event tree for a spurious opening of 2 or more SRVs that do not reclose due to an MSO event. However, the F&O finding closure review team identified additional locations in the model where the revised logic model still needs to be added to fully account for these fire-induced SRV opening scenarios.	The impact of these isolated errors is unlikely to impact the STI change evaluations. The risk impacts of the incomplete treatment of 2 SRV failures in the Large LOCA accident sequence logic would be assessed, if needed, on a case-by-case

Table 2-1
MNGP Open Fire PRA Peer Review Findings

F&O Number	SR	Peer Review Finding	Resolution	Impact on Application
		required. PRM calculation 016015-RPT-05, MSO 3a and 3b for potential opening of two or more SRVs added additional logic to the PRM. Potential opening of all SRVs mimics sequences similar to Large LOCA. Review of the PRM calculation noted in section 6.0 that the initiating events and accident sequences embodied in the MNGP internal events model are used as the basis for development of the Fire PRA model. Additional information received from the utility representative regarding the review of internal events initiating events determined that Large LOCA was deemed not applicable to the Fire PRA. Review of the PRM CAFTA model located MSO failure of more than one SRV via gate F_SORV_2of8 with parents to gates different from LLOCA. If it is deemed that opening of all SRVs does not need to mimic LLOCA, then provisions for a new initiating event, success criteria and accident sequence is required.		basis.
Finding FO-1	FSS-D3, FSS-D4	***From 2017 Focused Scope Fire PRA Peer Review:*** The analysis results of the thermal heat soak method appear to credit ventilation limited burning in several PAUs without providing sufficient basis. An example are the Group 1 scenarios listed in Table J-6 of 016015-RPT-06. Each of the four fire case	Documentation of the results of a sensitivity analysis that was conducted to exclude credit of ventilation-limited burning was added. This analysis demonstrates that the oxygen-limited fire reaches the damage threshold for the cable at an earlier time. This information was used to justify the use of the	If the usage of the thermal soak method assuming ventilation-limited conditions cannot be justified in some plant areas, and the risk evaluations of specific STI changes could be impacted by

Table 2-1
MNGP Open Fire PRA Peer Review Findings

F&O Number	SR	Peer Review Finding	Resolution	Impact on Application
		CFAST results have sensitivity cases due to the development of ventilation limited conditions. The baseline CFAST results do not result in damage to a generic target over a 60 minute time interval. The CFAST sensitivity cases that were originally run with additional ventilation to verify constant exposure damage times would likely result in damage to a generic Thermoplastic (TP) target when assessed in the heat soak model.	ventilation-limited cases for estimating the time to hot gas layer formation. However, the F&O finding closure review team identified issues with the sensitivity case and its applicability in certain situations. Additional justification concerning the treatment of the ventilation-limited modeling for those areas needs to be developed.	the incorrect application of this method, then sensitivity studies would be performed on a case by case basis.
Finding FO-2	FSS-D4, FSS-D3	***From 2017 Focused Scope Fire PRA Peer Review:*** A number of documentation issues have been identified. These include: a) There are a number of scenarios that appear to credit the thermal heat soak method listed in the Fire Modeling Database (FMDB) but the Hot Gas Layer (HGL) times do not match any scenario listed in Report 016015-RPT-06. An example is Equipment C-18 in tblIgnitionScenarios of the fire modeling database. Scenario 2 and the corresponding comment indicates HGL time is 25 minutes based on heat soak time. Table J-6 in Section J-6 of Report 016015-RPT-06 does not list any damage times from any ignition source – secondary combustible grouping of 25 minutes. The database should be checked for additional examples and addressed as necessary.	The various documentation issues identified in this F&O have been addressed. However, the F&O finding closure review team determined that additional information needs to be included in the documentation concerning the impacts of accumulation of damage at low temperature on cables and on the impacts of cable size on the heat soak methodology.	This is a documentation issue and has no impacts on quantitative results. Therefore it will have no impact on STI evaluations.

Table 2-1 MNGP Open Fire PRA Peer Review Findings				
F&O Number	**SR**	**Peer Review Finding**	**Resolution**	**Impact on Application**
		b) There are a number of scenarios listed in the FMDB indicating HGL timings but there is inconsistent indication for when a scenario credits the thermal heat soak method. The only method to verify that the thermal heat soak method was applied in the FMDB was to query the results in TblIgnitionScenarios and match HGL timing to those reported in Table J-6 in Section J-6 of Report 016015-RPT-06, or to search for comment fields in IgScnComment. c) Description of the method in which the results from the thermal heat soak analysis is incorporated in the Multi-Compartment Analysis (MCA). It is not clear where the MCA heat soak calculations or their direct inputs are among the reviewed material. Section 5.4 of the MCA Report 016015-RPT-08 points to Table J-6 in the Single Compartment Analysis (SCA) Report 016015- RPT-06 for heat soak results. However, the compartments listed in Table J-6 do not completely match the compartments that were screened from the MCA using the heat soak method. This suggests that there may be other heat soak results that are not documented. For example, the MCA screens combinations involving compartments 19B and 32A, but the SCA does not indicate that thermal heat soak analysis was performed for these compartments. In addition it appears that the heat soak method was used to increase		

Table 2-1 MNGP Open Fire PRA Peer Review Findings				
F&O Number	SR	Peer Review Finding	Resolution	Impact on Application
		the HGL timing for combinations involving compartment 32A, but there is no documentation of the results used to justify this timing. d) It is difficult to link the CFAST Group and the Fire Case as listed in Table J-6 in the SCA Report 016015-RPT-06 with the damage integral result listed in the database for the SCA and MCA where applied. There is no consolidated table which includes the CFAST Group and the Fire Case as applied to a given scenario in the FMDB. e) The thermal heat soak method does not fully document the approach for target damage accumulation at low temperatures. No technical deficiencies were noted in the method review; however, the treatment of the low temperature damage accumulation can have a significant influence on the overall result and should be clearly discussed. f) Additional documentation of the limits of applicability for the thermal heat soak method is needed in Report 016022-RPT-01. For example, is there a maximum exposure temperature or maximum/minimum cable size over which the results can be used? g) Documentation of sources of model		

Table 2-1 MNGP Open Fire PRA Peer Review Findings				
F&O Number	**SR**	**Peer Review Finding**	**Resolution**	**Impact on Application**
		uncertainty and its treatment in the analysis is needed to achieve a Cat II for FSS-H5 and FSS-H9 Since the heat soak method is an interpolation of the generic cable damage times listed in NUREG/CR-6850, there is no new uncertainty introduced with the heat soak method, except for the damage accrual estimates at temperatures below the damage threshold. h) Reports 016015-RPT-06, Rev. 4 and 016015-RPT-08, Rev. 4 were draft at the time of the review. They will need to be finalized and signed.		

* Internal Events SRs listed are referenced by various Fire PRA SRs. These Internal Events SRs are met at the Capability Category II level. The listing of these SRs here pertains solely to model changes/documentation developed in support of the Fire PRA.

ATTACHMENT 3

Monticello Nuclear Generating Plant

License Amendment Request: Application for Technical Specification Change Regarding Risk-Informed Justification for the Relocation of Specific Surveillance Frequency Requirements to a Licensee Controlled Program

PROPOSED TECHNICAL SPECIFICATION CHANGES (MARK-UP)

(110 pages to follow)

INSERT 1

In accordance with the Surveillance Frequency Control Program.

INSERT 2

5.5.15 Surveillance Frequency Control Program

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

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

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

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.2.1	Verify core reactivity difference between the monitored control rod inventory and the predicted control rod inventory is within ± 1% Δk/k.	Once within 24 hours after reaching equilibrium conditions following startup after fuel movement within the reactor pressure vessel or control rod replacement AND ~~1000 MWD/T thereafter during operations in MODE 1~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. ------------NOTE------------ Not applicable when THERMAL POWER > 10% RTP. -------------------------------- Two or more inoperable control rods not in compliance with banked position withdrawal sequence (BPWS) and not separated by two or more OPERABLE control rods.	D.1 Restore compliance with BPWS. <u>OR</u> D.2 Restore control rod to OPERABLE status.	4 hours 4 hours
E. Required Action and associated Completion Time of Condition A, C, or D not met. <u>OR</u> Nine or more control rods inoperable.	E.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.3.1	Determine the position of each control rod.	~~24 hours~~ [Insert 1]
SR 3.1.3.2	----------------------------NOTE---------------------------- Not required to be performed until 31 days after the control rod is withdrawn and THERMAL POWER is greater than the LPSP of RWM. -- Insert each withdrawn control rod at least one notch.	~~31 days~~ [Insert 1]

3.1 REACTIVITY CONTROL SYSTEMS

3.1.4 Control Rod Scram Times

LCO 3.1.4

a. No more than 8 OPERABLE control rods shall be "slow," in accordance with Table 3.1.4-1, and

b. No more than 2 OPERABLE control rods that are "slow" shall occupy adjacent locations.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met.	A.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

---NOTE---
During single control rod scram time Surveillances, the control rod drive (CRD) pumps shall be isolated from the associated scram accumulator.

SURVEILLANCE		FREQUENCY
SR 3.1.4.1	Verify each control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ 800 psig.	Prior to exceeding 40% RTP after each reactor shutdown ≥ 120 days
SR 3.1.4.2	Verify, for a representative sample, each tested control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ 800 psig.	~~200 days cumulative operation in MODE 1~~ [Insert 1]

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.5.1	Verify each control rod scram accumulator pressure is ≥ 940 psig.	~~7 days~~ [Insert 1]

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.6.1	Verify all OPERABLE control rods comply with BPWS.	~~24 hours~~ [Insert 1]

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.7.1	Verify available volume of sodium pentaborate solution is within the limits of Figure 3.1.7-1 or Equation 1 of Table 3.1.7-1.	~~24 hours~~ [Insert 1]
SR 3.1.7.2	Verify temperature of sodium pentaborate solution is within the limits of Figure 3.1.7-2.	~~24 hours~~ [Insert 1]
SR 3.1.7.3	Verify temperature of room in the vicinity of the SLC pumps is within the solution temperature limits of Figure 3.1.7-2 or verify SLC pump suction lines heat tracing is OPERABLE.	~~24 hours~~ [Insert 1]
SR 3.1.7.4	Verify continuity of explosive charge.	~~31 days~~ [Insert 1]
SR 3.1.7.5	Verify the concentration of sodium pentaborate in solution is within the limits of Figure 3.1.7-1 or within the limits of Equation 2 of Table 3.1.7-1.	~~31 days~~ [Insert 1] AND Once within 24 hours after water or sodium pentaborate is added to solution AND Once within 24 hours after solution temperature is restored within the limits of Figure 3.1.7-2
SR 3.1.7.6	Verify each SLC subsystem manual valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position, or can be aligned to the correct position.	~~31 days~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY	
SR 3.1.7.7	Verify each pump develops a flow rate ≥ 24 gpm at a discharge pressure ≥ 1275 psig.	In accordance with the INSERVICE TESTING PROGRAM	
SR 3.1.7.8	Verify flow through one SLC subsystem from pump into reactor pressure vessel.	~~24 months on a STAGGERED TEST BASIS~~	[Insert 1]
SR 3.1.7.9	Verify all heat traced piping between storage tank and pump suction is unblocked.	~~24 months~~ AND ---------NOTE-------- Only required if SLC pump suction lines heat tracing is inoperable. ------------------------- Once within 24 hours after room temperature in the vicinity of the SLC pumps is restored within the solution temperature limits of Figure 3.1.7-2	[Insert 1]
SR 3.1.7.10	Verify sodium pentaborate enrichment is ≥ 55.0 atom percent B-10.	Prior to addition to SLC tank	

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.8.1	-------------------------------NOTE------------------------------ Not required to be met on vent and drain valves closed during performance of SR 3.1.8.2. --- Verify each SDV vent and drain valve is open.	~~31 days~~ [Insert 1]
SR 3.1.8.2	Cycle each SDV vent and drain valve to the fully closed and fully open position.	~~92 days~~ [Insert 1]
SR 3.1.8.3	Verify each SDV vent and drain valve: a. Closes in ≤ 30 seconds after receipt of an actual or simulated scram signal; and b. Opens when the actual or simulated scram signal is reset.	~~24 months~~ [Insert 1]

3.2 POWER DISTRIBUTION LIMITS

3.2.1 AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)

LCO 3.2.1 All APLHGRs shall be less than or equal to the limits specified in the COLR.

APPLICABILITY: THERMAL POWER ≥ 25% RTP.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Any APLHGR not within limits.	A.1	Restore APLHGR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1	Reduce THERMAL POWER to < 25% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.1.1	Verify all APLHGRs are less than or equal to the limits specified in the COLR.	Once within 12 hours after ≥ 25% RTP <u>AND</u> ~~24 hours thereafter~~ [Insert 1]

3.2 POWER DISTRIBUTION LIMITS

3.2.2 MINIMUM CRITICAL POWER RATIO (MCPR)

LCO 3.2.2 All MCPRs shall be greater than or equal to the MCPR operating limits specified in the COLR.

APPLICABILITY: THERMAL POWER ≥ 25% RTP.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Any MCPR not within limits.	A.1	Restore MCPR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1	Reduce THERMAL POWER to < 25% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.2.1	Verify all MCPRs are greater than or equal to the limits specified in the COLR.	Once within 12 hours after ≥ 25% RTP AND ~~24 hours thereafter~~ [Insert 1]

3.2 POWER DISTRIBUTION LIMITS

3.2.3 LINEAR HEAT GENERATION RATE (LHGR)

LCO 3.2.3 All LHGRs shall be less than or equal to the limits specified in the COLR.

APPLICABILITY: THERMAL POWER ≥ 25% RTP.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Any LHGR not within limits.	A.1	Restore LHGR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1	Reduce THERMAL POWER to < 25% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.3.1	Verify all LHGRs are less than or equal to the limits specified in the COLR.	Once within 12 hours after ≥ 25% RTP <u>AND</u> ~~24 hours thereafter~~ [Insert 1]

SURVEILLANCE REQUIREMENTS

---NOTES---

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

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

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.1	Perform CHANNEL CHECK.	~~12 hours~~ [Insert 1]
SR 3.3.1.1.2	------------------------------NOTE------------------------------ Not required to be performed until 12 hours after THERMAL POWER ≥ 25% RTP. --- Verify the absolute difference between the average power range monitor (APRM) channels and the calculated power is ≤ 2% RTP while operating at ≥ 25% RTP.	~~7 days~~ [Insert 1]
SR 3.3.1.1.3	------------------------------NOTE------------------------------ Not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. --- Perform CHANNEL FUNCTIONAL TEST.	~~7 days~~ [Insert 1]
SR 3.3.1.1.4	Perform a functional test of each RPS automatic scram contactor.	~~7 days~~ [Insert 1]
SR 3.3.1.1.5	Perform CHANNEL FUNCTIONAL TEST.	~~31 days~~ [Insert 1]
SR 3.3.1.1.6	Calibrate the local power range monitors.	~~1000 megawatt days per ton~~ [Insert 1]
SR 3.3.1.1.7	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.8	Calibrate the trip units.	~~92 days~~ [Insert 1]
SR 3.3.1.1.9	Perform CHANNEL CALIBRATION.	~~92 days~~ [Insert 1]
SR 3.3.1.1.10	Perform CHANNEL FUNCTIONAL TEST.	~~24 months~~ [Insert 1]
SR 3.3.1.1.11	-----------------------------NOTES---------------------------- 1. Neutron detectors are excluded. 2. For Function 1, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. 3. For Functions 2.b and 2.f, the recirculation flow transmitters that feed the APRMs are included. --- Perform CHANNEL CALIBRATION.	~~24 months~~ [Insert 1]
SR 3.3.1.1.12	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~ [Insert 1]
SR 3.3.1.1.13	Verify Turbine Stop Valve - Closure and Turbine Control Valve Fast Closure, Acceleration Relay Oil Pressure - Low Functions are not bypassed when THERMAL POWER is > 40% RTP.	~~24 months~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1.14	~~-----NOTES-----~~ ~~1. For Function 2.e, "n" equals 8 channels for the purpose of determining the STAGGERED TEST BASIS Frequency. Testing of APRM and OPRM outputs shall alternate.~~ ~~2. For Function 5, "n" equals 4 channels for the purpose of determining the STAGGERED TEST BASIS Frequency.~~ ~~----------~~ Verify the RPS RESPONSE TIME is within limits.	~~24 months on a STAGGERED TEST BASIS~~ [Insert 1]
SR 3.3.1.1.15	-----NOTES----- 1. For Function 2.a, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. 2. For Functions 2.b and 2.f, the CHANNEL FUNCTIONAL TEST includes the recirculation flow input processing, excluding the flow transmitters. ---------- Perform CHANNEL FUNCTIONAL TEST.	~~184 days~~ [Insert 1]
SR 3.3.1.1.16	Verify the oscillation power range monitor (OPRM) function is not bypassed when APRM Simulated Thermal Power is ≥ 25% RTP and drive flow is ≤ 60% of rated drive flow.	~~24 months~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One or more required SRMs inoperable in MODE 5.	E.1 Suspend CORE ALTERATIONS except for control rod insertion.	Immediately
	AND	
	E.2 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

---NOTE---

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

SURVEILLANCE		FREQUENCY
SR 3.3.1.2.1	Perform CHANNEL CHECK.	~~12 hours~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.2.2	-----------------------------NOTES---------------------------- 1. Only required to be met during CORE ALTERATIONS. 2. One SRM may be used to satisfy more than one of the following. --- Verify an OPERABLE SRM detector is located in: a. The fueled region; b. The core quadrant where CORE ALTERATIONS are being performed, when the associated SRM is included in the fueled region; and c. A core quadrant adjacent to where CORE ALTERATIONS are being performed, when the associated SRM is included in the fueled region.	~~12 hours~~ [Insert 1]
SR 3.3.1.2.3	Perform CHANNEL CHECK.	~~24 hours~~ [Insert 1]
SR 3.3.1.2.4	------------------------------NOTE----------------------------- Not required to be met with less than or equal to two fuel assemblies adjacent to the SRM and no other fuel assemblies in the associated core quadrant. --- Verify count rate is ≥ 3.0 cps with a signal to noise ratio ≥ 3:1.	~~12 hours during CORE ALTERATIONS~~ ~~AND~~ ~~24 hours~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.2.5	------------------------------NOTE------------------------------ The determination of signal to noise ratio is not required to be met with less than or equal to two fuel assemblies adjacent to the SRM and no other fuel assemblies in the associated core quadrant. -- Perform CHANNEL FUNCTIONAL TEST and determination of signal to noise ratio.	~~7 days~~ [Insert 1]
SR 3.3.1.2.6	------------------------------NOTE------------------------------ Not required to be performed until 12 hours after IRMs on Range 2 or below. -- Perform CHANNEL FUNCTIONAL TEST and determination of signal to noise ratio.	~~31 days~~ [Insert 1]
SR 3.3.1.2.7	-----------------------------NOTES----------------------------- 1. Neutron detectors are excluded. 2. Not required to be performed until 12 hours after IRMs on Range 2 or below. -- Perform CHANNEL CALIBRATION.	~~24 months~~ [Insert 1]

SURVEILLANCE REQUIREMENTS

---NOTES---

1. Refer to Table 3.3.2.1-1 to determine which SRs apply for each Control Rod Block Function.

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

	SURVEILLANCE	FREQUENCY
SR 3.3.2.1.1	Perform CHANNEL FUNCTIONAL TEST.	~~184 days~~ [Insert 1]
SR 3.3.2.1.2	------------------------------NOTE------------------------------ Not required to be performed until 1 hour after any control rod is withdrawn at ≤ 10% RTP in MODE 2. --- Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ [Insert 1]
SR 3.3.2.1.3	------------------------------NOTE------------------------------ Not required to be performed until 1 hour after THERMAL POWER is ≤ 10% RTP in MODE 1. --- Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ [Insert 1]
SR 3.3.2.1.4	------------------------------NOTE------------------------------ Neutron detectors are excluded. --- Perform CHANNEL CALIBRATION.	~~24 months~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.2.1.5	------------------------------NOTE------------------------------ Neutron detectors are excluded. --- Verify the RBM: a. Low Power Range - Upscale Function is not bypassed when THERMAL POWER is ≥ 30% and < 65% RTP; b. Intermediate Power Range - Upscale Function is not bypassed when THERMAL POWER is ≥ 65% and < 85% RTP; and c. High Power Range - Upscale Function is not bypassed when THERMAL POWER is ≥ 85% RTP.	~~24 months~~ [Insert 1]
SR 3.3.2.1.6	Verify the RWM is not bypassed when THERMAL POWER is ≤ 10% RTP.	~~24 months~~ [Insert 1]
SR 3.3.2.1.7	------------------------------NOTE------------------------------ Not required to be performed until 1 hour after reactor mode switch is in the shutdown position. --- Perform CHANNEL FUNCTIONAL TEST.	~~24 months~~ [Insert 1]
SR 3.3.2.1.8	Verify control rod sequences input to the RWM are in conformance with BPWS.	Prior to declaring RWM OPERABLE following loading of sequence into RWM

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	C.2 Reduce THERMAL POWER to < 25% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

---NOTE---

When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided feedwater pump and main turbine high water level trip capability is maintained.

SURVEILLANCE		FREQUENCY
SR 3.3.2.2.1	Perform CHANNEL CHECK.	~~12 hours~~ [Insert 1]
SR 3.3.2.2.2	Perform CHANNEL FUNCTIONAL TEST.	~~184 days~~ [Insert 1]
SR 3.3.2.2.3	Calibrate the trip units.	~~184 days~~ [Insert 1]
SR 3.3.2.2.4	Perform CHANNEL CALIBRATION. The Allowable Value shall be ≤ 49 inches.	~~24 months~~ [Insert 1]
SR 3.3.2.2.5	Perform LOGIC SYSTEM FUNCTIONAL TEST including valve and breaker actuation.	~~24 months~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. As required by Required Action D.1 and referenced in Table 3.3.3.1-1.	E.1 Be in MODE 3.	12 hours
F. As required by Required Action D.1 and referenced in Table 3.3.3.1-1.	F.1 Initiate action in accordance with Specification 5.6.4.	Immediately

SURVEILLANCE REQUIREMENTS

---NOTES---

1. These SRs apply to each Function in Table 3.3.3.1-1.

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

SURVEILLANCE		FREQUENCY
SR 3.3.3.1.1	Perform CHANNEL CHECK.	~~31 days~~ [Insert 1]
SR 3.3.3.1.2	Perform CHANNEL CALIBRATION.	~~24 months~~ [Insert 1]

3.3 INSTRUMENTATION

3.3.3.2 Alternate Shutdown System

LCO 3.3.3.2 The Alternate Shutdown System Functions shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

---NOTE---
Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required Functions inoperable.	A.1 Restore required Function to OPERABLE status.	30 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.3.2.1	Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	~~31 days~~ [Insert 1]
SR 3.3.3.2.2	Verify each required control circuit and transfer switch is capable of performing the intended function.	~~24 months~~ [Insert 1]
SR 3.3.3.2.3	Perform CHANNEL CALIBRATION for each required instrumentation channel.	~~24 months~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Both Functions with ATWS-RPT trip capability not maintained.	C.1	Restore ATWS-RPT trip capability for one Function.	1 hour
D. Required Action and associated Completion Time not met.	D.1	---------------NOTE-------------- Only applicable if inoperable channel is the result of an inoperable breaker. ------------------------------------- Remove the affected recirculation pump from service.	6 hours
	OR		
	D.2	Be in MODE 2.	6 hours

SURVEILLANCE REQUIREMENTS

--NOTE--

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

SURVEILLANCE		FREQUENCY
SR 3.3.4.1.1	------------------------------NOTE------------------------------ Not required for the time delay portion of the Reactor Vessel Water Level - Low Low Function. --- Perform CHANNEL CHECK.	~~12 hours~~ [Insert 1]
SR 3.3.4.1.2	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.4.1.3	Calibrate the trip units.	~~92 days~~ [Insert 1]
SR 3.3.4.1.4	Perform CHANNEL CALIBRATION of Reactor Vessel Water Level - Low Low time delay relays. The Allowable Value shall be ≥ 6 seconds and ≤ 8.6 seconds.	~~184 days~~ [Insert 1]
SR 3.3.4.1.5	Perform CHANNEL CALIBRATION. The Allowable Values shall be: a. Reactor Vessel Water Level - Low Low ≥ -48 inches; and b. Reactor Vessel Steam Dome Pressure - High ≤ 1155 psig.	~~24 months~~ [Insert 1]
SR 3.3.4.1.6	Perform LOGIC SYSTEM FUNCTIONAL TEST including breaker actuation.	~~24 months~~ [Insert 1]

SURVEILLANCE REQUIREMENTS

---NOTES---

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

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

SURVEILLANCE		FREQUENCY
SR 3.3.5.1.1	Perform CHANNEL CHECK.	~~12 hours~~ [Insert 1]
SR 3.3.5.1.2	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ [Insert 1]
SR 3.3.5.1.3	Calibrate the trip unit.	~~92 days~~ [Insert 1]
SR 3.3.5.1.4	Perform CHANNEL CALIBRATION.	~~92 days~~ [Insert 1]
SR 3.3.5.1.5	Perform CHANNEL FUNCTIONAL TEST.	~~12 months~~ [Insert 1]
SR 3.3.5.1.6	Perform CHANNEL CALIBRATION.	~~12 months~~ [Insert 1]
SR 3.3.5.1.7	Perform CHANNEL CALIBRATION.	~~24 months~~ [Insert 1]
SR 3.3.5.1.8	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~ [Insert 1]
SR 3.3.5.1.9	Perform CHANNEL FUNCTIONAL TEST.	~~24 months~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. As required by Required Action A.1 and referenced in Table 3.3.5.2-1.	D.1 ---------------NOTE-------------- Only applicable if RCIC pump suction is not aligned to the suppression pool. ------------------------------------ Declare RCIC System inoperable.	 1 hour from discovery of loss of RCIC initiation capability
	AND	
	D.2.1 Place channel in trip.	24 hours
	OR	
	D.2.2 Align RCIC pump suction to the suppression pool.	24 hours
E. Required Action and associated Completion Time of Condition B, C, or D not met.	E.1 Declare RCIC System inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

---NOTES---

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

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

SURVEILLANCE	FREQUENCY
SR 3.3.5.2.1 Perform CHANNEL CHECK.	~~12 hours~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.5.2.2	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ [Insert 1]
SR 3.3.5.2.3	Calibrate the trip units.	~~92 days~~ [Insert 1]
SR 3.3.5.2.4	Perform CHANNEL CALIBRATION.	~~24 months~~ [Insert 1]
SR 3.3.5.2.5	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
I. As required by Required Action C.1 and referenced in Table 3.3.6.1-1.	I.1 Initiate action to restore channel to OPERABLE status.	Immediately
	OR	
	I.2 Initiate action to isolate the Residual Heat Removal (RHR) Shutdown Cooling System.	Immediately

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.6.1-1 to determine which SRs apply for each Primary Containment Isolation Function.
2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains primary containment isolation capability.

	SURVEILLANCE	FREQUENCY
SR 3.3.6.1.1	Perform CHANNEL CHECK.	~~12 hours~~ [Insert 1]
SR 3.3.6.1.2	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ [Insert 1]
SR 3.3.6.1.3	Calibrate the trip unit.	~~92 days~~ [Insert 1]
SR 3.3.6.1.4	Perform CHANNEL CALIBRATION.	~~92 days~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.6.1.5	Perform CHANNEL CALIBRATION.	~~24 months~~ [Insert 1]
SR 3.3.6.1.6	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	C.2.1 Place the associated standby gas treatment (SGT) subsystem in operation.	1 hour
	OR	
	C.2.2 Declare associated SGT subsystem inoperable.	1 hour

SURVEILLANCE REQUIREMENTS

-----NOTES-----

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

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

	SURVEILLANCE	FREQUENCY
SR 3.3.6.2.1	Perform CHANNEL CHECK.	~~12 hours~~ [Insert 1]
SR 3.3.6.2.2	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ [Insert 1]
SR 3.3.6.2.3	Calibrate the trip unit.	~~92 days~~ [Insert 1]
SR 3.3.6.2.4	Perform CHANNEL CALIBRATION.	~~92 days~~ [Insert 1]
SR 3.3.6.2.5	Perform CHANNEL CALIBRATION.	~~24 months~~ [Insert 1]
SR 3.3.6.2.6	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~ [Insert 1]

SURVEILLANCE REQUIREMENTS

---NOTES---

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

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

SURVEILLANCE		FREQUENCY
SR 3.3.6.3.1	Perform CHANNEL CHECK.	~~12 hours~~ [Insert 1]
SR 3.3.6.3.2	------------------------------NOTE------------------------------ For Function 1, only required to be performed prior to entering MODE 2 or 3 from MODE 4. --- Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ [Insert 1]
SR 3.3.6.3.3	Calibrate the trip unit.	~~92 days~~ [Insert 1]
SR 3.3.6.3.4	Perform CHANNEL CALIBRATION.	~~92 days~~ [Insert 1]
SR 3.3.6.3.5	Perform CHANNEL CALIBRATION.	~~24 months~~ [Insert 1]
SR 3.3.6.3.6	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~ [Insert 1]

SURVEILLANCE REQUIREMENTS

---NOTES---

1. Refer to Table 3.3.7.1-1 to determine which SRs apply for each CREF System Function.
2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains CREF System initiation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.7.1.1	Perform CHANNEL CHECK.	~~12 hours~~ [Insert 1]
SR 3.3.7.1.2	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ [Insert 1]
SR 3.3.7.1.3	Calibrate the trip unit.	~~92 days~~ [Insert 1]
SR 3.3.7.1.4	Perform CHANNEL CALIBRATION.	~~92 days~~ [Insert 1]
SR 3.3.7.1.5	Perform CHANNEL CALIBRATION.	~~24 months~~ [Insert 1]
SR 3.3.7.1.6	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time not met.	C.1 Isolate the mechanical vacuum pump.	12 hours
	<u>OR</u>	
	C.2 Isolate main steam lines.	12 hours
	<u>OR</u>	
	C.3 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

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

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

SURVEILLANCE		FREQUENCY
SR 3.3.7.2.1	Perform CHANNEL CHECK.	~~12 hours~~ [Insert 1]
SR 3.3.7.2.2	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ [Insert 1]
SR 3.3.7.2.3	Perform CHANNEL CALIBRATION. The Allowable Value shall be ≤ 6.9 R/hour.	~~24 months~~ [Insert 1]
SR 3.3.7.2.4	Perform LOGIC SYSTEM FUNCTIONAL TEST, including mechanical vacuum pump breaker and isolation valves actuation.	~~24 months~~ [Insert 1]

Corrected by letter dated
March 9, 2009

SURVEILLANCE REQUIREMENTS

---NOTES---

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

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

SURVEILLANCE		FREQUENCY
SR 3.3.8.1.1	Perform CHANNEL FUNCTIONAL TEST.	~~31 days~~ [Insert 1]
SR 3.3.8.1.2	Perform CHANNEL CALIBRATION.	~~92 days~~ [Insert 1]
SR 3.3.8.1.3	Perform CHANNEL CALIBRATION.	~~24 months~~ [Insert 1]
SR 3.3.8.1.4	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	F.2.2 Declare associated SGT subsystem(s) inoperable.	Immediately
	AND	
	F.3.1 Place the associated control room emergency filtration (CREF) subsystem(s) in operation.	Immediately
	OR	
	F.3.2 Declare associated CREF subsystem(s) inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.8.2.1	Perform CHANNEL FUNCTIONAL TEST.	~~184 days~~ [Insert 1]
SR 3.3.8.2.2	Perform CHANNEL CALIBRATION. The Allowable Values shall be: a. Overvoltage ≤ 128 V; b. Undervoltage ≥ 104 V; and c. Underfrequency ≥ 57 Hz.	~~184 days~~ [Insert 1]
SR 3.3.8.2.3	Perform CHANNEL CALIBRATION of each Overvoltage, Undervoltage, and Underfrequency time delay relay. The Allowable Value shall be ≤ 4 seconds.	~~24 months~~ [Insert 1]
SR 3.3.8.2.4	Perform a system functional test.	~~24 months~~ [Insert 1]

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.1.1	------------------------------NOTE------------------------------ Not required to be performed until 24 hours after both recirculation loops are in operation. --- Verify jet pump loop flow mismatch with both recirculation loops in operation is: a. ≤ 10% of rated core flow when operating at < 70% of rated core flow; and b. ≤ 5% of rated core flow when operating at ≥ 70% of rated core flow.	~~24 hours~~ [Insert 1]

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.2 Jet Pumps

LCO 3.4.2 All jet pumps shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more jet pumps inoperable.	A.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.2.1	------------------------------NOTES------------------------------ 1. Not required to be performed until 4 hours after associated recirculation loop is in operation. 2. Not required to be performed until 24 hours after > 25% RTP. --- Verify at least one of the following criteria (a or b) is satisfied for each operating recirculation loop: a. Recirculation pump flow to speed ratio differs by ≤ 5% from established patterns, and jet pump loop flow to recirculation pump speed ratio differs by ≤ 5% from established patterns; or b. Each jet pump diffuser to lower plenum differential pressure differs by ≤ 20% from established patterns.	~~24 hours~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met. <u>OR</u> Pressure boundary LEAKAGE exists.	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.4.1	Verify RCS unidentified and total LEAKAGE and unidentified LEAKAGE increase are within limits.	~~12 hours~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Required Action and associated Completion Time not met.	D.1	Be in MODE 3.	12 hours
	AND		
	D.2	Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.5.1	Perform a CHANNEL CHECK of required leakage detection instrumentation.	~~12 hours~~ [Insert 1]
SR 3.4.5.2	Perform a CHANNEL FUNCTIONAL TEST of the drywell particulate radioactivity monitoring system and the flow instrumentation of the required drywell drain sump monitoring system.	~~31 days~~ [Insert 1]
SR 3.4.5.3	Perform a CHANNEL CALIBRATION of required leakage detection instrumentation.	~~24 months~~ [Insert 1]

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.6.1	-------------------------------NOTE------------------------------ Only required to be performed in MODE 1. --- Verify reactor coolant DOSE EQUIVALENT I-131 specific activity is ≤ 0.2 μCi/gm.	~~7 days~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. No RHR shutdown cooling subsystem in operation. AND No recirculation pump in operation.	B.1	Initiate action to restore one RHR shutdown cooling subsystem or one recirculation pump to operation.	Immediately
	AND		
	B.2	Verify reactor coolant circulation by an alternate method.	1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter
	AND		
	B.3	Monitor reactor coolant temperature and pressure.	Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	------------------------------NOTE------------------------------ Not required to be met until 2 hours after reactor steam dome pressure is less than the RHR shutdown cooling supply isolation interlock. --- Verify one RHR shutdown cooling subsystem or recirculation pump is operating.	~~12 hours~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.7.2	------------------------------NOTE----------------------------- Not required to be performed until 12 hours after reactor steam dome pressure is less than the RHR shutdown cooling supply isolation interlock. --- Verify RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	~~31 days~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
	B.2	Monitor reactor coolant temperature and pressure.	Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify one RHR shutdown cooling subsystem or recirculation pump is operating.	~~12 hours~~ [Insert 1]
SR 3.4.8.2	Verify RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	~~31 days~~ [Insert 1]

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	------------------------------NOTES--------------------------- Only required to be performed during RCS heatup and cooldown operations and RCS inservice leak and hydrostatic testing. --- Verify: a. RCS pressure and RCS temperature are within the applicable limits specified in the PTLR; and b. RCS heatup and cooldown rates are within the the limits specified in the PTLR.	~~30 minutes~~ [Insert 1]
SR 3.4.9.2	Verify RCS pressure and RCS temperature are within the criticality limits specified in the PTLR.	Once within 15 minutes prior to control rod withdrawal for the purpose of achieving criticality
SR 3.4.9.3	------------------------------NOTE----------------------------- Only required to be met in MODES 1, 2, 3, and 4 during recirculation pump startup. --- Verify the difference between the reactor coolant temperature in the recirculation loop to be started and the RPV coolant temperature is within the limits specified in the PTLR.	Once within 15 minutes prior to each startup of a recirculation pump
SR 3.4.9.4	------------------------------NOTE----------------------------- Only required to be performed when tensioning the reactor vessel head bolting studs. --- Verify reactor vessel flange and head flange temperatures are within the limits specified in the PTLR.	~~30 minutes~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.9.5	-------------------------------NOTE------------------------------ Not required to be performed until 30 minutes after RCS temperature ≤ 80°F in MODE 4. --- Verify reactor vessel flange and head flange temperatures are within the limits specified in the PTLR.	~~30 minutes~~ [Insert 1]
SR 3.4.9.6	-------------------------------NOTE------------------------------ Not required to be performed until 12 hours after RCS temperature ≤ 100°F in MODE 4. --- Verify reactor vessel flange and head flange temperatures are within the limits specified in the PTLR.	~~12 hours~~ [Insert 1]

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.10 Reactor Steam Dome Pressure

LCO 3.4.10 The reactor steam dome pressure shall be ≤ 1025.3 psig.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Reactor steam dome pressure not within limit.	A.1	Restore reactor steam dome pressure to within limit.	15 minutes
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.10.1	Verify reactor steam dome pressure is ≤ 1025.3 psig.	~~12 hours~~ [Insert 1]

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify, for each ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.	~~31 days~~ [Insert 1]
SR 3.5.1.2	-----------------------------NOTE----------------------------- Not required to be met for system vent flow paths opened under administrative control. -- Verify each ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31 days~~ [Insert 1]
SR 3.5.1.3	Verify ADS pneumatic pressure is as follows for each required ADS pneumatic supply: a. S/RV Accumulator Bank header pressure ≥ 88.3 psig; and b. Alternate Nitrogen System pressure is ≥ 1060 psig.	~~31 days~~ [Insert 1]
SR 3.5.1.4	-----------------------------NOTE----------------------------- Only required to be met in MODE 1. -- Verify the RHR System intertie return line isolation valves are closed.	~~31 days~~ [Insert 1]
SR 3.5.1.5	Verify correct breaker alignment to the LPCI swing bus.	~~31 days~~ [Insert 1]
SR 3.5.1.6	Verify each recirculation pump discharge valve cycles through one complete cycle of full travel or is de-energized in the closed position.	In accordance with the INSERVICE TESTING PROGRAM

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.1.7	Verify the following ECCS pumps develop the specified flow rate against a system head corresponding to the specified reactor to containment pressure. System / Flow Rate / No. of Pumps / System Head Corresponding to a Reactor to Containment Pressure of Core Spray / ≥ 2835 gpm / 1 / ≥ 130 psi LPCI / ≥ 3870 gpm / 1 / ≥ 20 psi	In accordance with the INSERVICE TESTING PROGRAM
SR 3.5.1.8	------------------------------NOTE----------------------------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. --- Verify, with reactor steam dome pressure ≤ 1025.3 psig and ≥ 950 psig, the HPCI pump can develop a flow rate ≥ 2700 gpm against a system head corresponding to reactor pressure.	In accordance with the INSERVICE TESTING PROGRAM
SR 3.5.1.9	------------------------------NOTE----------------------------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. --- Verify, with reactor pressure ≤ 165 psig, the HPCI pump can develop a flow rate ≥ 2700 gpm against a system head corresponding to reactor pressure.	~~24 months~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.1.10	-----------------------------NOTE----------------------------- Vessel injection/spray may be excluded. -- Verify each ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal.	~~24 months~~ [Insert 1]
SR 3.5.1.11	-----------------------------NOTE----------------------------- Valve actuation may be excluded. -- Verify the ADS actuates on an actual or simulated automatic initiation signal.	~~24 months~~ [Insert 1]
SR 3.5.1.12	-----------------------------NOTE----------------------------- Not required to be performed until 12 hours after reactor steam flow is adequate to perform the test. -- Verify each ADS valve is capable of being opened.	In accordance with the INSERVICE TESTING PROGRAM
SR 3.5.1.13	Verify automatic transfer capability of the LPCI swing bus power supply from the normal source to the backup source.	~~24 months~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Required Action C.2 and associated Completion Time not met.	D.1	Initiate action to restore secondary containment to OPERABLE status.	Immediately
	AND		
	D.2	Initiate action to restore one standby gas treatment subsystem to OPERABLE status.	Immediately
	AND		
	D.3	Initiate action to restore isolation capability in each required secondary containment penetration flow path not isolated.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.2.1	Verify, for each required ECCS injection/spray subsystem, the: a. Suppression pool water level is ≥ -3 ft; or b. ---------------------------NOTE--------------------------- Only one required ECCS injection/spray subsystem may take credit for this option during OPDRVs. --- Condensate storage tank(s) water level is ≥ 7 ft for one tank operation and ≥ 4 ft for two tank operation.	~~12 hours~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.2.2	Verify, for each required ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.	~~31 days~~ [Insert 1]
SR 3.5.2.3	------------------------------NOTE------------------------------ Not required to be met for system vent flow paths opened under administrative control. --- Verify each required ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31 days~~ [Insert 1]
SR 3.5.2.4	Verify each required ECCS pump develops the specified flow rate against a system head corresponding to the specified reactor to containment pressure. System / Flow Rate / No. of Pumps / System Head Corresponding to a Reactor to Containment Pressure of Core Spray / ≥ 2835 gpm / 1 / ≥ 130 psi LPCI / ≥ 3870 gpm / 1 / ≥ 20 psi	In accordance with the INSERVICE TESTING PROGRAM
SR 3.5.2.5	------------------------------NOTE------------------------------ Vessel injection/spray may be excluded. --- Verify each required ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal.	~~24 months~~ [Insert 1]

SR 3.5.2.4 flow table:

System	Flow Rate	No. of Pumps	System Head Corresponding to a Reactor to Containment Pressure of
Core Spray	≥ 2835 gpm	1	≥ 130 psi
LPCI	≥ 3870 gpm	1	≥ 20 psi

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.5.3.1	-----------------------------NOTE----------------------------- Not required to be met for system vent flow paths opened under administrative control. --- Verify each RCIC System manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31 days~~ [Insert 1]
SR 3.5.3.2	-----------------------------NOTE----------------------------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. --- Verify, with reactor pressure ≤ 1025.3 psig and ≥ 950 psig, the RCIC pump can develop a flow rate ≥ 400 gpm against a system head corresponding to reactor pressure.	In accordance with the INSERVICE TESTING PROGRAM
SR 3.5.3.3	-----------------------------NOTE----------------------------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. --- Verify, with reactor pressure ≤ 165 psig, the RCIC pump can develop a flow rate ≥ 400 gpm against a system head corresponding to reactor pressure.	~~24 months~~ [Insert 1]
SR 3.5.3.4	-----------------------------NOTE----------------------------- Vessel injection may be excluded. --- Verify the RCIC System actuates on an actual or simulated automatic initiation signal.	~~24 months~~ [Insert 1]
SR 3.5.3.5	Verify the RCIC System locations susceptible to gas accumulation are sufficiently filled with water.	~~31 days~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.1.2	Verify drywell to suppression chamber bypass leakage is less than that equivalent to a one inch diameter orifice.	~~24 months~~ [Insert 1] AND --------NOTE-------- Only required after two consecutive tests fail and continues until two consecutive tests pass ------------------------ 12 months

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.2.1	------------------------------NOTES----------------------------- 1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. 2. Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1.1. --- Perform required primary containment air lock leakage rate testing in accordance with the Primary Containment Leakage Rate Testing Program.	In accordance with the Primary Containment Leakage Rate Testing Program
SR 3.6.1.2.2	Verify only one door in the primary containment air lock can be opened at a time.	~~24 months~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
G. Required Action and associated Completion Time of Condition A or B not met for PCIV(s) required to be OPERABLE during MODE 4 or 5.	G.1	Initiate action to suspend operations with a potential for draining the reactor vessel (OPDRVs).	Immediately
	<u>OR</u>		
	G.2	Initiate action to restore valve(s) to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.1	-----------------------------NOTE----------------------------- Not required to be met when the 18 inch primary containment purge and vent valves are open for inerting, de-inerting, pressure control, ALARA or air quality considerations for personnel entry, or Surveillances that require the valves to be open. ---	
	Verify each 18 inch primary containment purge and vent valve is closed.	~~31 days~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.2	------------------------------NOTES------------------------------ 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. Not required to be met for PCIVs that are open under administrative controls. --- Verify each primary containment isolation manual valve and blind flange that is located outside primary containment and not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed.	~~31 days~~ [Insert 1]
SR 3.6.1.3.3	------------------------------NOTES------------------------------ 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. Not required to be met for PCIVs that are open under administrative controls. --- Verify each primary containment manual isolation valve and blind flange that is located inside primary containment and not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed.	Prior to entering MODE 2 or 3 from MODE 4 if primary containment was de-inerted while in MODE 4, if not performed within the previous 92 days
SR 3.6.1.3.4	Verify continuity of the traversing incore probe (TIP) shear isolation valve explosive charge.	~~31 days~~ [Insert 1]
SR 3.6.1.3.5	Verify the isolation time of each power operated automatic PCIV, except for MSIVs, is within limits.	~~24 months~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.6	Verify the isolation time of each MSIV is ≥ 3 seconds and ≤ 9.9 seconds.	~~24 months~~ [Insert 1]
SR 3.6.1.3.7	Verify each automatic PCIV actuates to the isolation position on an actual or simulated isolation signal.	~~24 months~~ [Insert 1]
SR 3.6.1.3.8	Verify each reactor instrumentation line EFCV actuates on a simulated instrument line break to restrict flow to ≤ 2 gpm.	~~24 months~~ [Insert 1]
SR 3.6.1.3.9	Verify each 18 inch primary containment purge and vent valve is blocked to restrict the valve from opening > 40°.	~~24 months~~ [Insert 1]
SR 3.6.1.3.10	Remove and test the explosive squib from each shear isolation valve of the TIP System.	~~24 months on a STAGGERED TEST BASIS~~ [Insert 1]
SR 3.6.1.3.11	Perform leakage rate testing for each 18 inch primary containment purge and vent valve with resilient seals.	In accordance with the Primary Containment Leakage Rate Testing Program
SR 3.6.1.3.12	Verify leakage rate through each MSIV is: (a) ≤ 100 scfh when tested at ≥ 44.1 psig (P_a); or (b) ≤ 75.3 scfh when tested at ≥ 25 psig.	In accordance with the Primary Containment Leakage Rate Testing Program
SR 3.6.1.3.13	Verify leakage rate through the main steam pathway is: (a) ≤ 200 scfh when tested at ≥ 44.1 psig (P_a); or (b) ≤ 150.6 scfh when tested at ≥ 25 psig.	In accordance with the Primary Containment Leakage Rate Testing Program

3.6 CONTAINMENT SYSTEMS

3.6.1.4 Drywell Air Temperature

LCO 3.6.1.4 Drywell average air temperature shall be ≤ 135°F.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Drywell average air temperature not within limit.	A.1	Restore drywell average air temperature to within limit.	8 hours
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.4.1	Verify drywell average air temperature is within limit.	~~24 hours~~ [Insert 1]

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.1.5.1	-------------------------------NOTE------------------------------ Not required to be performed until 12 hours after reactor steam flow is adequate to perform the test. --- Verify each LLS valve is capable of being opened.	In accordance with the INSERVICE TESTING PROGRAM
SR 3.6.1.5.2	-------------------------------NOTE------------------------------ Valve actuation may be excluded. --- Verify the LLS System actuates on an actual or simulated automatic initiation signal.	~~24 months~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and Associated Completion Time not met.	E.1 Be in MODE 3. AND E.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.6.1	-----------------------------NOTES----------------------------- 1. Not required to be met for vacuum breakers that are open during Surveillances. 2. Not required to be met for vacuum breakers open when performing their intended function. --- Verify each vacuum breaker is closed.	~~14 days~~ [Insert 1]
SR 3.6.1.6.2	Perform a functional test of each vacuum breaker.	~~92 days~~ [Insert 1]
SR 3.6.1.6.3	Verify the opening setpoint of each vacuum breaker is $\leq$ 0.5 psid.	~~92 days~~ [Insert 1]

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.7.1	-----------------------------NOTES---------------------------- 1. Not required to be met for vacuum breakers that are open during Surveillances. 2. Not required to be met for vacuum breakers performing their intended function. 3. Not required to be met for vacuum breakers being cycled, one at a time, during primary containment inerting and de-inerting operations. --- Verify each vacuum breaker is closed.	~~14 days~~ [Insert 1] AND Within 12 hours after any operation that causes the drywell-to-suppression chamber differential pressure to be reduced by ≥ 0.5 psid if any vacuum breaker position indicator does not indicate closed
SR 3.6.1.7.2	Perform a functional test of each required vacuum breaker.	~~31 days~~ [Insert 1]
SR 3.6.1.7.3	Verify the opening setpoint of each required vacuum breaker is ≤ 0.5 psid.	~~24 months~~ [Insert 1]

3.6 CONTAINMENT SYSTEMS

3.6.1.8 Residual Heat Removal (RHR) Drywell Spray

LCO 3.6.1.8 Two RHR drywell spray subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RHR drywell spray subsystem inoperable.	A.1 Restore RHR drywell spray subsystem to OPERABLE status.	7 days
B. Two RHR drywell spray subsystems inoperable.	B.1 Restore one RHR drywell spray subsystem to OPERABLE status.	8 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.8.1	Verify each RHR drywell spray subsystem manual and power operated valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position or can be aligned to the correct position.	~~31 days~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.8.2	Verify each drywell spray header and nozzle is unobstructed.	10 years
SR 3.6.1.8.3	Verify RHR drywell spray subsystem locations susceptible to gas accumulation are sufficiently filled with water.	~~31 days~~ [Insert 1]

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.1.1	Verify suppression pool average temperature is within the applicable limits.	~~24 hours~~ [Insert 1] <u>AND</u> 5 minutes when performing testing that adds heat to the suppression pool

3.6 CONTAINMENT SYSTEMS

3.6.2.2 Suppression Pool Water Level

LCO 3.6.2.2 Suppression pool water level shall be ≥ - 4.0 inches and ≤ + 3.0 inches.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Suppression pool water level not within limits.	A.1 Restore suppression pool water level to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.2.1	Verify suppression pool water level is within limits.	~~24 hours~~ [Insert 1]

3.6 CONTAINMENT SYSTEMS

3.6.2.3 Residual Heat Removal (RHR) Suppression Pool Cooling

LCO 3.6.2.3 Two RHR suppression pool cooling subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One RHR suppression pool cooling subsystem inoperable.	A.1	Restore RHR suppression pool cooling subsystem to OPERABLE status.	7 days
B. Two RHR suppression pool cooling subsystems inoperable.	B.1	Restore one RHR suppression pool cooling subsystem to OPERABLE status.	8 hours
C. Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	12 hours
	AND		
	C.2	Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.3.1	Verify each RHR suppression pool cooling subsystem manual and power operated valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position or can be aligned to the correct position.	~~31 days~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.2.3.2	Verify each required RHR pump develops a flow rate ≥ 3870 gpm through the associated heat exchanger while operating in the suppression pool cooling mode.	In accordance with the INSERVICE TESTING PROGRAM
SR 3.6.2.3.3	Verify RHR suppression pool cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	~~31 days~~ [Insert 1]

3.6 CONTAINMENT SYSTEMS

3.6.3.1 Primary Containment Oxygen Concentration

LCO 3.6.3.1 The primary containment oxygen concentration shall be < 4.0 volume percent.

APPLICABILITY: MODE 1 during the time period:

a. From 24 hours after THERMAL POWER is > 15% RTP following startup, to

b. 24 hours prior to reducing THERMAL POWER to < 15% RTP prior to the next scheduled reactor shutdown.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Primary containment oxygen concentration not within limit.	A.1	Restore oxygen concentration to within limit.	24 hours
B. Required Action and associated Completion Time not met.	B.1	Reduce THERMAL POWER to ≤ 15% RTP.	8 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.3.1.1	Verify primary containment oxygen concentration is within limits.	~~7 days~~ [Insert 1]

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.1.1	Verify secondary containment vacuum is ≥ 0.25 inch of vacuum water gauge.	~~24 hours~~ [Insert 1]
SR 3.6.4.1.2	Verify all secondary containment equipment hatches are closed and sealed.	~~31 days~~ [Insert 1]
SR 3.6.4.1.3	Verify one secondary containment access door in each access opening is closed.	~~31 days~~ [Insert 1]
SR 3.6.4.1.4	Verify the secondary containment can be maintained ≥ 0.25 inch of vacuum water gauge for 1 hour using one SGT subsystem at a flow rate ≤ 4000 cfm.	~~24 months on a STAGGERED TEST BASIS for each SGT subsystem~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A or B not met during movement of recently irradiated fuel assemblies in the secondary containment or during OPDRVs.	D.1 ---------------NOTE-------------- LCO 3.0.3 is not applicable. ------------------------------------ Suspend movement of recently irradiated fuel assemblies in the secondary containment.	Immediately
	AND	
	D.2 Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.4.2.1	-----------------------------NOTES---------------------------- 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. Not required to be met for SCIVs that are open under administrative controls. -- Verify each secondary containment isolation manual valve and blind flange that is not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed.	~~31 days~~ [Insert 1]
SR 3.6.4.2.2	Verify the isolation time of each power operated, automatic SCIV is within limits.	~~92 days~~ [Insert 1]
SR 3.6.4.2.3	Verify each automatic SCIV actuates to the isolation position on an actual or simulated actuation signal.	~~24 months~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	C.2.2 Initiate action to suspend OPDRVs.	Immediately
D. Two SGT subsystems inoperable in MODE 1, 2, or 3.	D.1 Enter LCO 3.0.3.	Immediately
E. Two SGT subsystems inoperable during movement of recently irradiated fuel assemblies in the secondary containment or during OPDRVs.	E.1 ---------------NOTE-------------- LCO 3.0.3 is not applicable. ------------------------------------ Suspend movement of recently irradiated fuel assemblies in secondary containment.	Immediately
	<u>AND</u>	
	E.2 Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.3.1	Operate each SGT subsystem for ≥ 15 continuous minutes.	~~31 days~~ [Insert 1]
SR 3.6.4.3.2	Perform required SGT filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.6.4.3.3	Verify each SGT subsystem actuates on an actual or simulated initiation signal.	~~24 months~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.1.1	Verify each RHRSW manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position or can be aligned to the correct position.	~~31 days~~ [Insert 1]

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.2.1	Verify the water level in the intake structure is ≥ 899 ft mean sea level.	~~24 hours~~ [Insert 1]
SR 3.7.2.2	Verify the average water temperature of UHS is ≤ 90°F.	~~24 hours~~ [Insert 1]
SR 3.7.2.3	------------------------------NOTE------------------------------ Isolation of flow to individual components does not render ESW System inoperable. -- Verify each ESW subsystem manual and automatic valve in the flow paths servicing safety related systems or components, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31 days~~ [Insert 1]
SR 3.7.2.4	Verify each ESW subsystem actuates on an actual or simulated initiation signal.	~~24 months~~ [Insert 1]

3.7 PLANT SYSTEMS

3.7.3 Emergency Diesel Generator-Emergency Service Water (EDG-ESW) System

LCO 3.7.3 Two EDG-ESW subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

---NOTE---
Separate Condition entry is allowed for each EDG-ESW subsystem.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more EDG-ESW subsystems inoperable.	A.1 Declare associated EDG inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.3.1	Verify each EDG-ESW subsystem manual valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31 days~~ [Insert 1]
SR 3.7.3.2	Verify each EDG-ESW subsystem pump starts automatically when the associated EDG starts and energizes the respective bus.	~~24 months~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Two CREF subsystems inoperable during movement of recently irradiated fuel assemblies in the secondary containment or during OPDRVs. OR One or more CREF subsystems inoperable due to an inoperable CRE boundary during movement of recently irradiated fuel assemblies in the secondary containment or during OPDRVs.	--------------------NOTE------------------- LCO 3.0.3 is not applicable. --- F.1 Suspend movement of recently irradiated fuel assemblies in the secondary containment. AND F.2 Initiate action to suspend OPDRVs.	 Immediately Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.4.1	Operate each CREF subsystem for ≥ 15 continuous minutes.	~~31 days~~ [Insert 1]
SR 3.7.4.2	Perform required CREF filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.4.3	Verify each CREF subsystem actuates on an actual or simulated initiation signal.	~~24 months~~ [Insert 1]
SR 3.7.4.4	Perform required CRE unfiltered air in-leakage testing in accordance with the Control Room Envelope Habitability Program.	In accordance with the Control Room Envelope Habitability Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	D.2.1 Suspend movement of recently irradiated fuel assemblies in the secondary containment. AND D.2.2 Initiate action to suspend OPDRVs.	Immediately Immediately
E. Required Action and associated Completion Time of Condition B not met during movement of recently irradiated fuel assemblies in the secondary containment or during OPDRVs.	------------------NOTE------------------ LCO 3.0.3 is not applicable. --- E.1 Suspend movement of recently irradiated fuel assemblies in the secondary containment. AND E.2 Initiate actions to suspend OPDRVs.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.5.1	Verify each control room ventilation subsystem has the capability to remove the assumed heat load.	~~24 months~~ [Insert 1]

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.6.1	-------------------------------NOTE------------------------------ Not required to be performed until 31 days after any main steam line not isolated and SJAE in operation. -- Verify the gross gamma activity rate of the noble gases is ≤ 260 mCi/second after decay of 30 minutes.	~~31 days~~ [Insert 1] AND Once within 4 hours after a ≥ 50% increase in the nominal steady state fission gas release after factoring out increases due to changes in THERMAL POWER level

3.7 PLANT SYSTEMS

3.7.7 Main Turbine Bypass System

LCO 3.7.7 The Main Turbine Bypass System shall be OPERABLE.

APPLICABILITY: THERMAL POWER ≥ 25% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Main Turbine Bypass System inoperable.	A.1 Restore Main Turbine Bypass System to OPERABLE status.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < 25% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.7.1	Verify one complete cycle of each main turbine bypass valve.	~~92 days~~ [Insert 1]
SR 3.7.7.2	Perform a system functional test.	~~24 months~~ [Insert 1]
SR 3.7.7.3	Verify the TURBINE BYPASS SYSTEM RESPONSE TIME is within limits.	~~24 months~~ [Insert 1]

3.7 PLANT SYSTEMS

3.7.8 Spent Fuel Storage Pool Water Level

LCO 3.7.8 The spent fuel storage pool water level shall be ≥ 37 ft above the bottom of the spent fuel storage pool.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.8.1	Verify the spent fuel storage pool water level is ≥ 37 ft above the bottom of the spent fuel storage pool.	~~7 days~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met.	F.1	Be in MODE 3.	12 hours
	AND		
	F.2	Be in MODE 4.	36 hours
G. Three or more required AC sources inoperable.	G.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each required offsite circuit.	~~7 days~~ [Insert 1]
SR 3.8.1.2	-----------------------------NOTES---------------------------- 1. All EDG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 2. A modified EDG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. --- Verify each EDG starts from standby conditions and achieves steady state voltage ≥ 3975 V and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	~~31 days~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.3	-----------------------------NOTES---------------------------- 1. EDG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one EDG at a time. 4. This SR shall be preceded by and immediately follow, without shutdown, a successful performance of SR 3.8.1.2. --- Verify each EDG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 2250 kW and ≤ 2500 kW.	~~31 days~~ [Insert 1]
SR 3.8.1.4	Check for and remove accumulated water from each day tank and base tank.	~~31 days~~ [Insert 1]
SR 3.8.1.5	Verify the fuel oil transfer system operates to transfer fuel oil from the storage tank to the day tanks and from each day tank to the associated base tank.	~~31 days~~ [Insert 1]
SR 3.8.1.6	------------------------------NOTE----------------------------- This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. --- Verify automatic and manual transfer of unit power supply from the normal offsite circuit to the alternate offsite circuit.	~~24 months on a STAGGERED TEST BASIS for each division~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.7	-----------------------------NOTES----------------------------- 1. This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. 2. If performed with EDG synchronized with offsite power, it shall be performed within the power factor limit. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. -- Verify each EDG rejects a load greater than or equal to its associated single largest post-accident load, and following load rejection, the frequency is ≤ 67.5 Hz.	 ~~24 months~~ [Insert 1]
SR 3.8.1.8	------------------------------NOTE------------------------------ This Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. -- Verify on an actual or simulated Emergency Core Cooling System (ECCS) initiation signal, permanently connected loads remain energized from the offsite power system and emergency loads are auto-connected through the time delay relays from the offsite power system.	 ~~24 months~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.9	------------------------------NOTES------------------------------ 1. Momentary transients outside the load and power factor ranges do not invalidate this test. 2. This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. 3. If part b is performed with EDG synchronized with offsite power, it shall be performed within the power factor limit. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. ---	
	Verify each EDG operates for ≥ 8 hours: a. For ≥ 2 hours loaded ≥ 2625 kW and ≤ 2750 kW; and b. For the remaining hours of the test loaded ≥ 2250 kW and ≤ 2500 kW.	~~24 months~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.10	-----NOTES----- 1. This Surveillance shall be performed within 5 minutes of shutting down the EDG after the EDG has operated ≥ 2 hours loaded ≥ 2250 kW and ≤ 2500 kW. Momentary transients outside of load range do not invalidate this test. 2. All EDG starts may be preceded by an engine prelube period. ----- Verify each EDG starts and achieves: a. In ≤ 10 seconds, voltage ≥ 3975 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3975 V and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	~~24 months~~ [Insert 1]
SR 3.8.1.11	-----NOTE----- This Surveillance shall not normally be performed in MODE 1, 2, or 3. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ----- Verify each EDG: a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation.	~~24 months~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.12	------------------------------NOTES------------------------------ 1. All EDG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1, 2, or 3. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---	
	Verify, on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ECCS initiation signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. EDG auto-starts from standby condition and: 1. Energizes permanently connected loads in ≤ 10 seconds; 2. Energizes auto-connected emergency loads through time delay relays; 3. Achieves steady state voltage ≥ 3975 V and ≤ 4400 V; 4. Achieves steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz; and 5. Supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes.	~~24 months~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.13	------------------------------NOTE------------------------------ This Surveillance shall not normally be performed in MODE 1, 2, or 3. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. --	
	Verify interval between each sequenced load block is greater than or equal to the minimum design load interval.	~~24 months~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
E. One or more EDGs with starting air receiver pressure in one starting air subsystem < 165 psig.	E.1	Restore starting air receiver pressure to ≥ 165 psig.	7 days
F. One or more EDGs with starting air receiver pressure in both starting air subsystems < 165 psig and ≥ 125 psig.	F.1	Restore starting air receiver pressure in one starting air subsystem to ≥ 165 psig.	48 hours
G. Required Action and associated Completion Time of Condition A, B, C, D, E, or F not met. OR One or more EDGs with diesel fuel oil, lube oil, or starting air subsystem(s) not within limits for reasons other than Condition A, B, C, D, E, or F.	G.1	Declare associated EDG inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	Verify the fuel oil storage tank contains ≥ a 7-day supply of fuel.	~~31 days~~ [Insert 1]
SR 3.8.3.2	Verify, for each EDG, lube oil inventory is ≥ a 7-day supply.	~~31 days~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.3.3	Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.4	Verify each EDG air start receiver pressure is ≥ 165 psig.	~~31 days~~ [Insert 1]
SR 3.8.3.5	Check for and remove accumulated water from the fuel oil storage tank.	~~31 days~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.4.1	Verify battery terminal voltage is greater than or equal to the minimum established float voltage.	~~7 days~~ [Insert 1]
SR 3.8.4.2	Verify each required battery charger supplies the following: • ≥ 150 amps for 250 VDC Div 1 • ≥ 110 amps for 250 VDC Div 2 • ≥ 75 amps for 125 VDC subsystems, at greater than or equal to the minimum established float voltage for ≥ 4 hours.	~~24 months~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.4.3	-----------------------------NOTES---------------------------- 1. The modified performance discharge test in SR 3.8.6.6 may be performed in lieu of SR 3.8.4.3. 2. This Surveillance shall not normally be performed in MODE 1, 2, or 3. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. --- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test.	~~24 months~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met. OR One or more batteries with one or more battery cells float voltage < 2.07 V and float current > 2 amps for 250 VDC batteries or > 1 amp for 125 VDC batteries. OR SR 3.8.6.6 not met.	F.1 Declare associated battery inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.6.1	-----------------------------NOTE----------------------------- Not required to be met when battery terminal voltage is less than the minimum established float voltage of SR 3.8.4.1. --- Verify each battery float current is ≤ 2 amps for 250 VDC batteries and ≤ 1 amp for 125 VDC batteries.	~~7 days~~ [Insert 1]
SR 3.8.6.2	Verify each battery pilot cell voltage is ≥ 2.07 V.	~~31 days~~ [Insert 1]
SR 3.8.6.3	Verify each battery connected cell electrolyte level is greater than or equal to minimum established design limits.	~~31 days~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.6.4	Verify each battery pilot cell temperature is greater than or equal to minimum established design limits.	~~31 days~~ [Insert 1]
SR 3.8.6.5	Verify each battery connected cell voltage is ≥ 2.07 V.	~~92 days~~ [Insert 1]
SR 3.8.6.6	-------------------------------NOTE------------------------------ This Surveillance shall not normally be performed in MODE 1, 2, or 3. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---	
	Verify battery capacity is ≥ 90% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	~~60 months~~ [Insert 1] <u>AND</u> 12 months when battery shows degradation, or has reached 85% of the expected life with capacity < 100% of manufacturer's rating <u>AND</u> 24 months when battery has reached 85% of the expected life with capacity ≥ 100% of manufacturer's rating

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Two or more electrical power distribution subsystems inoperable that result in a loss of function.	D.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.7.1	Verify correct breaker alignments and voltage to required AC and DC electrical power distribution subsystems.	~~7 days~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	A.2.4 Initiate actions to restore required AC and DC electrical power distribution subsystems to OPERABLE status. AND A.2.5 Declare associated required shutdown cooling subsystem(s) inoperable and not in operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.8.1	Verify correct breaker alignments and voltage to required AC and DC electrical power distribution subsystems.	~~7 days~~ [Insert 1]

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.1.1	Perform CHANNEL FUNCTIONAL TEST on each of the following required refueling equipment interlock inputs: a. All-rods-in; b. Refuel platform position; c. Refuel platform fuel grapple, fuel loaded; d. Refuel platform fuel grapple fully retracted position; e. Refuel platform frame mounted hoist, fuel loaded; f. Refuel platform monorail mounted hoist, fuel loaded; and g. Service platform hoist, fuel loaded.	~~7 days~~ [Insert 1]

3.9 REFUELING OPERATIONS

3.9.2 Refuel Position One-Rod-Out Interlock

LCO 3.9.2 The refuel position one-rod-out interlock shall be OPERABLE.

APPLICABILITY: MODE 5 with the reactor mode switch in the refuel position and any control rod withdrawn.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Refuel position one-rod-out interlock inoperable.	A.1 Suspend control rod withdrawal. AND A.2 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.2.1	Verify reactor mode switch locked in refuel position.	~~12 hours~~ [Insert 1]
SR 3.9.2.2	------------------------------NOTE----------------------------- Not required to be performed until 1 hour after any control rod is withdrawn. --- Perform CHANNEL FUNCTIONAL TEST.	~~7 days~~ [Insert 1]

3.9 REFUELING OPERATIONS

3.9.3 Control Rod Position

LCO 3.9.3 All control rods shall be fully inserted.

APPLICABILITY: When loading fuel assemblies into the core.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more control rods not fully inserted.	A.1 Suspend loading fuel assemblies into the core.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.3.1	Verify all control rods are fully inserted.	~~12 hours~~ [Insert 1]

3.9 REFUELING OPERATIONS

3.9.5 Control Rod OPERABILITY - Refueling

LCO 3.9.5 Each withdrawn control rod shall be OPERABLE.

APPLICABILITY: MODE 5.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more withdrawn control rods inoperable.	A.1 Initiate action to fully insert inoperable withdrawn control rods.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.9.5.1	-------------------------------NOTE------------------------------ Not required to be performed until 7 days after the control rod is withdrawn. --- Insert each withdrawn control rod at least one notch.	~~7 days~~ [Insert 1]
SR 3.9.5.2	Verify each withdrawn control rod scram accumulator pressure is ≥ 940 psig.	~~7 days~~ [Insert 1]

3.9 REFUELING OPERATIONS

3.9.6 Reactor Pressure Vessel (RPV) Water Level

LCO 3.9.6 RPV water level shall be ≥ 21 ft 11 inches above the top of the RPV flange.

APPLICABILITY: During movement of irradiated fuel assemblies within the RPV,
During movement of new fuel assemblies or handling of control rods within the RPV, when irradiated fuel assemblies are seated within the RPV.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RPV water level not within limit.	A.1 Suspend movement of fuel assemblies and handling of control rods within the RPV.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.6.1	Verify RPV water level is ≥ 21 ft 11 inches above the top of the RPV flange.	~~24 hours~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
	B.3	Initiate action to restore one standby gas treatment subsystem to OPERABLE status.	Immediately
	AND		
	B.4	Initiate action to restore isolation capability in each required secondary containment penetration flow path not isolated.	Immediately
C. No RHR shutdown cooling subsystem in operation.	C.1	Verify reactor coolant circulation by an alternate method.	1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter
	AND		
	C.2	Monitor reactor coolant temperature.	Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.7.1	Verify one RHR shutdown cooling subsystem is operating.	~~12 hours~~ [Insert 1]
SR 3.9.7.2	Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	~~31 days~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
	B.3	Initiate action to restore isolation capability in each required secondary containment penetration flow path not isolated.	Immediately
C. No RHR shutdown cooling subsystem in operation.	C.1	Verify reactor coolant circulation by an alternate method.	1 hour from discovery of no reactor coolant circulation <u>AND</u> Once per 12 hours thereafter
	<u>AND</u>		
	C.2	Monitor reactor coolant temperature.	Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.8.1	Verify one RHR shutdown cooling subsystem is operating.	~~12 hours~~ [Insert 1]
SR 3.9.8.2	Verify RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	~~31 days~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	A.3.2 ---------------NOTE-------------- Only applicable in MODE 5. ------------------------------------- Place the reactor mode switch in the refuel position.	 1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.2.1	Verify all control rods are fully inserted in core cells containing one or more fuel assemblies.	~~12 hours~~ [Insert 1]
SR 3.10.2.2	Verify no CORE ALTERATIONS are in progress.	~~24 hours~~ [Insert 1]

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.10.3.2	-------------------------------NOTE------------------------------ Not required to be met if SR 3.10.3.1 is satisfied for LCO 3.10.3.d.1 requirements. --- Verify all control rods, other than the control rod being withdrawn, in a five by five array centered on the control rod being withdrawn, are disarmed.	~~24 hours~~ [Insert 1]
SR 3.10.3.3	Verify all control rods, other than the control rod being withdrawn, are fully inserted.	~~24 hours~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	B.2.2 Initiate action to satisfy the requirements of this LCO.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.4.1	Perform the applicable SRs for the required LCOs.	According to the applicable SRs
SR 3.10.4.2	------------------------------NOTE------------------------------ Not required to be met if SR 3.10.4.1 is satisfied for LCO 3.10.4.c.1 requirements. -- Verify all control rods, other than the control rod being withdrawn, in a five by five array centered on the control rod being withdrawn, are disarmed.	~~24 hours~~ [Insert 1]
SR 3.10.4.3	Verify all control rods, other than the control rod being withdrawn, are fully inserted.	~~24 hours~~ [Insert 1]
SR 3.10.4.4	------------------------------NOTE------------------------------ Not required to be met if SR 3.10.4.1 is satisfied for LCO 3.10.4.b.1 requirements. -- Verify a control rod withdrawal block is inserted.	~~24 hours~~ [Insert 1]

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met.	A.1 Suspend removal of the CRD mechanism.	Immediately
	AND	
	A.2.1 Initiate action to fully insert all control rods.	Immediately
	OR	
	A.2.2 Initiate action to satisfy the requirements of this LCO.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.5.1	Verify all control rods, other than the control rod withdrawn for the removal of the associated CRD, are fully inserted.	~~24 hours~~ [Insert 1]
SR 3.10.5.2	Verify all control rods, other than the control rod withdrawn for the removal of the associated CRD, in a five by five array centered on the control rod withdrawn for the removal of the associated CRD, are disarmed.	~~24 hours~~ [Insert 1]
SR 3.10.5.3	Verify a control rod withdrawal block is inserted.	~~24 hours~~ [Insert 1]
SR 3.10.5.4	Perform SR 3.1.1.1.	According to SR 3.1.1.1
SR 3.10.5.5	Verify no other CORE ALTERATIONS are in progress.	~~24 hours~~ [Insert 1]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	A.3.1 Initiate action to fully insert all control rods in core cells containing one or more fuel assemblies. <u>OR</u> A.3.2 Initiate action to satisfy the requirements of this LCO.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.10.6.1	Verify the four fuel assemblies are removed from core cells associated with each control rod or CRD removed.	~~24 hours~~ [Insert 1]
SR 3.10.6.2	Verify all other control rods in core cells containing one or more fuel assemblies are fully inserted.	~~24 hours~~ [Insert 1]
SR 3.10.6.3	-------------------------------NOTE------------------------------ Only required to be met during fuel loading. --- Verify fuel assemblies being loaded are in compliance with an approved reload sequence.	~~24 hours~~ [Insert 1]

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ------------NOTE------------ Separate Condition entry is allowed for each control rod. --------------------------------- One or more control rods not coupled to its associated CRD.	--------------------NOTE------------------- Rod worth minimizer may be bypassed as allowed by LCO 3.3.2.1, "Control Rod Block Instrumentation," if required, to allow insertion of inoperable control rod and continued operation. --- A.1 Fully insert inoperable control rod. AND A.2 Disarm the associated CRD.	 3 hours 4 hours
B. Requirements of the LCO not met for reasons other than Condition A.	B.1 Place the reactor mode switch in the shutdown or refuel position.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.8.1	Verify all RPS shorting links are removed.	~~12 hours~~ [Insert 1]
SR 3.10.8.2	-------------------------------NOTE------------------------------ Not required to be met if SR 3.10.8.3 satisfied. --- Perform the MODE 2 applicable SRs for LCO 3.3.2.1, Function 2 of Table 3.3.2.1-1.	According to the applicable SRs

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.10.8.3	-------------------------------NOTE------------------------------ Not required to be met if SR 3.10.8.2 satisfied. --- Verify movement of control rods is in compliance with the approved control rod sequence for the SDM test by a second licensed operator or other qualified member of the technical staff.	During control rod movement
SR 3.10.8.4	Verify no other CORE ALTERATIONS are in progress.	~~12 hours~~ [Insert 1]
SR 3.10.8.5	Verify each withdrawn control rod does not go to the withdrawn overtravel position.	Each time the control rod is withdrawn to "full out" position AND Prior to satisfying LCO 3.10.8.c requirement after work on control rod or CRD System that could affect coupling
SR 3.10.8.6	Verify CRD charging water header pressure ≥ 940 psig.	~~7 days~~ [Insert 1]

5.5 Programs and Manuals

5.5.14 Spent Fuel Pool Boral Monitoring Program

The program provides routine monitoring and actions to ensure that the condition of Boral in the spent fuel pool racks is appropriately monitored to ensure that the Boral neutron attenuation capability described in the criticality safety analysis of USAR Section 10.2.1 is maintained. The program shall include the following:

a. Periodic physical examination of representative Boral coupons or in situ storage racks at a frequency defined by observed trends or calculated projections of Boral degradation. The measurement will be performed to ensure that average thickness of the coupon (or average thickness of a representative area of the in situ storage rack) does not exceed the nominal design thickness of the coupon (or storage rack) plus the 0.055-inch dimension assumed for the analyzed blister.

b. Neutron attenuation testing of a representative Boral coupon or in situ storage rack shall be performed prior to December 31, 2015, and thereafter at a frequency of not more than 10 years, or more frequently based on observed trends or calculated projections of Boral degradation. The acceptance criterion for minimum boron areal density will be that value assumed in the criticality safety analysis (0.013 gm/cm^2).

c. Description of appropriate corrective actions for discovery of nonconforming Boral.

[Insert 2]

ATTACHMENT 4

Monticello Nuclear Generating Plant

License Amendment Request:
Application for Technical Specification Change Regarding Risk-Informed Justification for the Relocation of Specific Surveillance Frequency Requirements to a Licensee Controlled Program

PROPOSED TECHNICAL SPECIFICATION BASES CHANGES (MARK-UP)

FOR INFORMATION ONLY

(167 pages to follow)

INSERT 1

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

INSERT 2

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

occur following a refueling in which new fuel assemblies are loaded, fuel assemblies are shuffled within the core, or control rods are replaced or shuffled. Control rod replacement refers to the decoupling and removal of a control rod from a core location, and subsequent replacement with a new control rod or a control rod from another core location. Also, core reactivity changes during the cycle. The 24 hour interval after reaching equilibrium conditions following a startup is based on the need for equilibrium xenon concentrations in the core, such that an accurate comparison between the monitored and predicted control rod inventory can be made. For the purposes of this SR, the reactor is assumed to be at equilibrium conditions when steady state operations (no control rod movement or core flow changes) at ≥ 75% RTP have been obtained. At a specific steady state base condition the actual control rod inventory will be periodically compared to a normalized computed prediction of the inventory. The comparisons will be used as base data for reactivity monitoring during subsequent power operation throughout the fuel cycle. [Insert 2] ~~The 1000 MWD/T (where T is a short ton) Frequency was developed, considering the relatively slow change in core reactivity with exposure and operating experience related to variations in core reactivity.~~ This comparison requires the core to be operating at power levels which minimize the uncertainties and measurement errors, in order to obtain meaningful results. Therefore, the comparison is only done when in MODE 1.

REFERENCES

1. USAR, Section 1.2.2.

2. USAR, Chapter 14.

BASES

ACTIONS (continued)

E.1

If any Required Action and associated Completion Time of Condition A, C, or D are not met, or there are nine or more inoperable control rods, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 12 hours. This ensures all insertable control rods are inserted and places the reactor in a condition that does not require the active function (i.e., scram) of the control rods. The number of control rods permitted to be inoperable when operating above 10% RTP (e.g., no CRDA considerations) could be more than the value specified, but the occurrence of a large number of inoperable control rods could be indicative of a generic problem, and investigation and resolution of the potential problem should be undertaken. The allowed Completion Time of 12 hours is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.1.3.1

The position of each control rod must be determined to ensure adequate information on control rod position is available to the operator for determining control rod OPERABILITY and controlling rod patterns. Control rod position may be determined by the use of OPERABLE position indicators, by moving control rods to a position with an OPERABLE indicator, or by the use of other appropriate methods. ~~The 24 hour Frequency of this SR is based on operating experience related to expected changes in control rod position and the availability of control rod position indications in the control room.~~ [Insert 2]

SR 3.1.3.2

Control rod insertion capability is demonstrated by inserting each partially or fully withdrawn control rod at least one notch and observing that the control rod moves. The control rod may then be returned to its original position. This ensures the control rod is not stuck and is free to insert on a scram signal. These Surveillances are not required when THERMAL POWER is less than or equal to the actual LPSP of the RWM, since the notch insertions may not be compatible with the requirements of the Banked Position Withdrawal Sequence (BPWS) (LCO 3.1.6) and the RWM (LCO 3.3.2.1). ~~Partially and fully withdrawn control rods are tested at a 31 day Frequency, based on the potential power reduction required to allow the control rod movement (Ref. 6). Furthermore, the 31 day Frequency takes into account operating experience related to changes in~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~CRD performance.~~ At any time, if a control rod is immovable, a determination of that control rod's trippability (OPERABILITY) must be made and appropriate action taken. [Insert 2]

The SR is modified by a Note that allows 31 days after withdrawal of the control rod and increasing power to above the LPSP, to perform the Surveillance. This acknowledges that the control rod must be first withdrawn and THERMAL POWER must be increased to above the LPSP before performance of the Surveillance, and therefore, the Note avoids potential conflicts with SR 3.0.1 and SR 3.0.4.

SR 3.1.3.3

Verifying that the scram time for each control rod to notch position 06 is ≤ 7 seconds provides reasonable assurance that the control rod will insert when required during a DBA or transient, thereby completing its shutdown function. This SR is performed in conjunction with the control rod scram time testing of SR 3.1.4.1, SR 3.1.4.2, SR 3.1.4.3, and SR 3.1.4.4. The LOGIC SYSTEM FUNCTIONAL TEST in LCO 3.3.1.1, "Reactor Protection System (RPS) Instrumentation," and the functional testing of SDV vent and drain valves in LCO 3.1.8, "Scram Discharge Volume (SDV) Vent and Drain Valves," overlap this Surveillance to provide complete testing of the assumed safety function. The associated Frequencies are acceptable, considering the more frequent testing performed to demonstrate other aspects of control rod OPERABILITY and operating experience, which shows scram times do not significantly change over an operating cycle.

SR 3.1.3.4

Coupling verification is performed to ensure the control rod is connected to the CRDM and will perform its intended function when necessary. The Surveillance requires verifying that a control rod does not go to the withdrawn overtravel position when it is fully withdrawn. The overtravel position feature provides a positive check on the coupling integrity since only an uncoupled CRD can reach the overtravel position. The verification is required to be performed any time a control rod is withdrawn to the "full out" position (notch position 48) or prior to declaring the control rod OPERABLE after work on the control rod or CRD System that could affect coupling. This includes control rods inserted one notch and then returned to the "full out" position during the performance of SR 3.1.3.2. This Frequency is acceptable, considering the low probability that a control rod will become uncoupled when it is not being moved and operating experience related to uncoupling events.

BASES

SURVEILLANCE REQUIREMENTS (continued)

with pressure and to allow a range of pressures over which scram time testing can be performed. To ensure that scram time testing is performed within a reasonable time following a shutdown ≥ 120 days or longer, control rods are required to be tested before exceeding 40% RTP following the shutdown. This Frequency is acceptable considering the additional Surveillances performed for control rod OPERABILITY, the frequent verification of adequate accumulator pressure, and the required testing of control rods affected by fuel movement within the associated core cell and by work on control rods or the CRD System.

SR 3.1.4.2

Additional testing of a sample of control rods is required to verify the continued performance of the scram function during the cycle. A representative sample contains at least 10% of the control rods. The sample remains representative if no more than 7.5% of the control rods in the sample tested are determined to be "slow." With more than 7.5% of the sample declared to be "slow" per the criteria in Table 3.1.4-1, additional control rods are tested until this 7.5% criterion (e.g., 7.5% of the entire sample size) is satisfied, or until the total number of "slow" control rods (throughout the core, from all Surveillances) exceeds the LCO limit. For planned testing, the control rods selected for the sample should be different for each test. Data from inadvertent scrams should be used whenever possible to avoid unnecessary testing at power, even if the control rods with data may have been previously tested in a sample. ~~The 200 day Frequency is based on operating experience that has shown control rod scram times do not significantly change over an operating cycle. This Frequency is also reasonable based on the additional Surveillances done on the CRDs at more frequent intervals in accordance with LCO 3.1.3 and LCO 3.1.5, "Control Rod Scram Accumulators."~~ [Insert 2]

SR 3.1.4.3

When work that could affect the scram insertion time is performed on a control rod or the CRD System, testing must be done to demonstrate that each affected control rod retains adequate scram performance over the range of applicable reactor pressures. The scram testing must be performed once before declaring the control rod OPERABLE. The required scram time testing must demonstrate the affected control rod is still within acceptable limits. The scram time limits for reactor pressures < 800 psig are found in the Technical Requirements Manual (Ref. 7) and are established based on a high probability of meeting the acceptance

BASES

ACTIONS (continued)

degraded during a depressurization event or at low reactor pressures. Therefore, immediately upon discovery of charging water header pressure < 940 psig, concurrent with Condition C, all control rods associated with inoperable accumulators must be verified to be fully inserted. Withdrawn control rods with inoperable accumulators may fail to scram under these low pressure conditions. The associated control rods must also be declared inoperable within 1 hour. The allowed Completion Time of 1 hour is reasonable for Required Action C.2, considering the low probability of a DBA or transient occurring during the time that the accumulator is inoperable.

D.1

The reactor mode switch must be immediately placed in the shutdown position if either Required Action and associated Completion Time associated with loss of the CRD pump (Required Actions B.1 and C.1) cannot be met. This ensures that all insertable control rods are inserted and that the reactor is in a condition that does not require the active function (i.e., scram) of the control rods. This Required Action is modified by a Note stating that the action is not applicable if all control rods associated with the inoperable scram accumulators are fully inserted, since the function of the control rods has been performed.

SURVEILLANCE REQUIREMENTS

SR 3.1.5.1

SR 3.1.5.1 requires that the accumulator pressure be checked ~~every 7 days~~ [periodically] to ensure adequate accumulator pressure exists to provide sufficient scram force. The primary indicator of accumulator OPERABILITY is the accumulator pressure. A minimum accumulator pressure is specified, below which the capability of the accumulator to perform its intended function becomes degraded and the accumulator is considered inoperable. The minimum accumulator pressure of 940 psig is well below the expected pressure of 1100 psig. Declaring the accumulator inoperable when the minimum pressure is not maintained ensures that significant degradation in scram times does not occur. ~~The 7 day Frequency has been shown to be acceptable through operating experience and takes into account indications available in the control room.~~ [Insert 2]

REFERENCES

1. USAR, Chapter 3.

2. USAR, Chapter 14.

3. USAR, Chapter 14A.

ACTIONS (continued)

Required Action A.1 is modified by a Note which allows the RWM to be bypassed to allow the affected control rods to be returned to their correct position. LCO 3.3.2.1 requires verification of control rod movement by a second licensed operator (Operator or Senior Operator) or by a qualified member of the technical staff (e.g., engineer). This helps to ensure that the control rods will be moved to the correct position. A control rod not in compliance with the prescribed sequence is not considered inoperable except as required by Required Action A.2. The allowed Completion Time of 8 hours is reasonable, considering the restrictions on the number of allowed out of sequence control rods and the low probability of a CRDA occurring during the time the control rods are out of sequence.

B.1 and B.2

If nine or more OPERABLE control rods are out of sequence, the control rod pattern significantly deviates from the prescribed sequence. Control rod withdrawal should be suspended immediately to prevent the potential for further deviation from the prescribed sequence. Control rod insertion to correct control rods withdrawn beyond their allowed position is allowed since, in general, insertion of control rods has less impact on control rod worth than withdrawals have. Required Action B.1 is modified by a Note which allows the RWM to be bypassed to allow the affected control rods to be returned to their correct position. LCO 3.3.2.1 requires verification of control rod movement by a second licensed operator (Operator or Senior Operator) or by a qualified member of the technical staff (e.g., engineer).

When nine or more OPERABLE control rods are not in compliance with BPWS, the reactor mode switch must be placed in the shutdown position within 1 hour. With the mode switch in shutdown, the reactor is shut down, and as such, does not meet the applicability requirements of this LCO. The allowed Completion Time of 1 hour is reasonable to allow insertion of control rods to restore compliance, and is appropriate relative to the low probability of a CRDA occurring with the control rods out of sequence.

SURVEILLANCE REQUIREMENTS

SR 3.1.6.1

periodically

The control rod pattern is verified to be in compliance with the BPWS ~~at a 24 hour Frequency~~ to ensure the assumptions of the CRDA analyses are met. ~~The 24 hour Frequency was developed considering that the primary check on compliance with the BPWS is performed by the RWM (LCO 3.3.2.1), which~~ provides control rod blocks to enforce the required sequence and is required to be OPERABLE when operating at ≤ 10% RTP.

[Insert 2]. The RWM

SURVEILLANCE REQUIREMENTS

SR 3.1.7.1 and SR 3.1.7.2

SR 3.1.7.1 and SR 3.1.7.2 ~~are 24 hour Surveillances~~ verify~~ing~~ certain characteristics of the SLC System (e.g., the volume and temperature of the borated solution in the storage tank), thereby ensuring SLC System OPERABILITY without disturbing normal plant operation. These Surveillances ensure that the proper borated solution volume and temperature are maintained. Maintaining a minimum specified borated solution temperature is important in ensuring that the boron remains in solution and does not precipitate out in the storage tank. The temperature versus concentration curve of Figure 3.1.7-2 ensures that a 5°F margin will be maintained above the saturation temperature. The volume of sodium pentaborate solution requirements in Figure 3.1.7-1 and Table 3.1.7-1 Equation 1 will ensure both the original design basis and the ATWS design basis are met. Figure 3.1.7-1 can only be used if the B-10 enrichment in the storage tank is ≥ 55.0 atom percent. If the volume requirement of Table 3.1.7-1 Equation 1 is utilized for verification of volume requirements the concentration requirements for the original design basis can also be considered to be met. However, to verify the ATWS design basis requirements are met, Table 3.1.7-1 Equation 2 must be used to verify the concentration of sodium pentaborate solution requirements are met. The AST design basis for suppression pool pH control is preserved if the requirements of Figure 3.1.7-1 are met. ~~The 24 hour Frequency is based on operating experience and has shown there are relatively slow variations in the measured parameters of volume and temperature.~~ [Insert 1]

SR 3.1.7.3

SR 3.1.7.3 ~~is a 24 hour Surveillance that~~ requires the verification that the room temperature in the vicinity of the SLC pumps is within the solution temperature limits of Figure 3.1.7-2 or that the SLC pump suction lines heat tracing is OPERABLE. This Surveillance will help ensure that the proper borated solution temperature of the pump suction piping is maintained. Maintaining a minimum specified room temperature is important in ensuring that the boron remains in solution and does not precipitate out in the pump suction piping. The temperature versus concentration curve of Figure 3.1.7-2 ensures that a 5°F margin will be maintained above the saturation temperature. An acceptable alternate requirement is to verify the pump suction lines heat tracing is OPERABLE. The heat tracing is sized to maintain the pump suction above 70°F when the room temperature is 45°F. OPERABILITY of the heat tracing is confirmed by verifying the light associated with each controller is on, or by depressing the toggle switch and ensuring the light is on. ~~The 24 hour Frequency is based on operating experience and has shown there are relatively slow variations in the measured room temperature.~~ [Insert 2]

SURVEILLANCE REQUIREMENTS (continued)

SR 3.1.7.4 and SR 3.1.7.6

SR 3.1.7.4 verifies the continuity of the explosive charges in the injection valves to ensure that proper operation will occur if required. Other administrative controls, such as those that limit the shelf life of the explosive charges, must be followed. ~~The 31 day Frequency is based on operating experience and has demonstrated the reliability of the explosive charge continuity.~~ [Insert 2]

SR 3.1.7.6 verifies that each valve in the system is in its correct position, but does not apply to the squib (i.e., explosive) valves. Verifying the correct alignment for manual valves in the SLC System flow path provides assurance that the proper flow paths will exist for system operation. A valve is also allowed to be in the nonaccident position provided it can be aligned to the accident position from the control room, or locally by a dedicated operator at the valve control. This is acceptable since the SLC System is a manually initiated system. This Surveillance also does not apply to valves that are locked, sealed, or otherwise secured in position since they are verified to be in the correct position prior to locking, sealing, or securing. This verification of valve alignment does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves. ~~The 31 day Frequency is based on engineering judgment and is consistent with the procedural controls governing valve operation that ensures correct valve positions.~~ [Insert 2]

SR 3.1.7.5

This Surveillance requires an examination of the sodium pentaborate solution by using chemical analysis to ensure that the proper concentration of sodium pentaborate exists in the storage tank. The concentration of sodium pentaborate in solution required in Figure 3.1.7-1 will ensure the original design basis, the AST design basis for suppression pool pH control and the ATWS design basis are met. Figure 3.1.7-1 can only be used if the B-10 enrichment in the storage tank is $\geq$ 55.0 atom percent and as long as the flow rate requirements of SR 3.1.7.7 are met. Equation 2 of Table 3.1.7-1 ensures both the original design basis and ATWS design basis are satisfied. If the volume requirement of Equation 1 of Table 3.1.7-1 is utilized for verification of volume requirements the concentration requirements for the original design basis can also be considered to be met. However, to verify the ATWS requirements are met, Equation 2 of Table 3.1.7-1 must be used to verify the concentration of sodium pentaborate solution requirements are

SURVEILLANCE REQUIREMENTS (continued)

met. SR 3.1.7.5 must be performed any time sodium pentaborate or water is added to the storage tank solution to determine that the sodium pentaborate solution concentration is within the specified limits. SR 3.1.7.5 must also be performed anytime the temperature is restored to within the limits of Figure 3.1.7-2, to ensure that no significant boron

precipitation occurred. ~~The 31 day Frequency of this Surveillance is appropriate because of the relatively slow variation of sodium pentaborate concentration between Surveillances.~~ [Insert 2]

SR 3.1.7.7

Demonstrating that each SLC System pump develops a flow rate ≥ 24 gpm at a discharge pressure ≥ 1275 psig ensures that pump performance has not degraded during the fuel cycle. This minimum pump flow rate requirement ensures that, when combined with the sodium pentaborate solution concentration requirements, the rate of negative reactivity insertion from the SLC System will adequately compensate for the positive reactivity effects encountered during power reduction, cooldown of the moderator, and xenon decay. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. The Frequency of this Surveillance is in accordance with the INSERVICE TESTING PROGRAM.

SR 3.1.7.8 and SR 3.1.7.9

These Surveillances ensure that there is a functioning flow path from the boron solution storage tank to the RPV, including the firing of an explosive valve. The replacement charge for the explosive valve shall be from the same manufactured batch as the one fired or from another batch that has been certified by having one of that batch successfully fired. ~~The pump and explosive valve tested should be alternated such that both complete flow paths are tested every 48 months at alternating 24 month intervals.~~ The Surveillance may be performed in separate steps to prevent injecting boron into the RPV. An acceptable method for verifying flow from the pump to the RPV is to pump demineralized water from a test tank through one manually initiated SLC subsystem and into the RPV. ~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency; therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ [Insert 2]

SURVEILLANCE REQUIREMENTS (continued)

Demonstrating that all heat traced piping between the boron solution storage tank and the suction inlet to the injection pumps is unblocked ensures that there is a functioning flow path for injecting the sodium pentaborate solution. An acceptable method for verifying that the suction piping is unblocked is to pump from the storage tank to the test tank.

[Insert 2] ~~The 24 month Frequency is acceptable since there is a low probability that the subject piping will be blocked due to precipitation of the boron from solution in the heat traced piping.~~ This is especially true in light of the temperature verification of this piping required by SR 3.1.7.3. However, if, in performing SR 3.1.7.3, it is determined that the temperature of this piping has fallen below the specified minimum and the SLC pump suction lines heat tracing is inoperable, SR 3.1.7.9 must be performed once within 24 hours after the room temperature in the vicinity of the SLC pumps is restored to within the solution temperature limits of Figure 3.1.7-2.

SR 3.1.7.10

Enriched sodium pentaborate solution is made by mixing granular, enriched sodium pentaborate with water. Isotopic tests (laboratory analyses) on the granular sodium pentaborate to verify the actual B-10 enrichment must be performed prior to addition to the SLC tank in order to ensure that the proper B-10 atom percentage is being used.

REFERENCES

1. 10 CFR 50.62
2. NUREG-1465, “Accident Source Term for Light-Water Nuclear Power Plants, Final Report,” February 1995.
3. USAR, Section 6.6.1.1.
4. 10 CFR 50.67 “Accident Source Term”
5. USAR Section 14.7.2.4

BASES

ACTIONS (continued)

B.1

If both valves in a line are inoperable, the line must be isolated to contain the reactor coolant during a scram. The 8 hour Completion Time to isolate the line is based on the low probability of a scram occurring while the line is not isolated and unlikelihood of significant CRD seal leakage.

C.1

If any Required Action and associated Completion Time is not met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 12 hours. The allowed Completion Time of 12 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.1.8.1

During normal operation, the SDV vent and drain valves should be in the open position (except when performing SR 3.1.8.2) to allow for drainage of the SDV piping. Verifying that each valve is in the open position ensures that the SDV vent and drain valves will perform their intended functions during normal operation. This SR does not require any testing or valve manipulation; rather, it involves verification that the valves are in the correct position.

~~The 31 day Frequency is based on engineering judgment and is consistent with the procedural controls governing valve operation, which ensure correct valve positions.~~ [Insert 2]

SR 3.1.8.2

During a scram, the SDV vent and drain valves should close to contain the reactor water discharged to the SDV piping. Cycling each valve through its complete range of motion (closed and open) ensures that the valve will function properly during a scram. ~~The 92 day Frequency is based on operating experience and takes into account the level of redundancy in the system design.~~ [Insert 2]

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.1.8.3

SR 3.1.8.3 is an integrated test of the SDV vent and drain valves to verify total system performance. After receipt of a simulated or actual scram signal, the closure of the SDV vent and drain valves is verified. The closure time of 30 seconds after receipt of a scram signal is based on the bounding leakage case evaluated in the accident analysis (Ref. 3). Similarly, after receipt of a simulated or actual scram reset signal, the opening of the SDV vent and drain valves is verified. The LOGIC SYSTEM FUNCTIONAL TEST in LCO 3.3.1.1 and the scram time testing of control rods in LCO 3.1.3, "Control Rod OPERABILITY," overlap this Surveillance to provide complete testing of the assumed safety function. ~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency; therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ [Insert 2]

REFERENCES

1. USAR, Section 3.5.3.3.3.5.
2. 10 CFR 50.67, Accident Source Term.
3. NUREG-0803, "Generic Safety Evaluation Report Regarding Integrity of BWR Scram System Piping," August 1981.

BASES

ACTIONS (continued)

B.1

If the APLHGR cannot be restored to within its required limits within the associated Completion Time, the plant must be brought to a MODE or other specified condition in which the LCO does not apply. To achieve this status, THERMAL POWER must be reduced to < 25% RTP within 4 hours. The allowed Completion Time is reasonable, based on operating experience, to reduce THERMAL POWER to < 25% RTP in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.2.1.1

periodically

APLHGRs are required to be initially calculated within 12 hours after THERMAL POWER is ≥ 25% RTP and ~~then every 24 hours~~ thereafter. They are compared to the specified limits in the COLR to ensure that the reactor is operating within the assumptions of the safety analysis. ~~The 24 hour Frequency is based on both engineering judgment and recognition of the slowness of changes in power distribution during normal operation.~~ The 12 hour allowance after THERMAL POWER ≥ 25% RTP is achieved is acceptable given the large inherent margin to operating limits at low power levels. [Insert 2]

REFERENCES

1. NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel" (revision specified in Specification 5.6.3).

2. USAR, Chapter 3.

3. USAR, Section 6.2.6.

4. USAR, Section 14.7.2.

5. USAR, Section 14.3.

6. USAR, Chapter 14A.

7. NEDE-23785-P (A), Revision 1, "The GESTR-LOCA and SAFER Models for Evaluation of the Loss-of-Coolant Accident (Volume III), SAFER/GESTR Application Methodology," October 1984.

8. NEDC-30515, "GE BWR Extended Load Line Limit Analysis for Monticello Nuclear Generating Plant, Cycle 11," March 1984.

BASES

ACTIONS (continued)

restore the MCPR(s) to within its limits and is acceptable based on the low probability of a transient or DBA occurring simultaneously with the MCPR out of specification.

B.1

If the MCPR cannot be restored to within its required limits within the associated Completion Time, the plant must be brought to a MODE or other specified condition in which the LCO does not apply. To achieve this status, THERMAL POWER must be reduced to < 25% RTP within 4 hours. The allowed Completion Time is reasonable, based on operating experience, to reduce THERMAL POWER to < 25% RTP in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.2.2.1

The MCPR is required to be initially calculated [periodically] within 12 hours after THERMAL POWER is ≥ 25% RTP and ~~then every 24 hours~~ thereafter. It is compared to the specified limits in the COLR to ensure that the reactor is operating within the assumptions of the safety analysis. ~~The 24 hour Frequency is based on both engineering judgment and recognition of the slowness of changes in power distribution during normal operation.~~ The 12 hour allowance after THERMAL POWER ≥ 25% RTP is achieved is acceptable given the large inherent margin to operating limits at low power levels. [Insert 2]

SR 3.2.2.2

Because the transient analysis takes credit for conservatism in the scram speed performance, it must be demonstrated that the specific scram speed distribution is consistent with that used in the transient analysis. SR 3.2.2.2 determines actual scram speed distribution and compares it with the assumed distribution. The MCPR operating limit is determined based either on the applicable limit associated with scram times of LCO 3.1.4, "Control Rod Scram Times," or the nominal scram times. The scram speed dependent MCPR limits are contained in the COLR. This determination must be performed within 72 hours after each set of control rod scram time tests required by SR 3.1.4.1 and SR 3.1.4.2 because the effective scram speed distribution may change during the cycle. The 72 hour Completion Time is acceptable due to the relatively minor changes in the actual control rod scram speed distribution expected during the fuel cycle.

SURVEILLANCE REQUIREMENTS

SR 3.2.3.1

periodically

The LHGRs are required to be initially calculated within 12 hours after THERMAL POWER is ≥ 25% RTP and ~~then every 24 hours~~ thereafter. They are compared to the specified limits in the COLR to ensure that the reactor is operating within the assumptions of the safety analysis. ~~The 24 hour Frequency is based on both engineering judgment and recognition of the slow changes in power distribution during normal operation.~~ The 12 hour allowance after THERMAL POWER ≥ 25% RTP is achieved is acceptable given the large inherent margin to operating limits at lower power levels. [Insert 2]

REFERENCES

1. USAR, Chapter 14.
2. USAR, Chapter 3.
3. NUREG-0800, Section II.A.2(g), Revision 2, July 1981.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.1.1

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

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

[Insert 2] ~~The Frequency is based upon operating experience that demonstrates channel failure is rare.~~ The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the LCO.

SR 3.3.1.1.2

To ensure that the APRMs are accurately indicating the true core average power, the APRMs are calibrated to the reactor power calculated from a heat balance. ~~The Frequency of once per 7 days is based on minor changes in LPRM sensitivity, which could affect the APRM reading between performances of SR 3.3.1.1.6.~~ [Insert 2]

A restriction to satisfying this SR when < 25% RTP is provided that requires the SR to be met only at ≥ 25% RTP because it is difficult to accurately maintain APRM indication of core THERMAL POWER consistent with a heat balance when < 25% RTP. At low power levels, a high degree of accuracy is unnecessary because of the large, inherent margin to thermal limits (MCPR and APLHGR). At ≥ 25% RTP, the Surveillance is required to have been satisfactorily performed ~~within the last 7 days,~~ in accordance with SR 3.0.2. A Note is provided which allows an increase in THERMAL POWER above 25% if the ~~7 day~~ Frequency is not met per SR 3.0.2. In this event, the SR must be performed within 12 hours after reaching or exceeding 25% RTP. Twelve hours is based on operating experience and in consideration of providing a reasonable time in which to complete the SR.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.1.3

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

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

As noted, SR 3.3.1.1.3 is not required to be performed when entering MODE 2 from MODE 1, since testing of the MODE 2 required IRM Functions cannot be performed in MODE 1 without utilizing jumpers, lifted leads, or movable links. This allows entry into MODE 2 if the ~~7 day~~ Frequency is not met per SR 3.0.2. In this event, the SR must be performed within 12 hours after entering MODE 2 from MODE 1. Twelve hours is based on operating experience and in consideration of providing a reasonable time in which to complete the SR.

~~A Frequency of 7 days provides an acceptable level of system average unavailability over the Frequency interval and is based on reliability analysis (Ref. 16).~~ [Insert 2]

SR 3.3.1.1.4

A functional test of each automatic scram contactor is performed to ensure that each automatic RPS logic channel will perform the intended function. There are four RPS channel test switches, one associated with each of the four automatic trip channels (A1, A2, B1 and B2). These test switches allow the operator to test the OPERABILITY of the individual trip logic channel automatic scram contactors as an alternative to using an automatic scram function trip. This is accomplished by placing the RPS channel test switch in the test position, which will input a trip signal into the associated RPS logic channel. The RPS channel test switches are not credited in the accident analysis, they just provide a method to test the automatic scram contactors. The Manual Scram Functions are not configured the same as the generic model used in Reference 16. However, Reference 16 concluded that the Surveillance Frequency extensions for RPS Functions were not affected by the difference in

BASES

SURVEILLANCE REQUIREMENTS (continued)

configuration since each automatic RPS logic channel has a test switch that is functionally the same as the manual scram switches in the generic model. As such, a functional test of each RPS automatic scram contactor using either its associated test switch or by test of any of the associated automatic RPS Functions is required to be performed ~~once every 7 days~~. ~~The Frequency of 7 days is based on the reliability analysis of Reference 16.~~ [Insert 2]

SR 3.3.1.1.5

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the channel will perform the intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specification and non-Technical Specification tests at least once per refueling interval with applicable extensions. ~~The 31 day Frequency is based on engineering judgment, operating experience, and reliability of this instrumentation.~~ [Insert 2]

SR 3.3.1.1.6

LPRM gain settings are determined from the local flux profiles measured by the Traversing Incore Probe (TIP) System. This establishes the relative local flux profile for appropriate representative input to the APRM System. ~~The 1000 MWD/T Frequency (Ref. 30) is based on operating experience with LPRM sensitivity changes.~~ [Insert 2]

SR 3.3.1.1.7 and SR 3.3.1.1.10

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the channel will perform the intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specification and non-Technical Specification tests at least once per refueling interval with applicable extensions. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology. The CHANNEL FUNCTIONAL TEST (SR 3.3.1.1.10) for the Reactor Mode

BASES

SURVEILLANCE REQUIREMENTS (continued)

Switch – Shutdown Position channels will be performed by placing the reactor mode switch in the shutdown position.

~~The 92 day Frequency of SR 3.3.1.1.7 is based on the reliability analysis of Reference 16. The 24 month Frequency of SR 3.3.1.1.10 is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency.~~ [Insert 1]

SR 3.3.1.1.8

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

~~The Frequency of 92 days is based on the reliability analysis of Reference 16.~~ [Insert 2]

SR 3.3.1.1.9 and SR 3.3.1.1.11

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

CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology. For the APRM Simulated Thermal Power - High Function, this SR also includes calibrating the associated recirculation loop flow channel.

Note 1 to SR 3.3.1.1.11 state that neutron detectors are excluded from CHANNEL CALIBRATION because they are passive devices, with minimal drift, and because of the difficulty of simulating a meaningful signal. Changes in APRM neutron detector sensitivity are compensated for by performing the ~~7 day~~ calorimetric calibration (SR 3.3.1.1.2) and the ~~1000 MWD/T~~ LPRM calibration (Ref. 30) against the TIPs (SR 3.3.1.1.6).

BASES

SURVEILLANCE REQUIREMENTS (continued)

Note 2 to SR 3.3.1.1.11 requires the IRM SRs to be performed within 12 hours of entering MODE 2 from MODE 1. This Note allows entry into MODE 2 from MODE 1 if the associated Frequency is not met per SR 3.0.2. Twelve hours is based on operating experience and in consideration of providing a reasonable time in which to complete the SR. Note 3 is added to SR 3.3.1.1.11 to clarify that the recirculation flow transmitters that feed the APRMs are included in the CHANNEL CALIBRATION.

~~The Frequency of SR 3.3.1.1.9 is based upon the assumption of a 92 day calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis. The Frequency of SR 3.3.1.1.11 is based upon the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis. The Frequency of SR 3.3.1.1.11 for the APRM / OPRM functions is based upon a 24 month calibration interval (Refs. 17 and 21).~~ [Insert 1]

SR 3.3.1.1.11 for Function 2.c, APRM Neutron Flux - High, is modified by two Notes. This function was determined by the NRC Safety Evaluation for Amendment 159 (Ref. 24) to be a LSSS for the protection of the reactor core SLs.

Note (f) requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is not the NTSP but is conservative with respect to the Allowable Value. Evaluation of instrument performance will verify that the instrument will continue to perform in accordance with design basis assumptions. The purpose of the assessment is to ensure confidence in the instrument performance prior to returning the instrument to service. This nonconformance will be entered into the Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition for continued OPERABILITY.

Note (g) requires that the as-left setting for the instrument be returned to the NTSP. If the as-left instrument setting cannot be returned to the NTSP, then the instrument channel shall be declared inoperable. The NTSP and the methodology used to determine the NTSP for the APRM Neutron Flux - High Function, (Function 2.c) in Table 3.3.1.1-1 are specified in Appendix C to the Technical Requirements Manual, a document controlled under 10 CFR 50.59.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.1.12

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

The LOGIC SYSTEM FUNCTIONAL TEST for APRM Function 2.e simulates APRM and OPRM trip conditions at the 2-out-of-4 voter channel inputs to check all combinations of two tripped inputs to the 2-out-of-4 logic in the voter channels and APRM related redundant RPS relays.

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency. The Frequency of SR 3.3.1.1.12 for the APRM 2-Out-Of-4 Voter Function is based upon a 24 month calibration interval (Refs. 17 and 21).~~ [Insert 2]

SR 3.3.1.1.13

This SR ensures that scrams initiated from the Turbine Stop Valve - Closure and Turbine Control Valve Fast Closure, Acceleration Relay Oil Pressure - Low Functions will not be inadvertently bypassed when THERMAL POWER is > 40% RTP (Refs. 29 and 30). This involves calibration of the bypass channels. Adequate margins for the instrument setpoint methodologies are incorporated into the actual setpoint. Because main turbine bypass flow can affect this setpoint nonconservatively (THERMAL POWER is derived from turbine first stage pressure), the main turbine bypass valves must remain closed during in-service calibration at THERMAL POWER > 40% RTP (Refs. 29 and 30), if performing the calibration using actual turbine first stage pressure, to ensure that the calibration is valid. The pressure switches are normally adjusted lower (26.6% RTP – Refs. 29 and 30) to account for the turbine bypass valves being opened, such that approximately 11.5% of rated steam flow (Refs. 27 and 30) is being passed directly to the condenser.

BASES

SURVEILLANCE REQUIREMENTS (continued)

If any bypass channel's setpoint is nonconservative (i.e., the Functions are bypassed at > 40% RTP, either due to open main turbine bypass valve(s) or other reasons), then the affected Turbine Stop Valve – Closure and Turbine Control Valve Fast Closure, Acceleration Relay Oil Pressure - Low Functions are considered inoperable. Alternatively, the bypass channel can be placed in the conservative condition (nonbypass). If placed in the nonbypass condition, this SR is met and the channel is considered OPERABLE.

~~The Frequency of 24 months is based on engineering judgment and reliability of the components.~~ [Insert 2]

SR 3.3.1.1.14

This SR ensures that the individual channel response times are less than or equal to the maximum values assumed in the accident analysis. RPS RESPONSE TIME may be verified by actual response time measurements in any series of sequential, overlapping, or total channel measurements.

The RPS RESPONSE TIME acceptance criterion is 50 milliseconds.

RPS RESPONSE TIME for the APRM 2-Out-Of-4 Voter Function (Function 2.e), includes the output relays of the voter and the associated RPS relays and contactors. (The digital portion of the APRM and 2-out-of-4 voter channels are excluded from RPS RESPONSE TIME testing because self-testing and calibration checks the time base of the digital electronics. Confirmation of the time base is adequate to assure required response times are met. Neutron detectors are excluded from RPS RESPONSE TIME testing because the principles of detector operation virtually ensure an instantaneous response time.)

~~RPS RESPONSE TIME tests are conducted on a 24 month STAGGERED TEST BASIS. Note 2 requires STAGGERED TEST BASIS Frequency to be determined based on 4 channels per trip system, in lieu of the 8 channels specified in Table 3.3.1.1-1 for the MSIV - Closure Function.~~

~~APRM and OPRM RESPONSE TIME tests are conducted on a 24 month STAGGERED TEST BASIS. Note 1 requires the STAGGERED TEST BASIS to be determined based on 4 channels of APRM outputs and 4 channels of OPRM outputs, (total n = 8) being tested on an alternating basis.~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~This allows the STAGGERED TEST BASIS Frequency for Function 2.e to be determined based on 8 channels rather than the 4 actual 2-Out-Of-4 Voter channels. The redundant outputs from the 2-Out-Of-4 Voter channel (2 for APRM trips and 2 for OPRM trips) are considered part of the same channel, but the OPRM and APRM outputs are considered to be separate channels for application of SR 3.3.1.1.14, so n = 8. The note further requires that testing of OPRM and APRM outputs from a 2-Out-Of-4 Voter be alternated. In addition to these commitments, References 17 and 21 require that the testing of inputs to each RPS Trip System alternate.~~

~~Combining these frequency requirements, an acceptable test sequence is one that:~~

~~a) Tests each RPS Trip System interface every other cycle,~~

~~b) Alternates the testing of APRM and OPRM outputs from any specific 2-Out-Of-4 Voter channel, and~~

~~c) Alternates between divisions at least every other test cycle.~~

~~After 8 cycles, the sequence repeats.~~

~~Each test of an OPRM or APRM output tests each of the redundant outputs from the 2-Out-Of-4 Voter channel for that Function and each of the corresponding relays in the RPS. Consequently, each of the RPS relays is tested every fourth cycle. This RPS relay testing frequency is twice the frequency justified by References 17 and 21.~~

~~This Frequency is based on the logic interrelationships of the various channels required to produce an RPS scram signal. The 24 month Frequency is consistent with the typical industry refueling cycle and is based upon plant operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences~~. [Insert 2]

SR 3.3.1.1.15

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function. For the APRM Functions, this test supplements the automatic self-test functions that operate continuously in the APRM and voter channels. The APRM CHANNEL FUNCTIONAL TEST covers the APRM channels (including recirculation flow processing -- applicable to Function 2.b and 2.f only), the 2-out-of-4 voter channels, and the interface connections into

BASES

SURVEILLANCE REQUIREMENTS (continued)

the RPS trip systems from the voter channels. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology. ~~The 184 day Frequency of SR 3.3.1.1.15 is based on the reliability analysis of References 17 and 21.~~ [Insert 2] (NOTE: The actual voting logic of the 2-Out-Of-4 Voter Function is tested as part of SR 3.3.1.1.12.).

Note 1 is provided for Function 2.a to clarify that this SR is required to be performed within 12 hours of entering MODE 2 from MODE 1. Testing of the MODE 2 APRM Function cannot be performed in MODE 1 without utilizing jumpers or lifted leads. Note 1 allows entry into MODE 2 from MODE 1 if the associated Frequency is not met per SR 3.0.2.

Note 2 is added to clarify that the CHANNEL FUNCTIONAL TEST is limited to the recirculation flow input processing and does not include the flow transmitters.

SR 3.3.1.1.16

This SR ensures that scrams initiated from OPRM Upscale Function (Function 2.f) will not be inadvertently bypassed when the THERMAL POWER, as indicated by the APRM Simulated Thermal Power, is ≥ 25% RTP and core flow, as indicated by recirculation drive flow, is ≤ 60% rated core flow. This normally involves confirming the bypass setpoints. Adequate margins for the instrument setpoint methodologies are incorporated into the actual setpoint. The actual surveillance ensures that the OPRM Upscale Function is enabled (not bypassed) for the correct values of APRM Simulated Thermal Power and recirculation drive flow.

SR 3.3.1.1.11 and the Monticello core flow measurement system calibration procedure ensure that the APRM Simulated Thermal Power and recirculation flow properly correlate with THERMAL POWER and core flow, respectively.

If any bypass setpoint is non-conservative (i.e., the OPRM Upscale Function is bypassed when APRM Simulated Thermal Power ≥ 25% and recirculation drive flow ≤ 60% rated), then the affected channel is considered inoperable for the OPRM Upscale Function. Alternatively, the bypass setpoint may be adjusted to place the channel in a conservative condition (non-bypass). If placed in the non-bypass condition, this SR is met and the channel is considered OPERABLE.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~The Frequency of 24 months is based on engineering judgment and reliability of the components. The Frequency of SR 3.3.1.1.16 for the APRM OPRM Upscale Function is based upon a 24 month calibration interval (Refs. 17 and 21).~~ [Insert 2]

REFERENCES

1. Regulatory Guide 1.105, Revision 3, "Setpoints for Safety-Related Instrumentation."
2. USAR, Section 7.6.1.2.1.
3. USAR, Section 7.6.1.2.5.
4. USAR, Chapter 14.
5. USAR, Chapter 14A.
6. USAR, Section 7.8.2.1.
7. USAR, Section 7.3.4.3.
8. Not Used.
9. USAR, Section 14.5.1.
10. USAR, Section 14.7.1.
11. USAR, Section 14.7.2.
12. USAR, Section 14.7.3.
13. P. Check (NRC) letter to G. Lainas (NRC), "BWR Scram Discharge System Safety Evaluation," December 1, 1980.
14. USAR, Section 14.4.5.
15. USAR, Section 14.4.1.
16. NEDC-30851-P-A, "Technical Specification Improvement Analyses for BWR Reactor Protection System," March 1988.

BASES

SURVEILLANCE REQUIREMENTS (continued)

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

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

[Insert 1] ~~The Frequency of once every 12 hours for SR 3.3.1.2.1 is based on operating experience that demonstrates channel failure is rare. While in MODES 3 and 4, reactivity changes are not expected; therefore, the 12 hour Frequency is relaxed to 24 hours for SR 3.3.1.2.3.~~ The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the LCO.

SR 3.3.1.2.2

To provide adequate coverage of potential reactivity changes in the core, one SRM is required to be OPERABLE in the quadrant where CORE ALTERATIONS are being performed, and the other OPERABLE SRM must be in an adjacent quadrant containing fuel. Note 1 states that the SR is required to be met only during CORE ALTERATIONS. It is not required to be met at other times in MODE 5 since core reactivity changes are not occurring. This Surveillance consists of a review of plant logs to ensure that SRMs required to be OPERABLE for given CORE ALTERATIONS are, in fact, OPERABLE. In the event that only one SRM is required to be OPERABLE, per Table 3.3.1.2-1, footnote (b), only the a. portion of this SR is required. Note 2 clarifies that more than one of the three requirements can be met by the same OPERABLE SRM. ~~The 12 hour Frequency is based upon operating experience and supplements operational controls over refueling activities that include steps to ensure that the SRMs required by the LCO are in the proper quadrant.~~ [Insert 2]

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.2.4

This Surveillance consists of a verification of the SRM instrument readout to ensure that the SRM reading is greater than a specified minimum count rate with the detector full in, which ensures that the detectors are indicating count rates indicative of neutron flux levels within the core. With few fuel assemblies loaded, the SRMs will not have a high enough count rate to satisfy the SR. Therefore, allowances are made for loading sufficient "source" material, in the form of irradiated fuel assemblies, to establish the minimum count rate.

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

~~The Frequency is based upon channel redundancy and other information available in the control room, and ensures that the required channels are frequently monitored while core reactivity changes are occurring. When no reactivity changes are in progress, the Frequency is relaxed from 12 hours to 24 hours.~~ [Insert 2]

SR 3.3.1.2.5 and SR 3.3.1.2.6

Performance of a CHANNEL FUNCTIONAL TEST demonstrates the associated channel will function properly. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. SR 3.3.1.2.5 is required in MODE 5, and the ~~7 day~~ Frequency ensures that the channels are OPERABLE while core reactivity changes could be in progress. ~~This Frequency is reasonable, based on operating experience and on other Surveillances (such as a CHANNEL CHECK), that ensure proper functioning between CHANNEL FUNCTIONAL TESTS.~~ [Insert 2]

BASES

SURVEILLANCE REQUIREMENTS (continued)

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

Verification of the signal to noise ratio also ensures that the detectors are inserted to an acceptable operating level. In a fully withdrawn condition, the detectors are sufficiently removed from the fueled region of the core to essentially eliminate neutrons from reaching the detector. Any count rate obtained while the detectors are fully withdrawn is assumed to be "noise" only.

With few fuel assemblies loaded, the SRMs will not have a high enough count rate to determine the signal to noise ratio. Therefore, allowances are made for loading sufficient source material, in the form of irradiated fuel assemblies, to establish the conditions necessary to determine signal to noise ratio. To accomplish this, SR 3.3.1.2.5 is modified by a Note that states that the determination of signal to noise ratio is not required to be met on an SRM that has less than or equal to two fuel assemblies adjacent to the SRM and no other fuel assemblies are in the associated core quadrant. With two or less fuel assemblies loaded around each SRM and no other fuel assemblies in the associated quadrant, even with the control rod withdrawn the configuration will not be critical. The Note to SR 3.3.1.2.6 allows the Surveillance to be delayed until entry into the specified condition of the Applicability (THERMAL POWER decreased to IRM Range 2 or below). The SR must be performed within 12 hours after IRMs are on Range 2 or below. The allowance to enter the Applicability with the ~~31 day~~ Frequency not met is reasonable, based on the limited time of 12 hours allowed after entering the Applicability and the inability to perform the Surveillance while at higher power levels. Although the Surveillance could be performed while on IRM Range 3, the plant would not be expected to maintain steady state operation at this power level. In this event, the 12 hour Frequency is reasonable, based on the SRMs being otherwise verified to be OPERABLE (i.e., satisfactorily performing the CHANNEL CHECK) and the time required to perform the Surveillances.

SR 3.3.1.2.7

Performance of a CHANNEL CALIBRATION ~~at a Frequency of 24 months~~ verifies the performance of the SRM circuitry. ~~The Frequency considers the plant conditions required to perform the test, the ease of performing~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~the test, and the likelihood of a change in the system or component status.~~[Insert 2]

This SR is modified by two Notes. Note 1 excludes the neutron detectors from the CHANNEL CALIBRATION because they cannot readily be adjusted. The detectors are fission chambers that are designed to have a relatively constant sensitivity over the range and with an accuracy specified for a fixed useful life. Note 2 to the Surveillance allows the Surveillance to be delayed until entry into the specified condition of the Applicability. The SR must be performed in MODE 2 within 12 hours of entering MODE 2 with IRMs on Range 2 or below. The allowance to enter the Applicability with the ~~24 month~~ Frequency not met is reasonable, based on the limited time of 12 hours allowed after entering the Applicability and the inability to perform the Surveillance while at higher power levels. Although the Surveillance could be performed while on IRM Range 3, the plant would not be expected to maintain steady state operation at this power level. In this event, the 12 hour Frequency is reasonable, based on the SRMs being otherwise verified to be OPERABLE (i.e., satisfactorily performing the CHANNEL CHECK) and the time required to perform the Surveillances.

REFERENCES None.

BASES

SURVEILLANCE REQUIREMENTS (continued)

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

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology. ~~The Frequency of 184 days is based on reliability analyses (Ref. 10)~~. [Insert 2]

SR 3.3.2.1.2 and SR 3.3.2.1.3

A CHANNEL FUNCTIONAL TEST is performed for the RWM to ensure that the entire system will perform the intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The CHANNEL FUNCTIONAL TEST for the RWM is performed by: a) attempting to withdraw a control rod not in compliance with the prescribed sequence and verifying a control rod block occurs; b) verifying proper annunciation of the selection error of at least one out-of-sequence control rod in each fully inserted group; and c) performing a RWM computer on-line diagnostic test. As noted in the SRs, SR 3.3.2.1.2 is not required to be performed until 1 hour after any control rod is withdrawn at ≤ 10% RTP in MODE 2, and SR 3.3.2.1.3 is not required to be performed until 1 hour after THERMAL POWER is ≤ 10% RTP in MODE 1. This allows entry into MODE 2 for SR 3.3.2.1.2, and entry into MODE 1 when THERMAL POWER is ≤ 10% RTP for SR 3.3.2.1.3, to perform the required Surveillance if the ~~92 day~~ Frequency is not met per SR 3.0.2. The 1 hour allowance is based on operating experience and in consideration of providing a reasonable time in which to complete the SRs. ~~The Frequencies are based on reliability analysis (Ref. 8).~~ [Insert 1]

SR 3.3.2.1.4

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

As noted, neutron detectors are excluded from the CHANNEL CALIBRATION because they are passive devices, with minimal drift, and because of the difficulty of simulating a meaningful signal. Neutron detectors are adequately tested in SR 3.3.1.1.2 and SR 3.3.1.1.6.

~~The Frequency is based upon the assumption of a 24 month calibration interval (Refs. 10 and 11).~~ [Insert 2]

SR 3.3.2.1.4 for the following RBM functions is modified by two Notes as identified in Table 3.3.2.1-1. These functions, in accordance with the guidance of Regulatory Issue Summary 2006-17 (Ref. 13) and as determined in the NRC Safety Evaluation for Amendment 159 (Ref. 12), are LSSS SL-related.

Function No.	RBM Function
1.a	Low Power Range – Upscale
1.b	Intermediate Power Range – Upscale
1.c	High Power Range – Upscale

Note (h) requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is not the NTSP but is conservative with respect to the Allowable Value. For digital channel components, no as-found tolerance or as-left tolerance can be specified. Evaluation of instrument performance will verify that the instrument will continue to behave in accordance with design basis assumptions. The purpose of the assessment is to ensure confidence in the instrument performance prior to returning the instrument to service. This nonconformance will be entered into the Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition for continued OPERABILITY.

Note (i) requires that the as-left setting for the instrument be returned to the NTSP. If the as-left instrument setting cannot be returned to the NTSP, then the instrument channel shall be declared inoperable. The NTSPs and Allowable Values for Rod Block Monitor Functions 1.a, 1.b and 1.c are specified in the COLR. The methodology used to determine the NTSPs are specified in Appendix C to the Technical Requirements Manual, a document controlled under 10 CFR 50.59.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.2.1.5

The RBM setpoints are automatically varied as a function of power. The three control rod block Allowable Values required in Table 3.3.2.1-1, each within a specific power range, are specified in the COLR. The power at which the control rod block Allowable Values automatically change are based on the APRM signal's input to each RBM channel. Below the minimum power setpoint, the RBM is automatically bypassed. These control rod block bypass setpoints must be verified periodically to be less than or equal to the specified values. If any power range setpoint is nonconservative, then the affected RBM channel is considered inoperable. Alternatively, the power range channel can be placed in the conservative condition (i.e., enabling the proper RBM setpoint). If placed in this condition, the SR is met and the RBM channel is not considered inoperable. As noted, neutron detectors are excluded from the Surveillance because they are passive devices, with minimal drift, and because of the difficulty of simulating a meaningful signal. Neutron detectors are adequately tested in SR 3.3.1.1.2 and SR 3.3.1.1.6. ~~The 24 month Frequency is based on the actual trip setpoint methodology utilized for these channels.~~ [Insert 2]

SR 3.3.2.1.6

The RWM is automatically bypassed when power is above a specified value. The power level is determined from steam flow signals. The automatic bypass setpoint must be verified periodically to be > 10% RTP. If the RWM low power setpoint is nonconservative, then the RWM is considered inoperable. Alternately, the low power setpoint channel can be placed in the conservative condition (nonbypass). If placed in the nonbypassed condition, the SR is met and the RWM is not considered inoperable. ~~The 24 month Frequency is based on engineering judgment considering the reliability of the components, and that indication of whether or not the RWM is bypassed is provided in the control room.~~ [Insert 2]

SR 3.3.2.1.7

A CHANNEL FUNCTIONAL TEST is performed for the Reactor Mode Switch - Shutdown Position Function to ensure that the entire channel will perform the intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least

BASES

SURVEILLANCE REQUIREMENTS (continued)

once per refueling interval with applicable extensions. The CHANNEL FUNCTIONAL TEST for the Reactor Mode Switch - Shutdown Position Function is performed by attempting to withdraw any control rod with the reactor mode switch in the shutdown position and verifying a control rod block occurs.

As noted in the SR, the Surveillance is not required to be performed until 1 hour after the reactor mode switch is in the shutdown position, since testing of this interlock with the reactor mode switch in any other position cannot be performed without using jumpers, lifted leads, or movable links.

This allows entry into MODES 3 and 4 if the ~~24 month~~ Frequency is not met per SR 3.0.2. The 1 hour allowance is based on operating experience and in consideration of providing a reasonable time in which to complete the SRs.

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency.~~ [Insert 2]

SR 3.3.2.1.8

The RWM will only enforce the proper control rod sequence if the rod sequence is properly input into the RWM computer. This SR ensures that the proper sequence is loaded into the RWM so that it can perform its intended function. The Surveillance is performed once prior to declaring RWM OPERABLE following loading of sequence into RWM, since this is when rod sequence input errors are possible.

REFERENCES

1. USAR, Section 7.3.5.3.

2. USAR, Section 7.8.2.

3. NEDC-30492-P, "Average Power Range Monitor, Rod Block Monitor, and Technical Specification Improvements (ARTS) Program for Monticello Nuclear Generating Plant," April 1984.

4. NEDE-24011-P-A, "General Electrical Standard Application for Reload Fuel" (revision specified in Specification 5.6.3).

BASES

REFERENCES (continued)

5. Letter from T.A. Pickens (BWROG) to G.C. Lainas (NRC), "Amendment 17 to General Electric Licensing Topical Report NEDE-24011-P-A," BWROG-8644, August 15, 1986.

6. NEDO-21231, "Banked Position Withdrawal Sequence," January 1977.

7. NRC SER, "Acceptance of Referencing of Licensing Topical Report NEDE-24011-P-A," "General Electric Standard Application for Reactor Fuel, Revision 8, Amendment 17," December 27, 1987.

8. ~~NEDC-30851-P-A, "Technical Specification Improvement Analysis for BWR Control Rod Block Instrumentation," October 1988.~~ Not Used

9. GENE-770-06-1-A, "Bases for Changes to Surveillance Test Intervals and Allowed Out-of-Service Times for Selected Instrumentation Technical Specifications," December 1992.

10. NEDC-32410P-A, "Nuclear Measurement Analysis and Control Power Range Neutron Monitor (NUMAC PRNM) Retrofit Plus Option III Stability Trip Function," October 1995.

11. NEDC-32410P-A, Supplement 1, "Nuclear Measurement Analysis and Control Power Range Neutron Monitor (NUMAC PRNM) Retrofit Plus Option III Stability Trip Function," November 1987.

12. Amendment No. 159, "Issuance of Amendment Re: Request to Install Power Range Neutron Monitoring System, dated February 3, 2009. (ADAMS Accession No. ML083440681)

13. U.S. NRC Regulatory Issue Summary 2006 17, "NRC Staff Position on the Requirements of 10 CFR 50.36, "Technical Specifications," Regarding Limiting Safety System Settings During Periodic Testing and Calibration of Instrument Channels," dated August 24, 2006.

14. NEDC-33091-A, Revision 2, "Improved BPWS Control Rod Insertion Process," July 2004.

15. XN-NF-80-19(P)(A) Volume 1 and Supplements 1 and 2, "Exxon Nuclear Methodology for Boiling Water Reactors: Neutronic Methods for Design and Analysis", Exxon Nuclear Company, March 1983.

16. EMF-2158(P)(A) Revision 0, "Siemens Power Corporation Methodology for Boiling Water Reactors: Evaluation and Validation for CASMO-4/MICROBURN-B2", Siemens Power Corporation, October 1999.

BASES

SURVEILLANCE REQUIREMENTS (continued)

channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. This Note is based on the reliability analysis (Ref. 2) assumption that 6 hours is the average time required to perform channel Surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the feedwater pumps and main turbine will trip when necessary.

SR 3.3.2.2.1

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

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

~~The Frequency is based on operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channel status during normal operational use of the displays associated with the channels required by the LCO.~~ [Insert 2]

SR 3.3.2.2.2

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~The Frequency of 184 days is based on engineering judgment and the reliability of these components.~~ [Insert 2]

SR 3.3.2.2.3

Calibration of trip units provides a check of the actual trip setpoints. The channel must be declared inoperable if the trip setting is discovered to be less conservative than the Allowable Value specified in SR 3.3.2.2.4. If the trip setting is discovered to be less conservative than the setting accounted for in the appropriate setpoint methodology, but is not beyond the Allowable Value, the channel is still within the requirements of the plant safety analysis. Under these conditions, the setpoint must be readjusted to be equal to or more conservative than accounted for in the appropriate setpoint methodology.

~~The Frequency of 184 days is based on engineering judgment and the reliability of these components.~~ [Insert 2]

SR 3.3.2.2.4

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

~~The Frequency is based upon the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.~~ [Insert 2]

SR 3.3.2.2.5

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required trip logic for a specific channel. The system functional test of the feedwater pump breakers and main turbine stop valves is included as part of this Surveillance and overlaps the LOGIC SYSTEM FUNCTIONAL TEST to provide complete testing of the assumed safety function. Therefore, if a valve is incapable of operating, the associated instrumentation would also be inoperable. ~~The 24 month Frequency is based on the need to perform this Surveillance under the~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency.~~ [Insert 2]

REFERENCES

1. USAR, Section 14.4.4.

2. GENE-770-06-1-A, "Bases for Changes to Surveillance Test Intervals and Allowed Out-Of-Service Times for Selected Instrumentation Technical Specifications," December 1992.

3. Amendment No. 176, “Monticello Nuclear Generating Plant – Issuance of Amendment No. 176 to Renewed Facility Operating License Regarding Extended Power Uprate,” (ADAMS Accession No. ML13316C459)

BASES

SURVEILLANCE REQUIREMENTS

As noted at the beginning of the SRs, the following SRs apply to each PAM instrumentation Function in Table 3.3.3.1-1.

The Surveillances are modified by a second Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains capability. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. The 6 hour testing allowance is acceptable since it does not significantly reduce the probability of properly monitoring post accident parameters when necessary.

SR 3.3.3.1.1

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

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

~~The Frequency of 31 days is based upon plant operating experience, with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given Function in any 31 day interval is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of those displays associated with the required channels of this LCO.~~ [Insert 2]

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.3.1.2

~~A CHANNEL CALIBRATION is required to be performed every 24 months.~~ CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies the channel responds to measured parameter with the necessary range and accuracy.

~~The Frequency is based on operating experience and consistency with the typical industry refueling cycles.~~ [Insert 2]

REFERENCES

1. Regulatory Guide 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," Revision 2, December 1980.

2. USAR, Section 7.9.3.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.3.2.1

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

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit. As specified in the Surveillance, a CHANNEL CHECK is only required for those channels that are normally energized.

The Frequency is based upon plant operating experience that demonstrates channel failure is rare. [Insert 2]

SR 3.3.3.2.2

SR 3.3.3.2.2 verifies each required Alternate Shutdown System transfer switch and control circuit performs the intended function. This verification is performed from the Alternate Shutdown System panel and locally, as appropriate. In addition, for the master transfer switch, this SR ensures the alarm in the control room functions when the switch is in the transfer position. Operation of the equipment from the Alternate Shutdown System panel is not necessary. The Surveillance can be satisfied by performance of a continuity check. This will ensure that if the control room becomes inaccessible, the plant can be placed and maintained in MODE 3 from the Alternate Shutdown System panel and the local control stations. Operating experience demonstrates that Alternate Shutdown System control channels usually pass the Surveillance when performed at the 24 month Frequency. [Insert 2]

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.3.2.3

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

~~The 24 month Frequency is based upon operating experience and consistency with the typical industry refueling cycle.~~ [Insert 2]

REFERENCES

1. USAR, Section 7.11.1.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.4.1.1

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

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

[Insert 2] The Frequency is based upon operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the required channels of this LCO. A Note has been added to SR 3.3.4.1.1 that states the CHANNEL CHECK is not required for the time delay portion of the Reactor Vessel Water Level - Low Low Function.

SR 3.3.4.1.2

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

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

The Frequency of 92 days is based on the reliability analysis of Reference 3. [Insert 2]

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.4.1.3

Calibration of trip units provides a check of the actual trip setpoints. The channel must be declared inoperable if the trip setting is discovered to be less conservative than the Allowable Value specified in SR 3.3.4.1.5. If the trip setting is discovered to be less conservative than the setting accounted for in the appropriate setpoint methodology, but is not beyond the Allowable Value, the channel performance is still within the requirements of the plant safety analysis. Under these conditions, the setpoint must be readjusted to be equal to or more conservative than accounted for in the appropriate setpoint methodology.

~~The Frequency of 92 days is based on the reliability analysis of Reference 3.~~ [Insert 2]

SR 3.3.4.1.4 and SR 3.3.4.1.5

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

~~The Frequency of SR 3.3.4.1.4 is based upon the assumption of a 184 day calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis. The Frequency of SR 3.3.4.1.5 is based upon the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.~~ [Insert 1]

SR 3.3.4.1.6

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required trip logic for a specific channel. The system functional test of the pump breakers is included as part of this Surveillance and overlaps the LOGIC SYSTEM FUNCTIONAL TEST to provide complete testing of the assumed safety function. Therefore, if a breaker is incapable of operating, the associated instrument channel(s) would be inoperable.

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency.~~ [Insert 2]

REFERENCES

1. USAR, Section 7.6.2.2.
2. USAR, Section 14.8.
3. GENE-770-06-1-A, "Bases for Changes To Surveillance Test Intervals and Allowed Out-of-Service Times For Selected Instrumentation Technical Specifications," December 1992.

BASES

SURVEILLANCE REQUIREMENTS

As noted in the beginning of the SRs, the SRs for each ECCS instrumentation Function are found in the SRs column of Table 3.3.5.1-1. The Surveillances are modified by a Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours as follows: (a) for Functions 3.c and 3.f; and (b) for Functions other than 3.c and 3.f provided the associated Function or redundant Function maintains ECCS initiation capability. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. A channel that is shared between both trip systems is considered one channel. This Note is based on the reliability analysis (Ref. 3) assumption of the average time required to perform channel surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the ECCS will initiate when necessary.

SR 3.3.5.1.1

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

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

[Insert 2] ~~The Frequency is based upon operating experience that demonstrates channel failure is rare.~~ The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the LCO.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.5.1.2, SR 3.3.5.1.5 and SR 3.3.5.1.9

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

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

~~The Frequency of 92 days for SR 3.3.5.1.2 is based on the reliability analyses of Reference 3. The Frequency of 12 months for SR 3.3.5.1.5 is based on the known reliability of the equipment and the multichannel redundancy available, and has been shown to be acceptable through operating experience. The Frequency of 24 months for SR 3.3.5.1.9 is based on the known reliability of the equipment and the multichannel redundancy available, and has been shown to be acceptable through operating experience.~~ [Insert 1]

SR 3.3.5.1.3

Calibration of trip units provides a check of the actual trip setpoints. The channel must be declared inoperable if the trip setting is discovered to be less conservative than the Allowable Value specified in Table 3.3.5.1-1. If the trip setting is discovered to be less conservative than accounted for in the appropriate setpoint methodology, but is not beyond the Allowable Value, the channel performance is still within the requirements of the plant safety analyses. Under these conditions, the setpoint must be readjusted to be equal to or more conservative than the setting accounted for in the appropriate setpoint methodology.

~~The Frequency of 92 days is based on the reliability analysis of Reference 3.~~ [Insert 2]

SR 3.3.5.1.4, SR 3.3.5.1.6, and SR 3.3.5.1.7

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

~~The Frequency of SR 3.3.5.1.4 is based upon the assumption of a 92 day calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis. The Frequency of SR 3.3.5.1.6 is based upon the assumption of a 12 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis. The Frequency of SR 3.3.5.1.7 is based upon the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis, and for Function 2.j, a revised minimum detectable break area for the LPCI loop select logic (Refs. 5 and 6).~~ [Insert 1]

The SR 3.3.5.1.4 annotation in Table 3.3.5.1-1 for Functions 1.c, 1.d, 2.c, 2.d, 4.c, 4.d, 5.c, and 5.d has been modified by two Notes. The SR 3.3.5.1.7 annotation in Table 3.3.5.1-1 for Function 2.j has also been modified by these same two Notes. The first Note requires evaluation of channel performance for the condition where the as-found setting for the channel is outside its as-found tolerance but conservative with respect to the Allowable Value. Evaluation of instrument performance will verify that the instrument will continue to behave in accordance with design basis assumptions. The purpose of the assessment is to ensure confidence in the instrument performance prior to returning the instrument to service. These channels will also be identified in the Corrective Action Program. In accordance with procedures, entry into the Corrective Action Program will require review and documentation of the condition of OPERABILITY. The second Note requires the setting for the instrument be returned to within the as-left tolerance of the nominal trip setpoint. This will ensure that sufficient margin to the Safety Limit and /or Analytical Limit is maintained. If the setting for the instrument cannot be returned to within the as-left tolerance of the nominal trip setpoint, then the instrument channel shall be declared inoperable. The second Note also requires that the nominal trip setpoint and the methodology for calculating the as-left and the as-found tolerances be in a document controlled under 10 CFR 50.59 (i.e., Technical Requirements Manual (Ref. 4)).

SR 3.3.5.1.8

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency.~~ [Insert 2]

REFERENCES

1. USAR, Section 14.7.2.
2. USAR, Chapter 14.
3. NEDC-30936-P-A, "BWR Owners' Group Technical Specification Improvement Analyses for ECCS Actuation Instrumentation, Parts 1 and 2," December 1988.
4. Technical Requirements Manual.
5. GE-NE-0000-0052-3113-P-R0, "SAFER/GESTR ECCS-LOCA Analysis – LPCI Loop Selection Detectable Break Area," September 2006.
6. ~~Amendment No. 161, "Monticello Nuclear Generating Plant - Issuance of Amendment Regarding Recirculation Riser Differential Pressure (TAC No. MD6864)," dated April 7, 2009. (ADAMS Accession No. ML083040608)~~ Not Used
7. ~~Calculation 03-036, Revision 2, "Instrument Setpoint Calculation Reactor Low Pressure Permissive Bypass Timer~~ Not Used
8. Amendment No. 176, "Monticello Nuclear Generating Plant – Issuance of Amendment No. 176 to Renewed Facility Operating License Regarding Extended Power Uprate," (ADAMS Accession No. ML13316C459)

BASES

ACTIONS (continued)

inoperable channel to OPERABLE status. If the inoperable channel cannot be restored to OPERABLE status within the allowable out of service time, the channel must be placed in the tripped condition per Required Action D.2.1, which performs the intended function of the channel (shifting the suction source to the suppression pool). Alternatively, Required Action D.2.2 allows the manual alignment of the RCIC suction to the suppression pool, which also performs the intended function. If Required Action D.2.1 or D.2.2 is performed, measures should be taken to ensure that the RCIC System piping remains filled with water. If it is not desired to perform Required Actions D.2.1 and D.2.2 (e.g., as in the case where shifting the suction source could drain down the RCIC suction piping), Condition E must be entered and its Required Action taken.

E.1

With any Required Action and associated Completion Time not met, the RCIC System may be incapable of performing the intended function, and the RCIC System must be declared inoperable immediately.

SURVEILLANCE REQUIREMENTS

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

The Surveillances are modified by a Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed as follows: (a) for up to 6 hours for Function 2; and (b) for up to 6 hours for Functions 1 and 3, provided the associated Function maintains RCIC initiation capability. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. This Note is based on the reliability analysis (Ref. 1) assumption of the average time required to perform channel surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the RCIC will initiate when necessary.

SR 3.3.5.2.1

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

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

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

[Insert 2] ~~The Frequency is based upon operating experience that demonstrates channel failure is rare.~~ The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the LCO.

SR 3.3.5.2.2

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

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

~~The Frequency of 92 days is based on the reliability analysis of Reference 1.~~ [Insert 2]

SR 3.3.5.2.3

The calibration of trip units provides a check of the actual trip setpoints. The channel must be declared inoperable if the trip setting is discovered to be less conservative than the Allowable Value specified in Table 3.3.5.2-1. If the trip setting is discovered to be less conservative than the setting accounted for in the appropriate setpoint methodology, but is not beyond the Allowable Value, the channel performance is still within the requirements of the plant safety analysis. Under these

BASES

SURVEILLANCE REQUIREMENTS (continued)

conditions, the setpoint must be readjusted to be equal to or more conservative than accounted for in the appropriate setpoint methodology.

~~The Frequency of 92 days is based on the reliability analysis of Reference 1.~~ [Insert 2]

SR 3.3.5.2.4

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

~~The Frequency of SR 3.3.5.2.4 is based upon the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.~~ [Insert 2]

SR 3.3.5.2.5

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

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency.~~ [Insert 2]

REFERENCES

1. GENE-770-06-2-A, "Addendum to Bases for Changes to Surveillance Test Intervals and Allowed Out-of-Service Times for Selected Instrumentation Technical Specifications," December 1992.

BASES

ACTIONS (continued)

I.1 and I.2

If the channel is not restored to OPERABLE status or placed in trip within the allowed Completion Time, the associated penetration flow path should be closed. However, if the shutdown cooling function is needed to provide core cooling, these Required Actions allow the penetration flow path to remain unisolated provided action is immediately initiated to restore the channel to OPERABLE status or to isolate the RHR Shutdown Cooling System (i.e., provide alternate decay heat removal capabilities so the penetration flow path can be isolated). Actions must continue until the channel is restored to OPERABLE status or the RHR Shutdown Cooling System is isolated.

SURVEILLANCE REQUIREMENTS

As noted at the beginning of the SRs, the SRs for each Primary Containment Isolation instrumentation Function are found in the SRs column of Table 3.3.6.1-1.

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

SR 3.3.6.1.1

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

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

[Insert 2] ~~The Frequency is based on operating experience that demonstrates channel failure is rare.~~ The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the LCO.

SR 3.3.6.1.2

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

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

~~The 92 day Frequency of SR 3.3.6.1.2 is based on the reliability analyses described in References 5 and 6.~~ [Insert 2]

SR 3.3.6.1.3

Calibration of trip units provides a check of the actual trip setpoints (including any specified time delay). The channel must be declared inoperable if the trip setting is discovered to be less conservative than the Allowable Value specified in Table 3.3.6.1-1. If the trip setting is discovered to be less conservative than accounted for in the appropriate setpoint methodology, but is not beyond the Allowable Value, the channel performance is still within the requirements of the plant safety analysis. Under these conditions, the setpoint must be readjusted to be equal to or more conservative than that accounted for in the appropriate setpoint methodology.

~~The Frequency of 92 days is based on the reliability analyses of References 5 and 6.~~ [Insert 2]

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.6.1.4 and SR 3.3.6.1.5

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

The Frequency of SR 3.3.6.1.4 is based on the assumption of a 92 day calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis. The Frequency of SR 3.3.6.1.5 is based on the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis. [Insert 1]

SR 3.3.6.1.6

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required isolation logic for a specific channel. The system functional testing performed on PCIVs in LCO 3.6.1.3 overlaps this Surveillance to provide complete testing of the assumed safety function. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency. [Insert 2]

REFERENCES

1. USAR, Section 14.7.2.
2. USAR, Section 14.7.3.
3. USAR, Section 7.6.3.2.4.
4. USAR, Section 6.6.1.1.
5. NEDC-31677P-A, "Technical Specification Improvement Analysis for BWR Isolation Actuation Instrumentation," July 1990.
6. NEDC-30851P-A Supplement 2, "Technical Specifications Improvement Analysis for BWR Isolation Instrumentation Common to RPS and ECCS Instrumentation," March 1989.

BASES

SURVEILLANCE REQUIREMENTS (continued)

channel surveillance. That analysis demonstrated the 6 hour testing allowance does not significantly reduce the probability that the SCIVs will isolate the associated penetration flow paths and that the SGT System will initiate when necessary.

SR 3.3.6.2.1

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

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

[Insert 2] ~~The Frequency is based on operating experience that demonstrates channel failure is rare.~~ The CHANNEL CHECK supplements less formal, but more frequent, checks of channel status during normal operational use of the displays associated with channels required by the LCO.

SR 3.3.6.2.2

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

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~The Frequency of 92 days is based on the reliability analysis of References 3 and 4.~~ [Insert 2]

SR 3.3.6.2.3

Calibration of trip units provides a check of the actual trip setpoints. The channel must be declared inoperable if the trip setting is discovered to be less conservative than the Allowable Value specified in Table 3.3.6.2-1. If the trip setting is discovered to be less conservative than accounted for in the appropriate setpoint methodology, but is not beyond the Allowable Value, performance is still within the requirements of the plant safety analysis. Under these conditions, the setpoint must be readjusted to be equal to or more conservative than accounted for in the appropriate setpoint methodology.

~~The Frequency of 92 days is based on the reliability analysis of References 3 and 4.~~ [Insert 2]

SR 3.3.6.2.4 and SR 3.3.6.2.5

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

~~The Frequencies of SR 3.3.6.2.4 and SR 3.3.6.2.5 are based on the assumption of a 92 day and a 24 month calibration interval, respectively, in the determination of the magnitude of equipment drift in the setpoint analysis.~~ [Insert 1]

SR 3.3.6.2.6

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

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~potential for an unplanned transient if the Surveillance were performed with the reactor at power.~~

~~Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency.~~ [Insert 2]

REFERENCES

1. USAR, Section 14.7.2.
2. USAR, Section 14.7.6.
3. NEDC-31677P-A, "Technical Specification Improvement Analysis for BWR Isolation Actuation Instrumentation," July 1990.
4. NEDC-30851P-A Supplement 2, "Technical Specifications Improvement Analysis for BWR Isolation Instrumentation Common to RPS and ECCS Instrumentation," March 1989.

BASES

ACTIONS (continued)

since this action would not necessarily result in a safe state for a channel in all events.

B.1

If any Required Action and associated Completion Time are not met, the LLS valves may be incapable of performing their intended function. Therefore, the associated LLS valve must be declared inoperable immediately.

SURVEILLANCE REQUIREMENTS

As noted at the beginning of the SRs, the SRs for each LLS instrumentation Function are located in the SRs column of Table 3.3.6.3-1.

The Surveillances are modified by a Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains LLS initiation capability. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. This Note is based on the reliability analysis (Ref. 2) assumption of the average time required to perform channel surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the LLS valves will initiate when necessary.

SR 3.3.6.3.1

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

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication

BASES

SURVEILLANCE REQUIREMENTS (continued)

and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside its limit.

[Insert 2] ~~The Frequency is based upon operating experience that demonstrates channel failure is rare.~~ The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with channels required by the LCO.

SR 3.3.6.3.2

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

~~The 92 day Frequency is based on the reliability analysis of Reference 2.~~ [Insert 2] As noted, for Function 1 the CHANNEL FUNCTIONAL TEST is only required to be performed prior to entering MODE 2 or 3 from MODE 4, since the plant must be shutdown to perform the test.

SR 3.3.6.3.3

The calibration of trip units provides a check of the actual trip setpoints. The channel must be declared inoperable if the trip setting is discovered to be less conservative than the Allowable Value. If the trip setting is discovered to be less conservative than accounted for in the appropriate setpoint methodology, but is not beyond the Allowable Value, the channel performance is still within the requirements of the plant safety analysis. Under these conditions, the setpoint must be readjusted to be equal to or more conservative than the setting accounted for in the appropriate setpoint methodology. ~~The Frequency of every 92 days for SR 3.3.6.3.3 is based on the reliability analysis of Reference 2.~~ [Insert 2]

SR 3.3.6.3.4 and SR 3.3.6.3.5

CHANNEL CALIBRATION is a complete check of the instrument loop and sensor. This test verifies the channel responds to the measured

BASES

SURVEILLANCE REQUIREMENTS (continued)

parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

~~The Frequency of once every 92 days for SR 3.3.6.3.4 is based on the assumption of a 92 day calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis. The Frequency of once every 24 months for SR 3.3.6.3.5 is based on the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.~~ [Insert 1]

SR 3.3.6.3.6

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

~~The Frequency of once every 24 months for SR 3.3.6.3.6 is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency~~. [Insert 2]

REFERENCES

1. USAR, Figure 4.4.2.3.

2. GENE-770-06-1-A, "Bases for Changes to Surveillance Test Intervals and Allowed Out-of-Service Times for Selected Instrumentation Technical Specifications," December 1992.

BASES

SURVEILLANCE REQUIREMENTS

As noted at the beginning of the SRs, the SRs for each CREF System Instrumentation Function are located in the SRs column of Table 3.3.7.1-1. The Surveillances are modified by a Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6hours, provided the associated Function maintains CREF System initiation capability. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. The Notes are based on the reliability analysis (Refs. 2 and 3) assumption of the average time required to perform channel surveillance. That analysis demonstrated the 6 hour testing allowance does not significantly reduce the probability that the CREF System will initiate when necessary.

SR 3.3.7.1.1

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

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

[Insert 2] ~~The Frequency is based upon operating experience that demonstrates channel failure is rare.~~ The CHANNEL CHECK supplements less formal, but more frequent, checks of channel status during normal operational use of the displays associated with channels required by the LCO.

SR 3.3.7.1.2

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

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

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

~~The Frequency of 92 days is based on the reliability analysis of References 2 and 3.~~ [Insert 2]

SR 3.3.7.1.3

The calibration of trip units provides a check of the actual trip setpoints. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology. The channel must be declared inoperable if the trip setting is discovered to be less conservative than the Allowable Value specified in Table 3.3.7.1-1. If the trip setting is discovered to be less conservative than accounted for in the appropriate setpoint methodology, but is not beyond the Allowable Value, the channel performance is still within the requirements of the plant safety analysis. Under these conditions, the setpoint must be readjusted to be equal to or more conservative than the setting accounted for in the appropriate setpoint methodology.

~~The Frequency of 92 days is based on the reliability analysis of References 2 and 3.~~ [Insert 2]

SR 3.3.7.1.4 and SR 3.3.7.1.5

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

~~The Frequencies of SR 3.3.7.1.4 and SR 3.3.7.1.5 are based on the assumption of a 92 day and a 24 month Calibration interval, respectively, in the determination of the magnitude of equipment drift in the setpoint analysis.~~ [Insert 1]

SR 3.3.7.1.6

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required initiation logic for a specific channel. The system functional testing performed in LCO 3.7.4, "Control Room Emergency Filtration (CREF) System," overlaps this Surveillance to provide complete testing of the assumed safety function.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency.~~ [Insert 2]

REFERENCES

1. USAR, Section 14.7.2.

2. NEDC-31677P-A, "Technical Specification Improvement Analysis for BWR Isolation Actuation Instrumentation," July 1990.

3. NEDC-30851P-A Supplement 2, "Technical Specifications Improvement Analysis for BWR Isolation Instrumentation Common to RPS and ECCS Instrumentation," March 1989.

BASES

SURVEILLANCE REQUIREMENTS

The Surveillances are modified by a Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into the associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains mechanical vacuum pump isolation trip capability. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. This Note is based on the reliability analyses (Ref. 3) assumption of the average time required to perform channel Surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the mechanical vacuum pump will isolate when necessary.

SR 3.3.7.2.1

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

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

[Insert 2] ~~The Frequency is based on the CHANNEL CHECK Frequency requirement of other instrumentation.~~ The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the required channels of this LCO.

SR 3.3.7.2.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the channel will perform the intended function. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

~~The Frequency of 92 days is based on the reliability analysis of Reference 3.~~ [Insert 2]

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.7.2.3

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

~~The Frequency is based upon the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.~~ [Insert 2]

SR 3.3.7.2.4

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required trip logic for a specific channel. The system functional test of the mechanical vacuum pump breaker and actuation of the associated isolation valves are included as part of this Surveillance, to provide complete testing of the assumed safety function. Therefore, if the breaker is incapable of operating or an isolation valve is incapable of closing, the instrument channel would be inoperable.

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance was performed with the reactor at power.~~ [Insert 2]

REFERENCES

1. USAR Section 14.7.1
2. 10 CFR 50, Appendix A, GDC 19.
3. NEDC-30851P-A Supplement 2, "Technical Specifications Improvement Analysis for BWR Isolation Instrumentation Common to RPS and ECCS Instrumentation," March 1989.
4. 10 CFR 50.67, “Accident Source Term”

BASES

SURVEILLANCE REQUIREMENTS (continued)

contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

~~The Frequency of 31 days is based on operating experience with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given Function in any 31 day interval is a rare event.~~ [Insert 2]

SR 3.3.8.1.2 and SR 3.3.8.1.3

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

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

~~The Frequency of SR 3.3.8.1.2 is based upon the assumption of a 92 day calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.~~

~~The Frequency of SR 3.3.8.1.3 is based upon the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.~~ [Insert 1]

SR 3.3.8.1.4

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

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency.~~ [Insert 2]

BASES

ACTIONS (continued)

intended function of the instrumentation the RPS electric power monitoring assemblies is protecting, and allows operations to continue.

Alternatively, immediately declaring the associated secondary containment isolation valve(s), SGT subsystem(s), or CREF subsystem(s) inoperable (Required Actions F.1.2, F.2.2, and F.3.2) is also acceptable since the Required Actions of the respective LCOs (LCO 3.6.4.2, "Secondary Containment Isolation Valves," LCO 3.6.4.3, "Standby Gas Treatment (SGT) System," and LCO 3.7.4, "Control Room Emergency Filtration (CREF) System") provide appropriate actions for the inoperable components.

SURVEILLANCE REQUIREMENTS

SR 3.3.8.2.1

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

~~The 184 day Frequency in the Surveillance is based on guidance provided in Generic Letter 91-09 (Ref. 2).~~ [Insert 2]

SR 3.3.8.2.2 and SR 3.3.8.2.3

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

~~The Frequency of SR 3.3.8.2.2 is based on the assumption of a 184 day calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis. The Frequency of SR 3.3.8.2.3 is based on the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.~~ [Insert 1]

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.8.2.4

Performance of a system functional test demonstrates that, with a required system actuation (simulated or actual) signal, the logic of the system will automatically trip open the associated power monitoring assembly. Only one signal per power monitoring assembly is required to be tested. This Surveillance overlaps with the CHANNEL CALIBRATION to provide complete testing of the safety function. The system functional test of the Class 1E circuit breakers is included as part of this test to provide complete testing of the safety function. If the breakers are incapable of operating, the associated electric power monitoring assembly would be inoperable.

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency.~~ [Insert 2]

REFERENCES

1. USAR, Section 8.6.2.
2. ~~NRC Generic Letter 91-09, "Modification of Surveillance Interval for the Electrical Protective Assemblies in Power Supplies for the Reactor Protection System."~~

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.1.1

This SR ensures the recirculation loops are within the allowable limits for mismatch. At low core flow (i.e., < 70% of rated core flow), the MCPR requirements provide larger margins to the fuel cladding integrity Safety Limit and the APLHGR requirements reduce the average planar bundle power such that the potential adverse effect of early boiling transition during a LOCA is reduced. A larger flow mismatch can therefore be allowed when core flow is < 70% of rated core flow. The jet pump loop flow, as used in this Surveillance, is the summation of the flows from all of the jet pumps associated with a single recirculation loop. The mismatch is measured in terms of percent of rated core flow. If the flow mismatch exceeds the specified limits, the loop with the lower flow is considered not in operation. This SR is not required when both loops are not in operation since the mismatch limits are meaningless during single loop or natural circulation operation. The Surveillance must be performed within 24 hours after both loops are in operation. ~~The 24 hour Frequency is consistent with the Surveillance Frequency for jet pump OPERABILITY verification and has been shown by operating experience to be adequate to detect off normal jet pump loop flows in a timely manner.~~ [Insert 2]

REFERENCES

1. USAR, Section 14.7.2.

2. USAR, Chapter 14.

3. Calculation 11-180, MNGP EPU Task Report T0407, “ECCS-LOCA SAFER/GESTR”

4. NEDO-24271, “Monticello Nuclear Generating Plant Single-Loop Operation," June 1980.

5. NEDC-30492, "Average Power Range Monitor, Rod Block Monitor and Technical Specification Improvement (ARTS) Program for Monticello Nuclear Power Generating Plant," April 1984.

6. ANP-10262PA, “Enhanced Option III Long Term Stability Solution,” Revision 0, May 2008.

7. USAR, Section 14.6.

8. Amendment No. 176, “Monticello Nuclear Generating Plant – Issuance of Amendment No. 176 to Renewed Facility Operating License Regarding Extended Power Uprate,” (ADAMS Accession No. ML13316C459)

BASES

SURVEILLANCE REQUIREMENTS (continued)

entry into extended single loop operation may also require establishment of these relationships. During the initial weeks of operation under such conditions, while base-lining new "established patterns," engineering judgment of the daily surveillance results is used to detect significant abnormalities which could indicate a jet pump failure.

The recirculation pump speed operating characteristics (pump flow and loop flow versus pump speed) are determined by the flow resistance from the loop suction through the jet pump nozzles. A change in the relationship may indicate a plug, flow restriction, loss in pump hydraulic performance, leakage, or new flow path between the recirculation pump discharge and jet pump nozzle. For this criterion, the pump flow and loop flow versus pump speed relationship must be verified.

Individual jet pumps in a recirculation loop normally do not have the same flow. The unequal flow is due to the drive flow manifold, which does not distribute flow equally to all risers. The flow (or jet pump diffuser to lower plenum differential pressure) pattern or relationship of one jet pump to the loop average is repeatable. An appreciable change in this relationship is an indication that increased (or reduced) resistance has occurred in one of the jet pumps.

The deviations from normal are considered indicative of a potential problem in the recirculation drive flow or jet pump system (Ref. 2). Normal flow ranges and established jet pump flow and differential pressure patterns are established by plotting historical data as discussed in Reference 2.

~~The 24 hour Frequency has been shown by operating experience to be timely for detecting jet pump degradation and is consistent with the Surveillance Frequency for recirculation loop OPERABILITY verification.~~ [Insert 2]

This SR is modified by two Notes. Note 1 allows this Surveillance not to be performed until 4 hours after the associated recirculation loop is in operation, since these checks can only be performed during jet pump operation. The 4 hours is an acceptable time to establish conditions appropriate for data collection and evaluation.

Note 2 allows this SR not to be performed until 24 hours after THERMAL POWER exceeds 25% RTP. During low flow conditions, jet pump noise approaches the threshold response of the associated flow instrumentation and precludes the collection of repeatable and meaningful data. The 24 hours is an acceptable time to establish conditions appropriate to perform this SR.

BASES

ACTIONS (continued)

isolating the source or other possible methods) is to evaluate service sensitive type 304 and type 316 austenitic stainless steel piping that is subject to high stress or that contains relatively stagnant or intermittent flow fluids and determine it is not the source of the increased LEAKAGE. This type piping is very susceptible to IGSCC.

The 4 hour Completion Time is reasonable to properly reduce the LEAKAGE increase or verify the source before the reactor must be shut down without unduly jeopardizing plant safety.

C.1 and C.2

If any Required Action and associated Completion Time of Condition A or B is not met or if pressure boundary LEAKAGE exists, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 12 hours and to MODE 4 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 safety systems.

SURVEILLANCE REQUIREMENTS

SR 3.4.4.1

The RCS LEAKAGE is monitored by a variety of instruments designed to provide alarms when LEAKAGE is indicated and to quantify the various types of LEAKAGE. Leakage detection instrumentation is discussed in more detail in the Bases for LCO 3.4.5, "RCS Leakage Detection Instrumentation." Sump level and flow rate are typically monitored to determine actual LEAKAGE rates; however, an alternate method that may be used to quantify LEAKAGE is using drywell sump pump run times. ~~In conjunction with alarms and other administrative controls, a 12 hour Frequency for this Surveillance is appropriate for identifying LEAKAGE and for tracking required trends (Ref. 4).~~ [Insert 2]

REFERENCES

1. USAR, Section 4.3.3.3.
2. GEAP-5620, "Failure Behavior in ASTM A106B Pipes Containing Axial Through-Wall Flows," April 1968.
3. NUREG-75/067, "Investigation and Evaluation of Cracking in Austenitic Stainless Steel Piping of Boiling Water Reactor Plants," October 1975.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.5.1

This SR is for the performance of a CHANNEL CHECK of the required leakage detection instrumentation channels (both the required equipment specified in LCO 3.4.5.a and the drywell particulate radioactivity monitoring system). The check gives reasonable confidence that the channel is operating properly. ~~The Frequency of 12 hours is based on instrument reliability and is reasonable for detecting off normal conditions.~~ [Insert 2]

SR 3.4.5.2

This SR is for the performance of a CHANNEL FUNCTIONAL TEST of the drywell particulate radioactivity monitoring system and the flow instrumentation of the required drain sump monitoring system (drywell floor or drywell equipment). The test ensures that the monitors can perform their function in the desired manner. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. ~~The Frequency of 31 days considers instrument reliability, and operating experience has shown it proper for detecting degradation.~~ [Insert 2]

SR 3.4.5.3

This SR is for the performance of a CHANNEL CALIBRATION of required leakage detection instrumentation channels. The calibration verifies the accuracy of the instrument string, including the instruments located inside containment. ~~The Frequency of 24 months is a typical refueling cycle and considers channel reliability. Operating experience has proven this Frequency is acceptable.~~ [Insert 2]

REFERENCES

1. USAR, Section 4.3.3.3.
2. Regulatory Guide 1.45, May 1973.
3. GEAP-5620, "Failure Behavior in ASTM A106B Pipes Containing Axial Through-Wall Flaws," April 1968.
4. NUREG-75/067, "Investigation and Evaluation of Cracking in Austenitic Stainless Steel Piping of Boiling Water Reactor Plants," October 1975.

BASES

ACTIONS (continued)

B.1, B.2.1, B.2.2.1, and B.2.2.2

If the DOSE EQUIVALENT I-131 cannot be restored to ≤ 0.2 µCi/gm within 48 hours, or if at any time it is > 2.0 µCi/gm, it must be determined at least once every 4 hours and all the main steam lines must be isolated within 12 hours. Isolating the main steam lines precludes the possibility of releasing radioactive material to the environment in an amount that is more than the limits of 10 CFR 50.67 and 10 CFR 50, Appendix A, GDC 19 (Ref. 3) during a postulated MSLB accident.

Alternatively, the plant can be placed in MODE 3 within 12 hours and in MODE 4 within 36 hours. This option is provided for those instances when isolation of main steam lines is not desired (e.g., due to the decay heat loads). In MODE 4, the requirements of the LCO are no longer applicable.

The Completion Time of once every 4 hours is the time needed to take and analyze a sample. The 12 hour Completion Time is reasonable, based on operating experience, to isolate the main steam lines in an orderly manner and without challenging plant systems. Also, the allowed Completion Times for Required Actions B.2.2.1 and B.2.2.2 for placing the unit in MODES 3 and 4 are reasonable, based on operating experience, to achieve the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.4.6.1

This Surveillance is performed to ensure iodine remains within limit during normal operation. ~~The 7 day Frequency is adequate to trend changes in the iodine activity level.~~ [Insert 2]

This SR is modified by a Note that requires this Surveillance to be performed only in MODE 1 because the level of fission products generated in other MODES is much less.

REFERENCES

1. 10 CFR 50.67, “Accident Source Term.”
2. USAR, Section 14.7.3.
3. 10 CFR 50, Appendix A, GDC 19.

BASES

ACTIONS (continued)

B.1, B.2, and B.3

With no RHR shutdown cooling subsystem and no recirculation pump in operation, except as permitted by LCO Note 1, reactor coolant circulation by the RHR shutdown cooling subsystem or recirculation pump must be restored without delay.

Until RHR or recirculation pump operation is re-established, an alternate method of reactor coolant circulation must be placed into service. This will provide the necessary circulation for monitoring coolant temperature. The 1 hour Completion Time is based on the coolant circulation function and is modified such that the 1 hour is applicable separately for each occurrence involving a loss of coolant circulation. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR shutdown cooling subsystem or recirculation pump), the reactor coolant temperature and pressure must be periodically monitored to ensure proper function of the alternate method. The once per hour Completion Time is deemed appropriate.

SURVEILLANCE REQUIREMENTS

SR 3.4.7.1

This Surveillance verifies that one RHR shutdown cooling subsystem or recirculation pump is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. ~~The Frequency of 12 hours is sufficient in view of other visual and audible indications available to the operator for monitoring the RHR subsystem in the control room.~~ [Insert 2]

This Surveillance is modified by a Note allowing sufficient time to align the RHR System for shutdown cooling operation after clearing the pressure interlock that isolates the system, or for placing a recirculation pump in operation. The Note takes exception to the requirements of the Surveillance being met (i.e., forced coolant circulation is not required for this initial 2 hour period), which also allows entry into the Applicability of this Specification in accordance with SR 3.0.4 since the Surveillance will not be "not met" at the time of entry into the Applicability.

BASES

SURVEILLANCE REQUIREMENTS (continued)

susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

This SR is modified by a Note that states the SR is not required to be performed until 12 hours after the reactor steam dome pressure is less than the RHR shutdown cooling supply isolation interlock. In a rapid shutdown, there may be insufficient time to verify all susceptible locations prior to entering the Applicability.

~~The 31 day Frequency takes into consideration the gradual nature of gas accumulation in the RHR Shutdown Cooling System piping and the procedural controls governing system operation.~~ [Insert 2]

REFERENCES

1. Amendment No. 189, Monticello Nuclear Generating Plant – Issuance of Amendment Re: Technical Specifications Task Force Standard Technical Specifications Change Traveler TSTF-523, Revision 2, "Generic Letter 2008-01, Managing Gas Accumulation," June 21, 2016 (ADAMS Accession No. ML16125A165)

BASES

ACTIONS (continued)

Completion Time is based on the coolant circulation function and is modified such that the 1 hour is applicable separately for each occurrence involving a loss of coolant circulation. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR Shutdown Cooling System or recirculation pump), the reactor coolant temperature and pressure must be periodically monitored to ensure proper function of the alternate method. The once per hour Completion Time is deemed appropriate.

SURVEILLANCE REQUIREMENTS

SR 3.4.8.1

This Surveillance verifies that one RHR shutdown cooling subsystem or recirculation pump is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. ~~The Frequency of 12 hours is sufficient in view of other visual and audible indications available to the operator for monitoring the RHR subsystem in the control room.~~ [Insert 2]

SR 3.4.8.2

RHR Shutdown Cooling System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the RHR shutdown cooling subsystems and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of RHR Shutdown Cooling System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

BASES

SURVEILLANCE REQUIREMENTS (continued)

The RHR Shutdown Cooling System is OPERABLE when it is sufficiently filled with water. Acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criteria for gas volume at the suction or discharge of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR Shutdown Cooling System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits.

RHR Shutdown Cooling System locations susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative sub-set of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety. For these locations alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

~~The 31 day Frequency takes into consideration the gradual nature of gas accumulation in the RHR Shutdown Cooling System piping and the procedural controls governing system operation.~~ [Insert 2]

REFERENCES

1. Amendment No. 189, Monticello Nuclear Generating Plant – Issuance of Amendment Re: Technical Specifications Task Force Standard Technical Specifications Change Traveler TSTF-523, Revision 2, “Generic Letter 2008-01, Managing Gas Accumulation,” June 21, 2016 (ADAMS Accession No. ML16125A165)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.9.1

Verification that operation is within limits is required ~~every 30 minutes~~ when RCS pressure and temperature conditions are undergoing planned changes. ~~This Frequency is considered reasonable in view of the control room indication available to monitor RCS status. Also, since temperature rate of change limits are specified in hourly increments, 30 minutes permits a reasonable time for assessment and correction of minor deviations.~~ [Insert 2]

The following locations must be monitored during RCS heatup and cooldown operations: a) reactor vessel shell adjacent to shell flange; b) reactor vessel bottom drain; c) recirculation loops A and B; and d) reactor vessel bottom head. The following locations must be monitored during inservice leak and hydrostatic testing: a) reactor vessel shell adjacent to shell flange; b) reactor vessel bottom head; and c) reactor vessel shell or coolant temperature representative of the minimum temperature of the beltline region.

Surveillance for heatup and cooldown may be discontinued when three consecutive measurements at each location are within 5°F. Surveillance for inservice leak and hydrostatic testing may be discontinued when the criteria given in the relevant plant procedure for ending the activity are satisfied.

This SR has been modified by a Note. The Note requires this Surveillance to be performed only during system heatup and cooldown operations and inservice leak and hydrostatic testing.

SR 3.4.9.2

A separate limit is used when the reactor is approaching criticality. Consequently, the RCS pressure and temperature must be verified within the appropriate limits before withdrawing control rods that will make the reactor critical.

Performing the Surveillance within 15 minutes before control rod withdrawal for the purpose of achieving criticality provides adequate assurance that the limits will not be exceeded between the time of the Surveillance and the time of the control rod withdrawal.

BASES

SURVEILLANCE REQUIREMENTS (continued)

The following locations must be monitored to verify compliance with the P/T criticality curve limits: a) reactor vessel shell adjacent to shell flange; b) reactor vessel bottom drain; c) recirculation loops A and B; and d) reactor vessel bottom head.

SR 3.4.9.3

Differential temperature within the limit ensures that thermal stresses resulting from the startup of an idle recirculation pump will not exceed design allowances at the reactor nozzles and bottom head region. In addition, compliance with this limit ensures that the assumption of the analysis for the startup of an idle recirculation loop (Ref. 8) is satisfied.

Performing the Surveillance within 15 minutes before starting the idle recirculation pump provides adequate assurance that the limit will not be exceeded between the time of the Surveillance and the time of the idle pump start.

An acceptable means of demonstrating compliance with the temperature differential requirement in SR 3.4.9.3 is to compare the temperatures of the operating recirculation loop and the idle loop.

SR 3.4.9.3 has been modified by a Note that requires the Surveillance to be performed only in MODES 1, 2, 3, and 4. In MODE 5, the overall stress on limiting components is lower. Therefore, the ΔT limit is not required. The Note also states the SR is only required to be met during a recirculation pump startup, since this is when the stresses occur.

SR 3.4.9.4, SR 3.4.9.5, and SR 3.4.9.6

Limits on the reactor vessel flange and head flange temperatures are generally bounded by the other P/T limits during system heatup and cooldown. However, operations approaching MODE 4 from MODE 5 and in MODE 4 with RCS temperature less than or equal to certain specified values require assurance that these temperatures meet the LCO limits.

The flange temperatures must be verified to be above the limits ~~30 minutes~~ before and while tensioning the vessel head bolting studs to ensure that once the head is tensioned the limits are satisfied. When in MODE 4 with RCS temperature ≤ 80°F, ~~30 minute~~ checks of the flange temperatures are required because of the reduced margin to the limits. When in MODE 4 with RCS temperature ≤ 100°F, monitoring of the flange temperature is required ~~every 12 hours~~ to ensure the temperature is within the limits specified in the PTLR.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~The 30 minute Frequency reflects the urgency of maintaining the temperatures within limits, and also limits the time that the temperature limits could be exceeded. The 12 hour Frequency is reasonable based on the rate of temperature change possible at these temperatures.~~ [Insert 1]

SR 3.4.9.4 is modified by a Note that requires the Surveillance to be performed only when tensioning the reactor vessel head bolting studs. SR 3.4.9.5 is modified by a Note that requires the Surveillance to be initiated 30 minutes after RCS temperature ≤ 80°F in MODE 4. SR 3.4.9.6 is modified by a Note that requires the Surveillance to be initiated 12 hours after RCS temperature ≤ 100°F in MODE 4. The Notes contained in these SRs are necessary to specify when the reactor vessel flange and head flange temperatures are required to be verified to be within the specified limits.

REFERENCES

1. 10 CFR 50, Appendix G.
2. ASME, Boiler and Pressure Vessel Code, Section III, Appendix G.
3. ASTM E 185-66, 1961.
4. 10 CFR 50, Appendix H.
5. Regulatory Guide 1.99, Revision 2, May 1988.
6. ASME, Boiler and Pressure Vessel Code, Section XI, Appendix E.
7. (Not used)
8. GE Service Information Letter No. 517, Supplement 1, "Analysis Basis for Idle Recirculation Loop Startup," dated August 26, 1998.
9. SIR-05-044-A, “Pressure-Temperature Limits Report Methodology for Boiling Water Reactors,” (latest approved version, see PTLR).
10. Amendment 172, “Issuance of Amendment to Revise and Relocate Pressure Temperature Curves to a Pressure Temperature Limits Report,” dated February 27, 2013. (ADAMS Accession No. ML13025A155)

BASES

ACTIONS

A.1

With the reactor steam dome pressure greater than the limit, prompt action should be taken to reduce pressure to below the limit and return the reactor to operation within the bounds of the analyses. The 15 minute Completion Time is reasonable considering the importance of maintaining the pressure within limits. This Completion Time also ensures that the probability of an accident occurring while pressure is greater than the limit is minimized.

B.1

If the reactor steam dome pressure cannot be restored to within the limit within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours. The allowed Completion Time of 12 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.4.10.1

Verification that reactor steam dome pressure is ≤ 1025.3 psig ensures that the initial conditions of the design basis accidents and transients are met. ~~Operating experience has shown the 12 hour Frequency to be sufficient for identifying trends and verifying operation within safety analyses assumptions.~~ [Insert 2]

REFERENCES

1. USAR, Section 14.5.1.
2. USAR, Section 14.4.

BASES

SURVEILLANCE REQUIREMENTS (continued)

ECCS injection/spray subsystem locations susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative sub-set of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety. For these locations alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. While the potential for developing voids in the HPCI System exists, the effects of a void have been analyzed and shown to be acceptable. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

~~The 31 day Frequency is based on the gradual nature of void buildup in the ECCS injection/spray subsystem piping, the procedural controls governing system operation, and operating experience.~~ [Insert 2]

SR 3.5.1.2

Verifying the correct alignment for manual, power operated, and automatic valves in the ECCS flow paths provides assurance that the proper flow paths will exist for ECCS operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position since these were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an initiation signal is allowed to be in a nonaccident position provided the valve will automatically reposition in the proper stroke time. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of potentially being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves. For the HPCI System, this SR also includes the steam flow path for the turbine and the flow controller position.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~The 31 day Frequency of this SR was derived from the INSERVICE TESTING PROGRAM requirements for performing valve testing at least once every 92 days. The Frequency of 31 days is further justified because the valves are operated under procedural control and because improper valve position would only affect a single subsystem. This Frequency has been shown to be acceptable through operating experience.~~ [Insert 2]

The Surveillance is modified by a Note which exempts system vent flow paths opened under administrative control. The administrative control should be proceduralized and include stationing a dedicated individual at the system vent flow path who is in continuous communication with the operators in the control room. This individual will have a method to rapidly close the system vent flow path if directed.

SR 3.5.1.3

Verification ~~every 31 days~~ that each ADS pneumatic pressure is within the analysis limits (S/RV Accumulator Bank header pressure ≥ 88.3 psig and Alternate Nitrogen System supply (ALT N2 TRAIN A (or B) SUPPLY) pressure ≥ 410 psig (Ref. 13)) ensures adequate pressure for reliable ADS operation. The supply associated with each ADS valve provides pneumatic pressure for valve actuation. The design pneumatic supply pressure requirements for the S/RV accumulator bank and Alternate Nitrogen System trains (replaceable gas cylinders) are such that, following a failure of the pneumatic supply to them, at least five valve actuations can occur over a ten hour period (Ref. 10). The ECCS safety analysis assumes only one actuation to achieve the depressurization required for operation of the low pressure ECCS. ~~The 31 day Frequency takes into consideration administrative controls over operation of the system and alarms for low pressure.~~ [Insert 2]

Each Alternate Nitrogen System is designed for the three upstream nitrogen bottles to maintain OPERABILITY while the fourth, downstream, bottle is being replaced with a fully charged bottle. During bottle changeout the capacity of the system is temporarily reduced. This is acceptable based on the remaining capacity (only one actuation is necessary to depressurize), the low rate of usage, the fact that procedures have been initiated for replenishment, and the low probability of an event during this brief period.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.1.4

Verification ~~every 31 days~~ that the RHR System intertie return line isolation valves are closed ensures that each LPCI subsystem will provide the required flow rate to the reactor pressure vessel. ~~The 31 day Frequency has been found acceptable, considering that these valves are under strict administrative controls that will ensure the valves continue to remain closed.~~ [Insert 2]

The SR is modified by a Note stating that the SR is only required to be met in MODE 1. During MODE 1 operations with the RHR System intertie line isolation valves open, some of the LPCI flow may be diverted to the broken recirculation loop during a LOCA, potentially resulting in early transition boiling. In other MODES, the intertie line may be opened because the impact on the LOCA analyses is negligible.

SR 3.5.1.5

Verification of correct breaker alignment to the LPCI swing bus demonstrates that the normal AC electrical power source is powering the swing bus and the backup AC electrical power source is available to ensure proper operation of the LPCI injection valves and the recirculation pump discharge valves. If either the normal source is not powering the LPCI swing bus or the backup source is not available to the LPCI swing bus, one of the LPCI subsystems must be considered inoperable. ~~The 31 day Frequency has been found acceptable based on engineering judgment and operating experience.~~ [Insert 2]

SR 3.5.1.6

Cycling the recirculation pump discharge valves through one complete cycle of full travel demonstrates that the valves are mechanically OPERABLE and will close when required. Upon initiation of an automatic LPCI subsystem injection signal, these valves are required to be closed to ensure full LPCI subsystem flow injection in the reactor via the recirculation jet pumps. De-energizing the valve in the closed position will also ensure the proper flow path for the LPCI subsystem. Acceptable methods of de-energizing the valve include de-energizing breaker control power, racking out the breaker or removing the breaker.

The Frequency of this SR is in accordance with the INSERVICE TESTING PROGRAM. If any recirculation pump discharge valve is inoperable and in the open position, both LPCI subsystems must be declared inoperable.

BASES

SURVEILLANCE REQUIREMENTS (continued)

TESTING PROGRAM requirements. The 24 month Frequency for SR 3.5.1.9 is based on the need to perform the Surveillance under the conditions that apply during a startup from a plant outage. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint. controlled under the Surveillance Frequency Control Program.

SR 3.5.1.10

The ECCS subsystems are required to actuate automatically to perform their design functions. This Surveillance verifies that, with a required system initiation signal (actual or simulated), the automatic initiation logic of HPCI, CS, and LPCI will cause the systems or subsystems to operate as designed, including actuation of the system throughout its emergency operating sequence, automatic pump startup and actuation of all automatic valves to their required positions. This SR also ensures that the HPCI System will automatically restart on a Reactor Vessel Water Level - Low Low signal received subsequent to a Reactor Vessel Water Level - High trip and that the suction is automatically transferred from the CSTs to the suppression pool on a Suppression Pool Water Level - High or Condensate Storage Tank Level - Low signal. The LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.1 overlaps this Surveillance to provide complete testing of the assumed safety function.

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

Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint. [Insert 2]

This SR is modified by a Note that excludes vessel injection/spray during the Surveillance. Since all active components are testable and full flow can be demonstrated by recirculation through the test line, coolant injection into the RPV is not required during the Surveillance.

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.1.11

The ADS designated S/RVs are required to actuate automatically upon receipt of specific initiation signals. A system functional test is performed to demonstrate that the mechanical portions of the ADS function (i.e., solenoids) operate as designed when initiated either by an actual or simulated initiation signal, causing proper actuation of all the required components. SR 3.5.1.12 and the LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.1 overlap this Surveillance to provide complete testing of the assumed safety function.

~~The 24 month Frequency is based on the need to perform the Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint~~. [Insert 2]

This SR is modified by a Note that excludes valve actuation since the valves are individually tested in accordance with SR 3.5.1.12.

SR 3.5.1.12

This Surveillance verifies that each ADS valve is capable of being opened, which can be determined by either of two means, i.e., Method 1 or Method 2. Applying Method 1, approved in Reference 15, valve OPERABILITY and setpoints for overpressure protection are verified in accordance with the ASME OM Code. Applying Method 2, a manual actuation of the ADS valve is performed to verify the valve is functioning properly.

Method 1

Valve OPERABILITY and setpoints for overpressure protection are verified in accordance with the requirements of the ASME OM Code (Ref. 16). Proper ADS valve function is verified through performance of inspections and overlapping tests on component assemblies, demonstrating the valve is capable of being opened. Testing is performed to demonstrate that each:

- ADS S/RV main stage opens and passes steam when the associated pilot stage actuates; and

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Frequency of "In accordance with the INSERVICE TESTING PROGRAM" is based on ASME OM Code requirements. Industry operating experience has shown that these components usually pass the SR when performed at the Code required Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.5.1.13

The LPCI System injection valves, recirculation pump discharge valves, recirculation pump suction valves, and the RHR discharge intertie line isolation valves are powered from the LPCI swing bus, which must be energized after a single failure, including loss of power from the normal source to the swing bus. Therefore, the automatic transfer capability from the normal power source to the backup power source must be verified to ensure the automatic capability to detect loss of normal power and initiate an automatic transfer to the swing bus backup power source. Verification of this capability every 24 months ensures that AC electrical power is available for proper operation of the associated LPCI injection valves, recirculation pump discharge valves, recirculation pump suction valves, and the RHR discharge intertie line isolation valves. The swing bus automatic transfer scheme must be OPERABLE for both LPCI subsystems to be OPERABLE. ~~The Frequency of 24 months is based on the need to perform the Surveillance under the conditions that apply during a startup from a plant outage. Operating experience has shown that the components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ [Insert 2]

REFERENCES

1. USAR, Section 6.2.2.
2. USAR, Section 6.2.3.
3. USAR, Section 6.2.4.
4. USAR, Section 6.2.5.
5. USAR, Section 14.7.2.
6. USAR, Section 14.7.3.
7. 10 CFR 50, Appendix K.
8. USAR, Section 6.2.1.1.

BASES

ACTIONS (continued)

The 4 hour Completion Time to restore at least one low pressure ECCS injection/spray subsystem to OPERABLE status ensures that prompt action will be taken to provide the required cooling capacity or to initiate actions to place the plant in a condition that minimizes any potential fission product release to the environment.

SURVEILLANCE REQUIREMENTS

SR 3.5.2.1

The minimum water level of -3 ft required for the suppression pool is periodically verified to ensure that the suppression pool will provide adequate net positive suction head (NPSH) for the CS System and LPCI subsystem pumps, recirculation volume, and vortex prevention. With the suppression pool water level less than the required limit, all ECCS injection/spray subsystems are inoperable unless they are aligned to an OPERABLE CST.

When suppression pool level is < -3 ft, the CS and LPCI subsystems are considered OPERABLE only if they can take suction from the CST(s), and the CST(s) water level is sufficient to provide the required NPSH and vortex prevention for the CS pump or LPCI pump. Therefore, a verification that either the suppression pool water level is ≥ -3 ft or that the required low pressure ECCS injection/spray subsystems are aligned to take suction from the CST(s) and the CST(s) contain ≥ 58,000 gallons of water, equivalent to 4 ft in both CSTs when they are cross-tied (normal configuration) and 7 ft in one CST when they are not cross-tied, ensures that the required low pressure ECCS injection/spray subsystems can supply at least 50,000 available gallons of makeup water to the RPV. The low pressure ECCS injection/spray suction is uncovered at the 2366 gallon level. However, as noted, only one required low pressure ECCS injection/spray subsystem may take credit for the CST option during OPDRVs. During OPDRVs, the volume in the CST(s) may not provide adequate makeup if the RPV were completely drained. Therefore, only one low pressure ECCS injection/spray subsystem is allowed to use the CST(s). This ensures the other required ECCS subsystem has adequate makeup volume.

~~The 12 hour Frequency of these SRs was developed considering operating experience related to suppression pool water level and CST water level variations and instrument drift during the applicable MODES. Furthermore, the 12 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal suppression pool or CST water level condition.~~ [Insert 2]

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.2.2, SR 3.5.2.4, and SR 3.5.2.5

The Bases provided for SR 3.5.1.1, SR 3.5.1.7, and SR 3.5.1.10 are applicable to SR 3.5.2.2, SR 3.5.2.4, and SR 3.5.2.5, respectively.

SR 3.5.2.3

Verifying the correct alignment for manual, power operated, and automatic valves in the ECCS flow paths provides assurance that the proper flow paths will exist for ECCS operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an initiation signal is allowed to be in a nonaccident position provided the valve will automatically reposition in the proper stroke time. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of potentially being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves. ~~The 31 day Frequency is appropriate because the valves are operated under procedural control and the probability of their being mispositioned during this time period is low.~~ [Insert 2]

The Surveillance is modified by a Note which exempts system vent flow paths opened under administrative control. The administrative control should be proceduralized and include stationing a dedicated individual at the system vent flow path who is in continuous communication with the operators in the control room. This individual will have a method to rapidly close the system vent flow path if directed (Ref. 2).

REFERENCES

1. USAR, Section 14.7.2.3.6.

2. Amendment No. 189, Monticello Nuclear Generating Plant – Issuance of Amendment Re: Technical Specifications Task Force Standard Technical Specifications Change Traveler TSTF-523, Revision 2, “Generic Letter 2008-01, Managing Gas Accumulation,” June 21, 2016 (ADAMS Accession No. ML16125A165)

BASES

SURVEILLANCE REQUIREMENTS (continued)

sealing, or securing. A valve that receives an initiation signal is allowed to be in a nonaccident position provided the valve will automatically reposition in the proper stroke time. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of potentially being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves. For the RCIC System, this SR also includes the steam flow path for the turbine and the flow controller position.

~~The 31 day Frequency of this SR was derived from the INSERVICE TESTING PROGRAM requirements for performing valve testing at least once every 92 days. The Frequency of 31 days is further justified because the valves are operated under procedural control and because improper valve position would affect only the RCIC System. This Frequency has been shown to be acceptable through operating experience.~~ [Insert 2]

The Surveillance is modified by a Note which exempts system vent flow paths opened under administrative control The administrative control should be proceduralized and include stationing a dedicated individual at the system vent flow path who is in continuous communication with the operators in the control room. This individual will have a method to rapidly close the system vent flow path if directed.

SR 3.5.3.2 and SR 3.5.3.3

The RCIC pump flow rates ensure that the system can maintain reactor coolant inventory during pressurized conditions with the RPV isolated. The flow tests for the RCIC System are performed at two different pressure ranges such that system capability to provide rated flow against a system head corresponding to reactor pressure is tested both at the higher and lower operating ranges of the system. The required system head should overcome the RPV pressure and associated discharge line losses. Adequate reactor steam pressure must be available to perform these tests. Additionally, adequate steam flow must be passing through the turbine bypass valves to continue to control reactor pressure when the RCIC System diverts steam flow. Therefore, sufficient time is allowed after adequate pressure and flow are achieved to perform these SRs. Reactor steam pressure must be ≥ 950 psig to perform SR 3.5.3.2 and ≥ 150 psig to perform SR 3.5.3.3. Adequate steam flow is represented by at least one turbine bypass valve 80% open. Reactor startup is allowed prior to performing the low pressure Surveillance because the reactor pressure is low and the time allowed to satisfactorily perform the Surveillance is short. The reactor pressure is allowed to be increased to normal operating pressure since it is assumed that the low pressure

BASES

SURVEILLANCE REQUIREMENTS (continued)

Surveillance has been satisfactorily completed and there is no indication or reason to believe that RCIC is inoperable. Therefore, these SRs are modified by Notes that state the Surveillances are not required to be performed until 12 hours after the reactor steam pressure and flow are adequate to perform the test. The 12 hours allowed for performing the flow test after the required pressure and flow are reached is sufficient to achieve stable conditions for testing and provides reasonable time to complete the SRs.

The Frequency of SR 3.5.3.2 is consistent with the INSERVICE TESTING PROGRAM requirements. The ~~24 month~~ Frequency for SR 3.5.3.3 is ~~based on the need to perform the Surveillance under conditions that apply during a startup from a plant outage. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ controlled under the Surveillance Frequency Control Program.

SR 3.5.3.4

The RCIC System is required to actuate automatically in order to verify its design function satisfactorily. This Surveillance verifies that, with a required system initiation signal (actual or simulated), the automatic initiation logic of the RCIC System will cause the system to operate as designed, i.e., actuation of the system throughout its emergency operating sequence; which includes automatic pump startup and actuation of all automatic valves to their required positions. This Surveillance also ensures the RCIC System will automatically restart on a Reactor Vessel Water Level - Low Low signal received subsequent to a Reactor Vessel Water Level - High trip and that the suction is automatically transferred from the CSTs to the suppression pool on a Condensate Storage Tank Level - Low signal. The LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.2 overlaps this Surveillance to provide complete testing of the assumed safety function.

~~The 24 month Frequency is based on the need to perform the Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ [Insert 2]

BASES

SURVEILLANCE REQUIREMENTS (continued)

Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety. For these locations alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

~~The 31 day Frequency is based on the gradual nature of void buildup in the RCIC piping, the procedural controls governing system operation, and operating experience.~~ [Insert 2]

REFERENCES

1. USAR, Section 10.2.5.
2. Memorandum from R.L. Baer (NRC) to V. Stello, Jr. (NRC), "Recommended Interim Revisions to LCOs for ECCS Components," December 1, 1975.
3. Amendment No. 189, Monticello Nuclear Generating Plant – Issuance of Amendment Re: Technical Specifications Task Force Standard Technical Specifications Change Traveler TSTF-523, Revision 2, “Generic Letter 2008-01, Managing Gas Accumulation,” June 21, 2016 (ADAMS Accession No. ML16125A165)

BASES

SURVEILLANCE REQUIREMENTS (continued)

Thus, if an event were to occur that pressurized the drywell, the steam would be directed through the downcomers into the suppression pool. This SR measures drywell to suppression chamber differential pressure during a 25 minute period to ensure that the leakage paths that would bypass the suppression pool are within allowable limits.

[Insert 2] Satisfactory performance of this SR can be achieved by establishing a known differential pressure between the drywell and the suppression chamber and verifying that the bypass leakage is less than that equivalent to a one inch diameter orifice. ~~The leakage test is performed every 24 months. The 24 month Frequency was developed considering it is prudent that this Surveillance be performed during a unit outage and also in view of the fact that component failures that might have affected this test are identified by other primary containment SRs.~~ Two consecutive ~~24 month~~ test failures, however, would indicate unexpected primary containment degradation; in this event, as the Note indicates, increasing the Frequency to once every 12 months is required until the situation is remedied as evidenced by passing two consecutive 12 month tests.

REFERENCES

1. USAR, Section 5.2.
2. USAR, Section 14.7.2.
3. 10 CFR 50, Appendix J, Option B.
4. Amendment No. 176, "Monticello Nuclear Generating Plant – Issuance of Amendment No. 176 to Renewed Facility Operating License Regarding Extended Power Uprate," (ADAMS Accession No. ML13316C459)
5. Nuclear Energy Institute (NEI) Topical Report NEI 94-01, "Industry Guideline for Implementing Performance-Based Option of 10 CFR 50, Appendix J", Revision 2-A, dated October 2008
6. ANSI/ANS 56.8-2002, "Containment System Leakage Testing Requirements"
7. Amendment No. 193, "Monticello Nuclear Generating Plant – Issuance of Amendment Re: Technical Specification 5.5.11, "Primary Containment Leakage Rate Testing Program," dated April 25, 2017. (ADAMS Accession No. ML17103A235)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.1.2.1

Maintaining the primary containment air lock OPERABLE requires compliance with the leakage rate test requirements of the Primary Containment Leakage Rate Testing Program. This SR reflects the leakage rate testing requirements with respect to air lock leakage (Type B leakage tests). The acceptance criteria were established during initial air lock and primary containment OPERABILITY testing. The periodic testing requirements verify that the air lock leakage does not exceed the allowed fraction of the overall primary containment leakage rate. The Frequency is required by the Primary Containment Leakage Rate Testing Program.

The SR has been modified by two Notes. Note 1 states that an inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. This is considered reasonable since either air lock door is capable of providing a fission product barrier in the event of a DBA. Note 2 has been added to this SR requiring the results to be evaluated against the acceptance criteria which is applicable to SR 3.6.1.1.1. This ensures that air lock leakage is properly accounted for in determining the combined Types B and C primary containment leakage.

SR 3.6.1.2.2

The air lock interlock mechanism is designed to prevent simultaneous opening of both doors in the air lock. Since both the inner and outer doors of an air lock are designed to withstand the maximum expected post accident primary containment pressure, closure of either door will support primary containment OPERABILITY. Thus, the interlock feature supports primary containment OPERABILITY while the air lock is being used for personnel transit in and out of the containment. Periodic testing of this interlock demonstrates that the interlock will function as designed and that simultaneous inner and outer door opening will not inadvertently occur. ~~Due to the purely mechanical nature of this interlock, and given that the interlock mechanism is not normally challenged when the primary containment airlock door is used for entry and exit (procedures require strict adherence to single door opening), this test is only required to be performed every 24 months. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage, and the potential for loss of primary containment OPERABILITY if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on engineering judgment and is considered adequate given that the interlock is not challenged during the use of the air lock.~~ [Insert 2]

BASES

SURVEILLANCE REQUIREMENTS (continued)

The 18 inch purge and vent valves are capable of closing in the environment following a LOCA. Therefore, these valves are allowed to be open for limited periods of time. ~~The 31 day Frequency is consistent with other PCIV requirements discussed in SR 3.6.1.3.2.~~ [Insert 2]

SR 3.6.1.3.2

This SR verifies that each primary containment isolation manual valve and blind flange that is located outside primary containment and not locked, sealed, or otherwise secured and is required to be closed during accident conditions, is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside the primary containment boundary is within design limits.

This SR does not require any testing or valve manipulation. Rather, it involves verification that those PCIVs outside primary containment, and capable of being mispositioned, are in the correct position. ~~Since verification of position for PCIVs outside primary containment is relatively easy, the 31 day Frequency was chosen to provide added assurance that the PCIVs are in the correct positions.~~ [Insert 2] This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

Two Notes have been added to this SR. The first Note allows valves and blind flanges located in high radiation areas to be verified by use of administrative controls. Allowing verification by administrative controls is considered acceptable since access to these areas is typically restricted for ALARA reasons. Therefore, the probability of misalignment of these PCIVs, once they have been verified to be in the proper position, is low. A second Note has been included to clarify that PCIVs open under administrative controls are not required to meet the SR during the time that the PCIVs are open. These controls consist of stationing a dedicated individual at the controls of the valve, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for primary containment isolation is indicated.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.1.3.3

This SR verifies that each primary containment manual isolation valve and blind flange that is located inside primary containment and not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside the primary containment boundary is within design limits. For PCIVs inside primary containment, the Frequency of "prior to entering MODE 2 or 3 from MODE 4 if primary containment was de-inerted while in MODE 4, if not performed within the previous 92 days" is appropriate since these PCIVs are operated under administrative controls and the probability of their misalignment is low. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

Two Notes have been added to this SR. The first Note allows valves and blind flanges located in high radiation areas to be verified by use of administrative controls. Allowing verification by administrative controls is considered acceptable since the primary containment is inerted and access to these areas is typically restricted during MODES 1, 2, and 3 for ALARA reasons. Therefore, the probability of misalignment of these PCIVs, once they have been verified to be in their proper position, is low. A second Note has been included to clarify that PCIVs that are open under administrative controls are not required to meet the SR during the time that the PCIVs are open. These controls consist of stationing a dedicated individual at the controls of the valve, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for primary containment isolation is indicated.

SR 3.6.1.3.4

The traversing incore probe (TIP) shear isolation valves are actuated by explosive charges. Surveillance of explosive charge continuity provides assurance that TIP valves will actuate when required. Other administrative controls, such as those that limit the shelf life of the explosive charges, must be followed. ~~The 31 day Frequency is based on operating experience that has demonstrated the reliability of the explosive charge continuity.~~ [Insert 2]

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.1.3.5

Verifying the isolation time of each power operated, automatic PCIV is within limits is required to demonstrate OPERABILITY. MSIVs may be excluded from this SR since MSIV full closure isolation time is demonstrated by SR 3.6.1.3.6. The isolation time test ensures that the valve will isolate in a time period less than or equal to that assumed in the safety analyses. ~~The Frequency of this SR is 24 months.~~ [Insert 2]

SR 3.6.1.3.6

Verifying that the isolation time of each MSIV is within the specified limits is required to demonstrate OPERABILITY. The isolation time test ensures that the MSIV will isolate in a time period that does not exceed the times assumed in the DBA and transient analyses. This ensures that the calculated radiological consequences of these events remain within 10 CFR 50.67 limits. ~~The Frequency of this SR is 24 months.~~ [Insert 2]

SR 3.6.1.3.7

Automatic PCIVs close on a primary containment isolation signal to prevent leakage of radioactive material from primary containment following a DBA. This SR ensures that each automatic PCIV will actuate to its isolation position on a primary containment isolation signal. The LOGIC SYSTEM FUNCTIONAL TEST in LCO 3.3.6.1 overlaps this SR to provide complete testing of the safety function. ~~The 24 month Frequency was developed considering it is prudent that this Surveillance be performed only during a unit outage since isolation of penetrations would eliminate cooling water flow and disrupt the normal operation of many critical components. Operating experience has shown that these components usually pass this Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ [Insert 2]

SR 3.6.1.3.8

This SR requires a demonstration that each reactor instrumentation line excess flow check valve (EFCV) is OPERABLE by verifying that the valve reduces flow to ≤ 2 gpm on a simulated instrument line break.

BASES

SURVEILLANCE REQUIREMENTS (continued)

This SR provides assurance that the instrumentation line EFCVs will perform as designed (Ref. 9). ~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass this Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ [Insert 2]

SR 3.6.1.3.9

Verifying each 18 inch primary containment purge and vent valve is blocked to restrict opening to ≤ 40° is required to ensure that the valves can close under DBA conditions. ~~The 24 month Frequency is appropriate because the blocking devices are typically removed only during a refueling outage.~~ [Insert 2]

SR 3.6.1.3.10

The TIP shear isolation valves are actuated by explosive charges. An in place functional test is not possible with this design. The explosive squib is removed and tested to provide assurance that the valves will actuate when required. The replacement charge for the explosive squib shall be from the same manufactured batch as the one fired or from another batch that has been certified by having one of the batch successfully fired. ~~The Frequency of 24 months on a STAGGERED TEST BASIS is considered adequate given the administrative controls on replacement charges and the frequent checks of circuit continuity (SR 3.6.1.3.4).~~ [Insert 2]

SR 3.6.1.3.11

For the 18 inch primary containment purge and vent valves with resilient seals, leakage rate testing consistent with the test requirements of 10 CFR 50, Appendix J, Option B (Ref. 8), is required to ensure OPERABILITY. The Frequency of this SR is in accordance with the Primary Containment Leakage Rate Testing Program.

SR 3.6.1.3.12

The Alternative Source Term DBA LOCA analyses are based on the specified leakage rate. Leakage through each MSIV must be ≤ 100 scfh when tested at ≥ 44.1 psig (P_a) or ≤ 75.3 scfh (Ref. 10) when tested

BASES

ACTIONS

A.1

With drywell average air temperature not within the limit of the LCO, drywell average air temperature must be restored within 8 hours. The Required Action is necessary to return operation to within the bounds of the primary containment analysis. The 8 hour Completion Time is acceptable, considering the sensitivity of the analysis to variations in this parameter, and provides sufficient time to correct minor problems.

B.1 and B.2

If the drywell average air temperature cannot be restored to within the limit within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.1.4.1

Verifying that the drywell average air temperature is within the LCO limit ensures that operation remains within the limits assumed for the primary containment analyses. Drywell air temperature is monitored in all quadrants and at various elevations (referenced to mean sea level). Due to the shape of the drywell, a volumetric average is used to determine an accurate representation of the actual average temperature.

~~The 24 hour Frequency of the SR was developed based on operating experience related to drywell average air temperature variations and temperature instrument drift during the applicable MODES and the low probability of a DBA occurring between surveillances. Furthermore, the 24 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal drywell air temperature condition.~~ [Insert 2]

REFERENCES

1. USAR, Section 5.2.3.3.
2. USAR, Section 5.2.3.9.
3. USAR, Section 5.2.3.2.
4. USAR, Table 5.2-7.
5. USAR, Section 5.2.1.1.

BASES

SURVEILLANCE REQUIREMENTS (continued)

Reference 2 prior to valve installation. The 12 hours allowed for manual actuation after the required flow is reached is sufficient to achieve stable conditions for testing and provides a reasonable time to complete the Surveillance.

SR 3.6.1.5.2 and the LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.6.3, “LLS Instrumentation,” overlap this Surveillance to provide complete testing of the assumed safety function.

The Frequency of “In accordance with the INSERVICE TESTING PROGRAM” is based on ASME OM Code requirements. Industry operating experience has shown that these components usually pass the SR when performed at the Code required Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.6.1.5.2

The LLS designated S/RVs are required to actuate automatically upon receipt of specific initiation signals. A system functional test is performed to verify that the mechanical portions (i.e., solenoids) of the LLS function operate as designed when initiated either by an actual or simulated automatic initiation signal. The LOGIC SYSTEM FUNCTIONAL TEST in LCO 3.3.6.3, "Low-Low Set (LLS) Instrumentation," overlaps this SR to provide complete testing of the safety function.

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ [Insert 2]

This SR is modified by a Note that excludes valve actuation. This prevents a reactor pressure vessel pressure blowdown.

REFERENCES

1. USAR, Section 4.4.3.
2. ASME Operation and Maintenance (OM) Code.
3. Amendment No. 168, “Issuance of Amendment Re: Testing of Main Steam Safety/Relief Valves,” dated July 27, 2012. (ADAMS Accession No. ML12185A216)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.1.6.1

Each vacuum breaker is verified to be closed to ensure that a potential breach in the primary containment boundary is not present. This Surveillance is performed by observing local or control room indications of vacuum breaker position. ~~The 14 day Frequency is based on engineering judgment, is considered adequate in view of other indications of vacuum breaker status available to operations personnel, and has been shown to be acceptable through operating experience.~~ [Insert 2]

Two Notes are added to this SR. The first Note allows reactor building-to-suppression chamber vacuum breakers opened in conjunction with the performance of a Surveillance to not be considered as failing this SR. These periods of opening vacuum breakers are controlled by plant procedures and do not represent inoperable vacuum breakers. The second Note is included to clarify that vacuum breakers open due to an actual differential pressure are not considered as failing this SR.

SR 3.6.1.6.2

Each vacuum breaker must be cycled to ensure that it opens properly to perform its design function and returns to its fully closed position. This ensures that the safety analysis assumptions are valid. ~~The 92 day Frequency of this SR was developed based upon INSERVICE TESTING PROGRAM requirements to perform valve testing at least once every 92 days.~~ [Insert 2]

SR 3.6.1.6.3

Demonstration of vacuum breaker opening setpoint is necessary to ensure that the safety analysis assumption regarding vacuum breaker full open differential pressure of ≤ 0.5 psid is valid. ~~The 92 day Frequency has been shown to be acceptable, based on operating experience.~~ [Insert 2]

REFERENCES

1. USAR, Section 5.2.1.2.3.

BASES

ACTIONS (continued)

C.1 and C.2

If the inoperable suppression chamber-to-drywell vacuum breaker cannot be closed or restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.1.7.1

Each vacuum breaker is verified closed to ensure that this potential large bypass leakage path is not present. This Surveillance is performed by observing the vacuum breaker position indication or by verifying that the differential pressure decay between the suppression chamber and drywell is maintained within the Allowable Region of Figure B 3.6.1.7-1. ~~The 14 day Frequency is based on engineering judgment, is considered adequate in view of other indications of vacuum breaker status available to operations personnel, and has been shown to be acceptable through operating experience.~~ [Insert 2] This verification is also required within 12 hours after any operation that causes the drywell-to-suppression chamber differential pressure to be reduced by ≥ 0.5 psid.

Three Notes are added to this SR. The first Note allows suppression chamber-to-drywell vacuum breakers opened in conjunction with the performance of a Surveillance to not be considered as failing this SR. These periods of opening vacuum breakers are controlled by plant procedures and do not represent inoperable vacuum breakers. The second Note is included to clarify that vacuum breakers open due to an actual differential pressure are not considered as failing this SR. The third Note is included to clarify that vacuum breakers open, one at a time, during primary containment inerting or de-inerting operations are not considered as failing this SR. This allowance is necessary to assist in purging air or nitrogen from the suppression chamber vent header.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.1.7.2

Each required vacuum breaker must be cycled to ensure that it opens adequately to perform its design function and returns to the fully closed position. This ensures that the safety analysis assumptions are valid. ~~The 31 day Frequency of this SR was developed, based on INSERVICE TESTING PROGRAM requirements to perform valve testing at least once every 92 days. A 31 day Frequency was chosen to provide additional assurance that the vacuum breakers are OPERABLE, since they are located in a harsh environment (the suppression chamber airspace).~~ [Insert 2]

SR 3.6.1.7.3

Verification of the vacuum breaker opening setpoint is necessary to ensure that the safety analysis assumption regarding vacuum breaker full open differential pressure of 0.5 psid (acting on the suppression chamber face of the valve disc) is valid. ~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. For this facility, the 24 month Frequency has been shown to be acceptable, based on operating experience, and is further justified because of other surveillances performed at shorter Frequencies that convey the proper functioning status of each vacuum breaker.~~ [Insert 2]

REFERENCES

1. USAR, Section 5.2.1.2.3.

BASES

ACTIONS (continued)

MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.1.8.1

Verifying the correct alignment for manual and power operated valves in the RHR drywell spray mode flow path provides assurance that the proper flow paths will exist for system operation. This SR 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 is also allowed to be in the nonaccident position provided it can be aligned to the accident position within the time assumed in the accident analysis. This is acceptable since the RHR drywell spray mode is manually initiated. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves.

~~The Frequency of 31 days is justified because the valves are operated under procedural control, improper valve position would affect only a single subsystem, the probability of an event requiring initiation of the system is low, and the subsystem is a manually initiated system. This Frequency has been shown to be acceptable based on operating experience.~~ [Insert 2]

SR 3.6.1.8.2

This Surveillance is performed every 10 years to verify that the drywell spray nozzles are not obstructed and that spray flow will be provided when required. The 10 year Frequency is adequate to detect degradation in performance due to the passive nozzle design and has been shown to be acceptable through operating experience.

SR 3.6.1.8.3

RHR Drywell Spray System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the RHR drywell spray subsystems and may also prevent water hammer and pump cavitation.

BASES

SURVEILLANCE REQUIREMENTS (continued)

Selection of RHR Drywell Spray System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

The RHR Drywell Spray System is OPERABLE when it is sufficiently filled with water. Acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criteria for gas volume at the suction or discharge of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR Drywell Spray System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits.

RHR Drywell Spray System locations susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative sub-set of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety. For these locations alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

~~The 31 day Frequency takes into consideration the gradual nature of gas accumulation in the RHR Drywell Spray System piping and the procedural controls governing system operation.~~ [Insert 2]

BASES

ACTIONS (continued)

D.1 and D.2

Suppression pool average temperature > 110°F requires that the reactor be shut down immediately. This is accomplished by placing the reactor mode switch in the shutdown position. Further cooldown to MODE 4 within 36 hours is required at normal cooldown rates (provided pool temperature remains ≤ 120°F). Additionally, when suppression pool temperature is > 110°F, increased monitoring of pool temperature is required. The once per 30 minute Completion Time is adequate, based on operating experience. Given the high suppression pool average temperature in this condition, the monitoring Frequency is increased to twice that of Required Action A.1. Furthermore, the 30 minute Completion Time is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal suppression pool average temperature condition. Additionally, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 4 within 36 hours. The allowed Completion Time is reasonable, based on operating experience, to reach the required plant condition from full power conditions in an orderly manner and without challenging plant systems.

E.1

If suppression pool average temperature cannot be maintained at ≤ 120°F, the reactor pressure must be reduced to < 200 psig within 12 hours. The allowed Completion Time is reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

Continued addition of heat to the suppression pool with suppression pool temperature > 120°F could result in exceeding the design basis maximum allowable values for primary containment temperature or pressure. Furthermore, if a blowdown were to occur when the temperature was > 120°F, the maximum allowable bulk and local temperatures could be exceeded very quickly.

SURVEILLANCE REQUIREMENTS

SR 3.6.2.1.1

The suppression pool average temperature is regularly monitored to ensure that the required limits are satisfied. The average temperature is determined by taking an arithmetic average of OPERABLE suppression pool water temperature channels. ~~The 24 hour Frequency has been shown, based on operating experience, to be acceptable.~~ ~~When heat is~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

[Insert 2]

~~being added to the suppression pool by testing, however, it is necessary to monitor suppression pool temperature more frequently.~~ The 5 minute Frequency during testing is justified by the rates at which tests will heat up the suppression pool, has been shown to be acceptable based on operating experience, and provides assurance that allowable pool temperatures are not exceeded. The ~~Frequencies are~~ Frequency is further justified in view of other indications available in the control room, including alarms, to alert the operator to an abnormal suppression pool average temperature condition.

REFERENCES

1. USAR, Section 5.2.1.1.

2. USAR, Section 5.2.3.

3. NEDC-23487-P, "Monticello Nuclear Generating Plant Suppression Pool Temperature Response," December 1981.

4. Amendment 126, “Monticello Nuclear Generating Plant – Issuance of Amendment Re: Elimination of Local Suppression Pool Temperature Limits (TAC No. MB2064),” dated January 18, 2002.

5. NEDE-24539-P, "Mark I Containment Program," April 1979.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.2.2.1

Verification of the suppression pool water level is to ensure that the required limits are satisfied. ~~The 24 hour Frequency has been shown to be acceptable based on operating experience. Furthermore, the 24 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal suppression pool water level condition.~~ [Insert 2]

REFERENCES

1. USAR, Section 5.2.3.

BASES

ACTIONS (continued)

C.1 and C.2

If the Required Action and associated Completion Time cannot be met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.2.3.1

Verifying the correct alignment for manual and power operated valves in the RHR suppression pool cooling mode flow path provides assurance that the proper flow path exists for system operation. This SR 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 is also allowed to be in the nonaccident position provided it can be aligned to the accident position within the time assumed in the accident analysis. This is acceptable since the RHR suppression pool cooling mode is manually initiated. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves.

~~The Frequency of 31 days is justified because the valves are operated under procedural control, improper valve position would affect only a single subsystem, the probability of an event requiring initiation of the system is low, and the subsystem is a manually initiated system. This Frequency has been shown to be acceptable based on operating experience.~~ [Insert 2]

SR 3.6.2.3.2

Verifying that each RHR pump develops a flow rate ≥ 3870 gpm while operating in the suppression pool cooling mode with flow through the associated heat exchanger ensures that pump performance has not degraded during the cycle. Flow is a normal test of centrifugal pump performance required by ASME OM Code (Ref. 2). This test confirms one point on the pump design curve, and the results are indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance.

BASES

SURVEILLANCE REQUIREMENTS (continued)

monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

~~The 31 day Frequency takes into consideration the gradual nature of gas accumulation in the RHR Suppression Pool Cooling System piping and the procedural controls governing system operation.~~ [Insert 2]

REFERENCES

1. USAR, Section 5.2.3.
2. ASME Operation and Maintenance (OM) Code.
3. Amendment No. 189, Monticello Nuclear Generating Plant – Issuance of Amendment Re: Technical Specifications Task Force Standard Technical Specifications Change Traveler TSTF-523, Revision 2, “Generic Letter 2008-01, Managing Gas Accumulation,” June 21, 2016 (ADAMS Accession No. ML16125A165)

BASES

APPLICABILITY (continued)

that generates hydrogen occurring within the first 24 hours of a startup, or within the last 24 hours before a shutdown, is low enough that these "windows," when the primary containment is not inerted, are also justified. The 24 hour time period is a reasonable amount of time to allow plant personnel to perform inerting or de-inerting.

ACTIONS

A.1

If oxygen concentration is ≥ 4.0 v/o at any time while operating in MODE 1, with the exception of the relaxations allowed during startup and shutdown, oxygen concentration must be restored to < 4.0 v/o within 24 hours. The 24 hour Completion Time is allowed when oxygen concentration is ≥ 4.0 v/o because of the low probability and long duration of an event that would generate significant amounts of hydrogen and oxygen occurring during this period.

B.1

If oxygen concentration cannot be restored to within limits within the required Completion Time, the plant must be brought to ≤ 15% RTP because the potential for an event that generates significant hydrogen and oxygen is low. To achieve this status, power must be reduced to ≤ 15% RTP within 8 hours. The 8 hour Completion Time is reasonable, based on operating experience, to reduce reactor power from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.3.1.1

The primary containment must be determined to be inerted by verifying that oxygen concentration is < 4.0 v/o. ~~The 7 day Frequency is based on the slow rate at which oxygen concentration can change and on other indications of abnormal conditions (which could lead to more frequent checking by operators in accordance with plant procedures). Also, this Frequency has been shown to be acceptable through operating experience.~~ [Insert 2]

REFERENCES

1. USAR, Section 5.2.3.5.

BASES

ACTIONS (continued)

C.1 and C.2

Movement of recently irradiated fuel assemblies in the secondary containment and OPDRVs can be postulated to cause significant fission product release to the secondary containment. In such cases, the secondary containment is the only barrier to release of fission products to the environment. Therefore, movement of recently irradiated fuel assemblies must be immediately suspended if the secondary containment is inoperable.

Suspension of these activities shall not preclude completing an action that involves moving a component to a safe position. Also, action must be immediately initiated to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until OPDRVs are suspended.

Required Action C.1 has been modified by a Note stating that LCO 3.0.3 is not applicable. If moving recently irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving recently irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, in either case, inability to suspend movement of recently irradiated fuel assemblies would not be a sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.6.4.1.1

This SR ensures that the secondary containment boundary is sufficiently leak tight to preclude exfiltration under expected wind conditions. ~~The 24 hour Frequency of this SR was developed based on operating experience related to secondary containment vacuum variations during the applicable MODES and the low probability of a DBA occurring.~~

~~Furthermore, the 24 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal secondary containment vacuum condition.~~ [Insert 2]

SR 3.6.4.1.2 and SR 3.6.4.1.3

Verifying that secondary containment equipment hatches and one access door in each access opening are closed ensures that the infiltration of outside air of such a magnitude as to prevent maintaining the desired negative pressure does not occur. Verifying that all such openings are closed provides adequate assurance that exfiltration from the secondary

BASES

SURVEILLANCE REQUIREMENTS (continued)

containment will not occur. In this application, the term "sealed" has no connotation of leak tightness. Maintaining secondary containment OPERABILITY requires verifying one door in the access opening is closed. An access opening contains one inner and one outer door. In some cases, secondary containment access openings are shared such that a secondary containment barrier may have multiple inner or multiple outer doors. The intent is to not breach the secondary containment at any time when secondary containment is required. This is achieved by maintaining the inner or outer portion of the barrier closed at all times. However, all secondary containment access doors are normally kept closed, except when the access opening is being used for entry and exit or when maintenance is being performed on an access opening. ~~The 31 day Frequency for these SRs has been shown to be adequate, based on operating experience, and is considered adequate in view of the other indications of door and hatch status that are available to the operator.~~ [Insert 1]

SR 3.6.4.1.4

The SGT System exhausts the secondary containment atmosphere to the environment through appropriate treatment equipment. To ensure that all fission products released to the secondary containment are treated, SR 3.6.4.1.4 verifies that a pressure in the secondary containment that is less than the lowest postulated pressure external to the secondary containment boundary can be maintained. When the SGT System is operating as designed, the maintenance of secondary containment pressure cannot be accomplished if the secondary containment boundary is not intact. SR 3.6.4.1.4 demonstrates that the pressure in the secondary containment can be maintained ≥ 0.25 inches of vacuum water gauge for 1 hour using one SGT subsystem at a flow rate ≤ 4000 cfm. The 1 hour test period allows secondary containment to be in thermal equilibrium at steady state conditions. The primary purpose of this SR is to ensure secondary containment boundary integrity. The test is normally performed under calm wind (< 5 mph) conditions. If calm wind conditions do not exist during this testing, the test data is to be corrected to calm wind conditions. The secondary purpose of this SR is to ensure that the SGT subsystem being tested functions as designed. There is a separate LCO with Surveillance Requirements which serves the primary purpose of ensuring OPERABILITY of the SGT System. ~~This SR need not be performed with each SGT subsystem. The SGT subsystem used for this Surveillance is staggered to ensure that in addition to the requirements of LCO 3.6.4.3, either SGT subsystem will perform this test.~~ The inoperability of the SGT System does not necessarily constitute a failure

BASES

SURVEILLANCE REQUIREMENTS (continued)

of this Surveillance relative to the secondary containment OPERABILITY. ~~Operating experience has shown the secondary containment boundary usually passes this Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ [Insert 2]

REFERENCES

1. USAR, Section 14.7.2.
2. USAR, Section 14.7.6.

BASES

ACTIONS (continued)

Required Action D.1 has been modified by a Note stating that LCO 3.0.3 is not applicable. If moving recently irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving fuel while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, in either case, inability to suspend movement of recently irradiated fuel assemblies would not be a sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.6.4.2.1

This SR verifies that each secondary containment manual isolation valve and blind flange that is not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the secondary containment boundary is within design limits. This SR does not require any testing or valve manipulation. Rather, it involves verification that those SCIVs in secondary containment that are capable of being mispositioned are in the correct position.

~~Since these SCIVs are readily accessible to personnel during normal operation and verification of their position is relatively easy, the 31 day Frequency was chosen to provide added assurance that the SCIVs are in the correct positions.~~ [Insert 2] This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

Two Notes have been added to this SR. The first Note applies to valves and blind flanges located in high radiation areas and allows them to be verified by use of administrative controls. Allowing verification by administrative controls is considered acceptable, since access to these areas is typically restricted during MODES 1, 2, and 3 for ALARA reasons. Therefore, the probability of misalignment of these SCIVs, once they have been verified to be in the proper position, is low.

A second Note has been included to clarify that SCIVs that are open under administrative controls are not required to meet the SR during the time the SCIVs are open.

SR 3.6.4.2.2

Verifying that the isolation time of each power operated, automatic SCIV is within limits is required to demonstrate OPERABILITY. The isolation time test ensures that the SCIV will isolate in a time period less than or equal to that assumed in the safety analyses. ~~The Frequency of this SR is 92 days.~~ [Insert 2]

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.4.2.3

Verifying that each automatic SCIV closes on a secondary containment isolation signal is required to prevent leakage of radioactive material from secondary containment following a DBA or other accidents. This SR ensures that each automatic SCIV will actuate to the isolation position on a secondary containment isolation signal. The LOGIC SYSTEM FUNCTIONAL TEST in LCO 3.3.6.2, "Secondary Containment Isolation Instrumentation," overlaps this SR to provide complete testing of the safety function. ~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ [Insert 2]

REFERENCES

1. USAR, Section 14.7.2.
2. USAR, Section 14.7.6.
3. Technical Requirements Manual.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~The 31 day Frequency was developed in consideration of the known reliability of fan motors and controls and the redundancy available in the system.~~ [Insert 2]

SR 3.6.4.3.2

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

SR 3.6.4.3.3

This SR verifies that each SGT subsystem starts on receipt of an actual or simulated initiation signal. ~~While this Surveillance can be performed with the reactor at power, operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency. The LOGIC SYSTEM FUNCTIONAL TEST in LCO 3.3.6.2, "Secondary Containment Isolation Instrumentation," overlaps this SR to provide complete testing of the safety function. Therefore, the Frequency was found to be acceptable from a reliability standpoint.~~ [Insert 2]

REFERENCES

1. USAR, Section 1.2.4.e.
2. USAR, Section 5.3.
3. USAR, Section 14.7.2.
4. USAR, Section 14.7.6.
5. Amendment No. 181, Monticello Nuclear Generating Plant – Issuance of Amendment to Adopt TSTF Traveler TSTF-522, Revision 0, “Revise Ventilation System Surveillance Requirements to Operate for 10 Hours per Month,” dated May 2, 2014. (ADAMS Accession No. ML14058A825)

BASES

ACTIONS (continued)

C.1 and C.2

If the RHRSW subsystems cannot be not restored to OPERABLE status within the associated Completion Times, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours and in MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.1.1

Verifying the correct alignment for each manual, power operated, and automatic valve in each RHRSW subsystem flow path provides assurance that the proper flow paths will exist for RHRSW operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves are verified to be in the correct position prior to locking, sealing, or securing. A valve is also allowed to be in the nonaccident position, and yet considered in the correct position, provided it can be realigned to its accident position. This is acceptable because the RHRSW System is a manually initiated system. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves.

~~The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.~~ [Insert 2]

REFERENCES

1. USAR, Section 10.4.2.
2. USAR, Section 5.2.3.
3. Calculation 11-173, MNGP EPU Task Report T0400, Revision 3, “Containment System Response”
4. Amendment No. 176, “Monticello Nuclear Generating Plant – Issuance of Amendment No. 176 to Renewed Facility Operating License Regarding Extended Power Uprate,” (ADAMS Accession No. ML13316C459)

BASES

ACTIONS (continued)

Required Action A.1 is modified by a Note indicating that the applicable Conditions of LCO 3.4.7, "Residual Heat Removal (RHR) Shutdown Cooling System - Hot Shutdown," be entered and Required Actions taken if the inoperable ESW subsystem results in an inoperable RHR shutdown cooling subsystem. This is in accordance with LCO 3.0.6 and ensures the proper actions are taken for these components.

B.1 and B.2

If the ESW subsystem cannot be restored to OPERABLE status within the associated Completion Time, or both ESW subsystems are inoperable, or the UHS is determined inoperable, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours and in MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.2.1

This SR verifies the water level in the intake structure to be sufficient for the proper operation of the ESW pumps (net positive suction head and pump vortexing are considered in determining this limit). ~~The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES.~~ [Insert 2]

SR 3.7.2.2

Verification of the UHS temperature ensures that the heat removal capability of the ESW System is within the assumptions of the DBA analysis. ~~The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES.~~ [Insert 2]

SR 3.7.2.3

Verifying the correct alignment for each manual and automatic valve in each ESW subsystem flow path provides assurance that the proper flow paths will exist for ESW operation. This SR 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. This SR does not require any testing or valve manipulation;

BASES

SURVEILLANCE REQUIREMENTS (continued)

rather, it involves verification that those valves capable of being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves.

This SR is modified by a Note indicating that isolation of the ESW System to components or systems may render those components or systems inoperable, but does not affect the OPERABILITY of the ESW System. As such, when all ESW pumps, valves, and piping are OPERABLE, but a branch connection off the main header is isolated, the ESW System is still OPERABLE.

~~The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.~~[Insert 2]

SR 3.7.2.4

This SR verifies the automatic start capability of the ESW pump in each subsystem. This is demonstrated by the use of an actual or simulated initiation signal.

~~Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency. Therefore, this Frequency is concluded to be acceptable from a reliability standpoint.~~ [Insert 2]

REFERENCES

1. USAR, Section 5.2.3.
2. Calculation 96-106, CSP Motor – Oil and Bearing Operating Temperatures Without Water Cooling.

BASES

SURVEILLANCE REQUIREMENTS (continued)

rather, it involves verification that those valves capable of being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves.

~~The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.~~ [Insert 2]

SR 3.7.3.2

This SR ensures that each EDG-ESW subsystem pump will automatically start to provide required cooling to the associated EDG when the associated EDG starts and the respective bus is energized.

~~Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based at the refueling cycle. Therefore, this Frequency is concluded to be acceptable from a reliability standpoint.~~ [Insert 2]

REFERENCES

1. USAR, Section 10.4.4.
2. USAR, Section 14.7.2.3.1.1.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.4.1

This SR verifies that a subsystem in a standby mode starts on demand from the control room and continues to operate. Standby systems should be checked periodically to ensure that they start and function properly. ~~As the environmental and normal operating conditions of this system are not severe, testing each subsystem once every month provides an adequate check on this system.~~ Operation for ≥ 15 continuous minutes (Ref. 6) demonstrates OPERABILITY of the system. Periodic operation ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. ~~Furthermore, the 31 day Frequency is based on the known reliability of the equipment and the two subsystem redundancy available.~~ [Insert 2]

SR 3.7.4.2

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

SR 3.7.4.3

This SR verifies that on an actual or simulated initiation signal, each CREF subsystem starts and operates. The LOGIC SYSTEM FUNCTIONAL TEST in LCO 3.3.7.1, "Control Room Emergency Filtration (CREF) Instrumentation," overlaps this SR to provide complete testing of the safety function. ~~Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~ [Insert 2]

SR 3.7.4.4

This SR verifies the OPERABILITY of the CRE boundary by testing for unfiltered air in-leakage past the CRE boundary and into the CRE. The details of the testing are specified in the Control Room Envelope Habitability Program.

BASES

ACTIONS (continued)

If applicable, handling of recently irradiated fuel in the secondary containment must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. Also, if applicable, actions must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

SURVEILLANCE REQUIREMENTS

SR 3.7.5.1

This SR verifies that the heat removal capability of the system is sufficient to remove the control room envelope heat load assumed in the safety analyses. The SR consists of a combination of testing and calculation. ~~The 24 month Frequency is appropriate since significant degradation of the Control Room Ventilation System is not expected over this time period.~~ [Insert 2]

REFERENCES

1. USAR, Section 6.7.

2. Amendment No. 154, "Issuance of Amendment Re: Two Inoperable Control Room Ventilation Subsystems Using the Guidance of TSTF-477," dated January 23, 2008.

3. USAR, Section 14.7.2.

4. USAR, Section 14.7.6.

BASES

ACTIONS (continued)

with permissible dose and exposure limits, and the low probability of an event that inadvertently releases the main condenser effluent directly to the environment without treatment.

B.1, B.2, B.3.1, and B.3.2

If the gross gamma activity rate is not restored to within the limits in the associated Completion Time, all main steam lines or the SJAE must be isolated. This isolates the Main Condenser Offgas System from the source of the radioactive steam. The main steam lines are considered isolated if at least one main steam isolation valve in each main steam line is closed, and at least one main steam line drain valve in each drain line is closed. The 12 hour Completion Time is reasonable, based on operating experience, to perform the actions from full power conditions in an orderly manner and without challenging unit systems.

An alternative to Required Actions B.1 and B.2 is to place the unit in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours and in MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.6.1

This SR~~, on a 31 day Frequency,~~ requires an isotopic analysis of an offgas sample to ensure that the required limits are satisfied. The noble gases to be sampled are Xe-133, Xe-135, Xe-138, Kr-85, Kr-87, and Kr-88. If the measured rate of radioactivity increases significantly (by ≥ 50% after correcting for expected increases due to changes in THERMAL POWER), an isotopic analysis is also performed within 4 hours after the increase is noted, to ensure that the increase is not indicative of a sustained increase in the radioactivity rate. ~~The 31 day Frequency is adequate in view of other instrumentation that continuously monitor the offgas, and is acceptable, based on operating experience.~~ [Insert 2]

This SR is modified by a Note indicating that the SR is not required to be performed until 31 days after any main steam line is not isolated and the SJAE is in operation. Only in this condition can radioactive fission gases be in the Main Condenser Offgas System at significant rates.

REFERENCES

1. 10 CFR 50.67.

BASES

LCO (continued)

are also parameters that can be monitored to determine if a bypass valve is open (e.g., change in Megawatts electric generated or change in bypass valve discharge piping temperature). The bypass valves are considered closed when there is no indication either bypass valve is open. This response is within the assumptions of the applicable analyses (Refs. 2 and 3).

APPLICABILITY

The Main Turbine Bypass System is required to be OPERABLE at ≥ 25% RTP to ensure that the fuel cladding integrity Safety Limit and the cladding 1% plastic strain limit are not violated during the feedwater controller failure (maximum demand) and pneumatic system degradation, turbine trip with bypass - reduced scram speeds transients. As discussed in the Bases for LCO 3.2.1 and LCO 3.2.2, sufficient margin to these limits exists at < 25% RTP. Therefore, these requirements are only necessary when operating at or above this power level.

ACTIONS

A.1

If the Main Turbine Bypass System is inoperable (one or more bypass valves inoperable), the assumptions of the design basis transient analysis may not be met. Under such circumstances, prompt action should be taken to restore the Main Turbine Bypass System to OPERABLE status. The 2 hour Completion Time is reasonable, based on the time to complete the Required Action and the low probability of an event occurring during this period requiring the Main Turbine Bypass System.

B.1

If the Main Turbine Bypass System cannot be restored to OPERABLE status, THERMAL POWER must be reduced to < 25% RTP. As discussed in the Applicability section, operation at < 25% RTP results in sufficient margin to the required limits, and the Main Turbine Bypass System is not required to protect fuel integrity during the feedwater controller failure (maximum demand) and pneumatic system degradation, turbine trip with bypass - reduced scram speeds transients. The 4 hour Completion Time is reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.7.1

Cycling each main turbine bypass valve through one complete cycle of full travel demonstrates that the valves are mechanically OPERABLE and will function when required. ~~The 92 day Frequency is based on engineering judgment, is consistent with the procedural controls~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

governing valve operation, and ensures correct valve positions. Operating experience has shown that these components usually pass the SR when performed at the 92 day Frequency. Therefore, the Frequency is acceptable from a reliability standpoint. [Insert 2]

SR 3.7.7.2

The Main Turbine Bypass System is required to actuate automatically to perform its design function. This SR demonstrates that, with the required system initiation signals, the valves will actuate to their required position. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and because of the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint. [Insert 2]

SR 3.7.7.3

This SR ensures that the TURBINE BYPASS SYSTEM RESPONSE TIME is in compliance with the assumptions of the appropriate safety analyses. The response time limits are specified in the COLR. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and because of the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint. [Insert 2]

REFERENCES

1. USAR, Section 7.7.2.2.
2. USAR, Section 14.4.4.
3. USAR, Section 14A.4.
4. Calculation 09-239, Revision 0a, “Turbine Bypass Valve Capacity for EPU”
5. Amendment No. 176, “Monticello Nuclear Generating Plant – Issuance of Amendment No. 176 to Renewed Facility Operating License Regarding Extended Power Uprate,” (ADAMS Accession No. ML13316C459)

BASES

ACTIONS

A.1

Required Action A.1 is modified by a Note indicating that LCO 3.0.3 does not apply. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of irradiated fuel assemblies is not a sufficient reason to require a reactor shutdown.

When the initial conditions for an accident cannot be met, action must be taken to preclude the accident from occurring. If the spent fuel storage pool level is less than required, the movement of irradiated fuel assemblies in the spent fuel storage pool is suspended immediately. Suspension of this activity shall not preclude completion of movement of an irradiated fuel assembly to a safe position. This effectively precludes a spent fuel handling accident from occurring.

SURVEILLANCE REQUIREMENTS

SR 3.7.8.1

This SR verifies that sufficient water is available in the event of a fuel handling accident. The water level in the spent fuel storage pool must be checked periodically. ~~The 7 day Frequency is acceptable, based on operating experience, considering that the water volume in the pool is normally stable, and all water level changes are controlled by unit procedures.~~ [Insert 2]

REFERENCES

1. USAR, Section 10.2.1.
2. USAR, Section 14.7.6.
3. 10 CFR 50.67.
4. Regulatory Guide 1.25, March 1972.
5. USAR, Section 14.7.6.3.1.

BASES

SURVEILLANCE REQUIREMENTS (continued)

specified for 4000 V motors. It ensures that for a lightly loaded distribution system, the voltage at the terminals of 4000 V motors is no more than the maximum rated operating voltages. The specified minimum and maximum frequencies of the EDG are 58.8 Hz and 61.2 Hz, respectively. These values are equal to ± 2% of the 60 Hz nominal frequency and are derived from the recommendations found in Regulatory Guide 1.9 (Ref. 3).

SR 3.8.1.1

This SR ensures proper circuit continuity for the offsite AC electrical power supply to the onsite distribution network and availability of offsite AC electrical power. The breaker alignment verifies that each breaker is in its correct position to ensure that distribution buses and loads are connected to their preferred power source and that appropriate independence of offsite circuits is maintained. ~~The 7 day Frequency is adequate since breaker position is not likely to change without the operator being aware of it and because its status is displayed in the control room.~~ [Insert 2]

SR 3.8.1.2

This SR helps to ensure the availability of the standby electrical power supply to mitigate DBAs and transients and maintain the unit in a safe shutdown condition.

To minimize the wear on moving parts that do not get lubricated when the engine is not running, this SR has been modified by a Note (Note 1) to indicate that all EDG starts for this Surveillance may be preceded by an engine prelube period and followed by a warmup prior to loading.

For the purposes of this testing, the EDGs are started from standby conditions. Standby conditions for a EDG mean that the diesel engine coolant and oil are being continuously circulated and temperature is being maintained consistent with manufacturer recommendations.

In order to reduce stress and wear on diesel engines, the manufacturer has recommended a modified start in which the starting speed of EDGs is limited, warmup is limited to this lower speed, and the EDGs are gradually accelerated to synchronous speed prior to loading. These start procedures are the intent of Note 2.

~~The 31 day Frequency is consistent with Regulatory Guide 1.9 (Ref. 3). This Frequency provides adequate assurance of EDG OPERABILITY, while minimizing degradation resulting from testing.~~ [Insert 2]

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.3

Consistent with Regulatory Guide 1.9 (Ref. 3), this Surveillance verifies that the EDGs are capable of synchronizing and accepting loads 90% to 100% of the continuous rating of the EDG. A minimum run time of 60 minutes is required to stabilize engine temperatures, while minimizing the time that the EDG is connected to the offsite source.

Although no power factor requirements are established by this SR, the EDG is normally operated at a power factor between 0.8 lagging and 1.0. The 0.8 power factor value is the design rating of the machine, while the 1.0 power factor value is an operational limitation to ensure circulating currents are minimized. The load band is provided to avoid routine overloading of the EDG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain EDG OPERABILITY.

~~The 31 day Frequency for this Surveillance is consistent with Regulatory Guide 1.9 (Ref. 3).~~ [Insert 2]

Note 1 modifies this Surveillance to indicate 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 modifies this Surveillance by stating that momentary transients because of changing bus loads do not invalidate this test. Similarly, momentary power factor transients above the limit do not invalidate the test.

Note 3 indicates that this Surveillance should be conducted on only one EDG at a time in order to avoid common cause failures that might result from offsite circuit or grid perturbations.

Note 4 stipulates a prerequisite requirement for performance of this SR. A successful EDG start must precede this test to credit satisfactory performance.

SR 3.8.1.4

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the fuel oil day and base tanks ~~once every 31 days~~ periodically eliminates the necessary environment for bacterial survival. This is the most effective means of

BASES

SURVEILLANCE REQUIREMENTS (continued)

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, ground water, rain water, contaminated fuel oil, and breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. The Surveillance Frequencies are established by Regulatory Guide 1.137 (Ref. 10). This SR is for preventive maintenance. The presence of water does not necessarily represent a failure of this SR provided that accumulated water is removed during performance of this Surveillance. [Insert 2]

SR 3.8.1.5

This Surveillance demonstrates that each fuel oil transfer subsystem can transfer fuel oil from the common fuel oil storage tank to the associated EDG day tank with one pump. This Surveillance also demonstrates that each day tank fuel oil transfer subsystem can transfer fuel oil from its associated day tank to its associated base tank with one pump. It is required to support continuous operation of standby power sources. This Surveillance provides assurance that the required fuel oil transfer pumps are OPERABLE, the fuel oil piping system is intact, the fuel delivery piping is not obstructed, and the controls and control systems for automatic fuel transfer systems are OPERABLE.

The Frequency for this SR is consistent with the Frequency for testing the EDGs in SR 3.8.1.2. [Insert 2]

SR 3.8.1.6

Transfer of each 4.16 kV essential bus power supply from the normal offsite circuit (i.e., either transformer 2R or 1R) to the alternate offsite circuit (i.e., either transformer 1R or 1AR) demonstrates the OPERABILITY of the alternate circuit distribution network to power the shutdown loads. The 24 month on a STAGGERED TEST BASIS for each division Frequency of the Surveillance is based on engineering judgment taking into consideration the plant 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

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~pass the SR when performed on the 24 month on a STAGGERED TEST BASIS for each division Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ [Insert 2]

This SR is modified by a Note. The reason for the Note is that, during operation with the reactor critical, performance of this SR could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, plant safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR.

SR 3.8.1.7

Each EDG 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 EDG load response characteristics and capability to reject the largest single load while maintaining a specified margin to the overspeed trip. The largest single load for each EDG is a core spray pump (800 hp). This Surveillance may be accomplished by either:

a. Tripping the EDG output breaker with the EDG carrying greater than or equal to its associated single largest post-accident load while paralleled to offsite power, or while solely supplying the bus; or

b. Tripping its associated single largest post-accident load with the EDG solely supplying the bus.

Consistent with Regulatory Guide 1.9 (Ref. 3), the load rejection test is acceptable if the diesel speed does not exceed the normal (synchronous)

BASES

SURVEILLANCE REQUIREMENTS (continued)

speed plus 75% of the difference between nominal speed and the overspeed trip setpoint, or 115% of nominal speed, whichever is lower. For EDGs 11 and 12, this represents 67.5 Hz, equivalent to 75% of the difference between nominal speed and the overspeed trip setpoint.

~~The 24 month Frequency is based on engineering judgment, taking into consideration plant conditions required to perform the Surveillance and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~ [Insert 2]

This SR is modified by two Notes. The reason for Note 1 is that, during operation with the reactor critical, performance of this SR could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, plant safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR. Note 2 ensures that the EDG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed within the power factor limit. This power factor is representative of the actual inductive loading an EDG would see under design basis accident conditions. The power factor limit is $\leq$ 0.85 for Division 1 and $\leq$ 0.88 for Division 2. Under certain conditions, however, Note 2 allows the surveillance to be conducted outside the power factor limit. These conditions occur when grid voltage may be such that the EDG excitation levels needed to obtain a power factor within limit are not achievable and may be in excess of those recommended for the EDG. In such cases, the power factor shall be maintained as close as practicable to the power factor limit without exceeding the EDG excitation limits.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.8

Consistent with Regulatory Guide 1.9 (Ref. 3), paragraph c.2.2.5, this Surveillance demonstrates that permanently connected loads remain energized from the offsite circuit and emergency loads are auto-connected through the time delay relays from the offsite electrical power system on a LOCA signal without loss of offsite power.

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 loading logic for loading onto offsite power. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. For instance, ECCS injection valves are not desired to be stroked open, high pressure injection systems are not capable of being operated at full flow, or RHR systems performing a decay heat removal function are not desired to be realigned to the ECCS mode of operation. In lieu of actual demonstration of the connection and loading of these loads, testing that adequately shows the capability of the EDG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

~~The Frequency of 24 months is based on engineering judgment, taking into consideration plant conditions required to perform the Surveillance and is intended to be consistent with the expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~ [Insert 2]

This SR is modified by a Note. The reason for the Note is that during operation with the reactor critical, performance of this Surveillance could potentially cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, plant safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing 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.

BASES

SURVEILLANCE REQUIREMENTS (continued)

These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for the assessment. Credit may be taken for unplanned events that satisfy this SR.

SR 3.8.1.9

This Surveillance demonstrates the EDGs can start and run continuously at full load capability (90% to 100% of the EDG continuous rating) for an interval of not less than 8 hours - 6 hours of which is at a load equivalent to 90% to 100% of the continuous rating of the EDG, and 2 hours of which is at a load equivalent to 105% to 110% of the continuous rating of the EDG. The run duration of 8 hours and the load ranges and duration are consistent with IEEE Standard 387-1995 (Ref. 13). The EDG starts for this Surveillance can be performed either from standby or hot conditions. The provisions for prelube and warmup, discussed in SR 3.8.1.2, and for gradual loading, discussed in SR 3.8.1.3, are applicable to this SR.

A load band is provided to avoid routine overloading of the EDG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain EDG OPERABILITY.

~~The 24 month Frequency is based on engineering judgment, taking into consideration plant conditions required to perform the Surveillance and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~ [Insert 2]

This Surveillance has been modified by three Notes. Note 1 states that momentary transients due to changing bus loads do not invalidate this test. Similarly, momentary power factor transients above the limit do not invalidate the test. The reason for Note 2 is that during operation with the reactor critical, performance of this Surveillance could cause perturbations to the electrical distribution systems that would challenge continued steady state operation and, as a result, plant safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or

BASES

SURVEILLANCE REQUIREMENTS (continued)

enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR. When an EDG is tested at a load equivalent to 90% to 100% of the continuous rating, Note 3 ensures that the EDG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed within the power factor limit. This power factor is representative of the actual inductive loading an EDG would see under design basis accident conditions. The power factor limit is ≤ 0.85 for Division 1 and ≤ 0.88 for Division 2. Under certain conditions, however, Note 3 allows the surveillance to be conducted outside of the power factor limit. These conditions occur when grid voltage may be such that the EDG excitation levels needed to obtain a power factor within limit are not achievable and may be in excess of those recommended for the EDG. In such cases, the power factor shall be maintained as close as practicable to the power factor limit without exceeding the EDG excitation limits. During EDG testing at a load equivalent to 105% to 110% of the EDG continuous rating the power factor limit does not have to be met since the EDGs are not required to mitigate the consequences of an accident at these loads.

SR 3.8.1.10

This Surveillance demonstrates that the diesel engine can restart from a hot condition, such as subsequent to shutdown from normal Surveillances, and achieve the required voltage and frequency within 10 seconds. The 10 second time is derived from the requirements of the accident analysis to respond to a design basis large break LOCA. ~~The 24 month Frequency is based on engineering judgment, taking into consideration plant conditions required to perform the Surveillance, and is intended to be consistent with the expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~ [Insert 2]

BASES

SURVEILLANCE REQUIREMENTS (continued)

This SR is modified by two Notes. Note 1 ensures that the test is performed with the diesel sufficiently hot. The requirement that the diesel has operated for at least 2 hours at approximately full load conditions prior to performance of this Surveillance is based on manufacturer recommendations for achieving hot conditions. The load band is provided to avoid routine overloading of the EDG. Routine overloads may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain EDG OPERABILITY. Momentary transients due to changing bus loads do not invalidate this test. Note 2 allows all EDG starts to be preceded by an engine prelube period to minimize wear and tear on the diesel during testing.

SR 3.8.1.11

Consistent with Regulatory Guide 1.9 (Ref. 3), paragraph c.2.2.11, this Surveillance ensures that the manual synchronization and load transfer from the EDG to the offsite source can be made and that the EDG can be returned to ready-to-load status when offsite power is restored. It also ensures that the auto-start logic is reset to allow the EDG to reload if a subsequent loss of offsite power occurs. The EDG is considered to be in ready-to-load status when the EDG is at rated speed and voltage, the output breaker is open and can receive an auto-close signal on bus undervoltage, and the associated individual time delay relays are reset.

~~The Frequency of 24 months is based on engineering judgment, taking into consideration plant conditions required to perform the Surveillance, and is intended to be consistent with the expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~ [Insert 2]

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the Surveillance in MODE 1, 2, or 3 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

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~The Frequency of 24 months is based on engineering judgment, taking into consideration plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~ [Insert 2]

This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the EDGs during testing. For the purpose of this testing, the EDGs must be started from standby conditions, that is, with the engine coolant and oil being continuously circulated and temperature maintained consistent with manufacturer recommendations. The reason for Note 2 is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the Surveillance in MODE 1, 2, or 3 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, or 3. Risk insights or deterministic methods may be used for the assessment. Credit may be taken for unplanned events that satisfy this SR.

SR 3.8.1.13

Under accident conditions loads are sequentially connected to the bus by the individual time delay relays. The sequencing logic controls the permissive and starting signals to motor breakers to prevent overloading of the EDGs and offsite circuits due to high motor starting currents. The minimum load sequence time interval tolerance ensures that sufficient time exists for the EDGs and offsite circuits to restore frequency and voltage prior to applying the next load and that safety analysis assumptions regarding ESF equipment time delays are not violated.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~The Frequency of 24 months is based on engineering judgment, taking into consideration plant conditions required to perform the Surveillance and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~ [Insert 2]

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

REFERENCES

1. USAR, Section 1.2.6.
2. USAR, Section 8.2.
3. Regulatory Guide 1.9.
4. USAR, Chapter 5.
5. USAR, Chapter 14.
6. Regulatory Guide 1.93.
7. Generic Letter 84-15.
8. USAR, Chapter 8.
9. Regulatory Guide 1.108.

BASES

ACTIONS (continued)

F.1

With starting air receiver pressure < 165 psig in both starting air subsystems, sufficient capacity for three successive EDG start attempts does not exist. However, as long as the receiver pressure is > 125 psig in at least one starting air subsystem, there is adequate capacity for at least one start attempt, and the EDG can be considered OPERABLE while the air receiver pressure is restored to the required limit. A period of 48 hours is considered sufficient to complete restoration to the required pressure prior to declaring the EDG inoperable. This period is acceptable based on the remaining air start capacity, the fact that most EDG starts are accomplished on the first attempt, and the low probability of an event during this brief period.

G.1

With a Required Action and associated Completion Time not met, or the stored diesel fuel oil, lube oil, or starting air subsystem not within limits for reasons other than addressed by Conditions A through F, the associated EDG may be incapable of performing its intended function and must be immediately declared inoperable.

SURVEILLANCE REQUIREMENTS

SR 3.8.3.1

This SR provides verification that there is an adequate inventory of fuel oil in the storage tank to support one EDG's operation for 7 days at full load. The fuel oil level equivalent to a 7 day supply is 37,364 gallons for the 11 EDG and 51,665 gallons for the 12 EDG (Ref. 6) when calculated in accordance with RG 1.137 (Ref. 2) and ANSI N195 (Ref. 3). The required fuel storage volume is determined using the most limiting energy content of the stored fuel that meets the plant design basis requirements. Using the most limiting energy content as verified by direct energy content measurement or the known correlation of diesel fuel oil absolute specific gravity or API gravity to energy content, the required diesel generator output, and the corresponding fuel consumption rate, the onsite fuel storage volume required for 7 days of operation can be determined. SR 3.8.3.3 requires that new and stored fuel oil properties are verified and maintained within the limits of the Diesel Fuel Oil Testing Program. The 7 day period is sufficient time to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location.

~~The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period.~~ [Insert 2]

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.3.2

This Surveillance ensures that sufficient lubricating oil inventory is available to support at least 7 days of full load operation for each EDG. The lube oil volume equivalent to a 7-day supply is 165 gallons and is based on the EDG manufacturer's consumption values for the run time of the EDG. Implicit in this SR is the requirement to verify the capability to transfer the lube oil from its storage location to the EDG, if the EDG lube oil sump does not hold adequate inventory for 7 days of full load operation without the level reaching the manufacturer's recommended minimum level.

~~A 31 day Frequency is adequate to ensure that a sufficient lube oil supply is onsite, since EDG starts and run time are closely monitored by the plant staff.~~ [Insert 2]

SR 3.8.3.3

The tests of new fuel oil prior to addition to the storage tank are a means of determining whether new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate detrimental impact on diesel engine combustion. If results from these tests are within acceptable limits, the fuel oil may be added to the storage tanks without concern for contaminating the entire volume of fuel oil in the storage tank. These tests are to be conducted prior to adding the new fuel that is in the diesel oil receiving tank to the storage tank. The tests, limits, and applicable ASTM Standards are as follows:

a. Sample the new fuel oil:

   1) in accordance with ASTM D4057-88 (Ref. 5); or

   2) by recirculating fuel oil to avoid tank stratification and allowing a single point representative sample;

b. Verify that the new fuel oil sample has: (1) an API gravity at 60°F of ≥ 28 and ≤ 38 when tested in accordance with ASTM D287-92 (Ref. 5); (2) a saybolt viscosity at 100°F of ≥ 32.6 and ≤ 40.1 seconds universal when tested in accordance with ASTM D445-96 (Ref. 5); and (3) a flash point of ≥ 125°F when tested in accordance with ASTM D93-97 (Ref. 5); and

c. Verify water and sediment content within limits when tested in accordance with ASTM D1796-90 (Ref. 5).

BASES

SURVEILLANCE REQUIREMENTS (continued)

Failure to meet any of the above limits is cause for rejecting the new fuel oil, but does not represent a failure to meet the LCO concern since the fuel oil is not added to the storage tanks.

Following the initial analysis of the new fuel oil sample, further analysis is completed prior to or within 31 days following addition of the new fuel oil to the fuel oil storage tank to establish that the other properties specified in Table 1 of ASTM D975-91 (Ref. 5) are met for new fuel oil when tested in accordance with ASTM D975-91 (Ref. 5), except that the analysis for sulfur may be performed in accordance with ASTM D1552-95 (Ref. 5). The 31 day period is acceptable because the fuel oil properties of interest, even if they were not within stated limits, would not have an immediate effect on EDG operation. This Surveillance ensures the availability of high quality fuel oil for the EDGs.

Fuel oil degradation during long term storage shows up as an increase in particulate, mostly due to oxidation. The presence of particulate does not mean that the fuel oil will not burn properly in a diesel engine. The particulate can cause fouling of filters and fuel oil injection equipment, however, which can cause engine failure.

Particulate concentrations should be determined in accordance with ASTM D6217-98 (Ref. 5). This method involves a gravimetric determination of total particulate concentration in the fuel oil and has a limit of 10 mg/l. It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing.

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

SR 3.8.3.4

This Surveillance ensures that, without the aid of the refill compressor, sufficient air start capacity for each EDG is available. The system design requirements provide for a minimum of three engine start cycles without recharging. A start cycle is up to three seconds of cranking. The pressure specified in this SR is intended to reflect the lowest value at which the three starts can be accomplished.

~~The 31 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and other indications available in the control room, including alarms, to alert the operator to below normal air start pressure.~~ [Insert 2]

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.3.5

Periodic removal

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. ~~Removal~~ of water from the fuel storage tanks ~~once every 31 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, ground water, 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. ~~The Surveillance Frequencies are established by Regulatory Guide 1.137 (Ref. 2). This SR is for preventive maintenance. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during performance of the Surveillance.~~ [Insert 2]

REFERENCES

1. USAR, Section 8.4.1.1.
2. Regulatory Guide 1.137, Revision 1.
3. ANSI N195, 1976.
4. USAR, Chapter 14.
5. ASTM Standards: D4057-88; D287-92; D445-96; D93-97; D1796-90; D975-91; D1552-95; D6217-98.
6. Calculation 90-023, “Minimum Allowable Fuel Oil Storage Tank Level,” Revision 3C.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.1

Verifying battery terminal voltage while on float charge helps to ensure the effectiveness of the battery chargers, which support the ability of the batteries to perform their intended function. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery and maintain the battery in a fully charged state while supplying the continuous steady state loads of the associated DC subsystem. On float charge, battery cells will receive adequate current to optimally charge the battery. The voltage requirements are based on the nominal design voltage of the battery and are consistent with the minimum float voltage established by the battery manufacturer (2.20 Vpc or 132 V (for each 250 VDC subsystem battery) and 127.6 V (for each 125 VDC subsystem battery) at the battery terminals). This voltage maintains the battery plates in a condition that supports maintaining the grid life (expected to be approximately 20 years). ~~The 7 day Frequency is conservative when compared with manufacturer recommendations and IEEE-450 (Ref. 9).~~ [Insert 2]

SR 3.8.4.2

This SR verifies the design capacity of the battery chargers. According to Regulatory Guide 1.32 (Ref. 10), the battery charger supply is recommended to be based on the largest combined demands of the various steady state loads and the charging capacity to restore the battery from the design minimum charge state to the fully charged state, irrespective of the status of the unit during these demand occurrences. The minimum required amperes and duration ensures that these requirements can be satisfied.

This SR requires that each Division 1 battery charger be capable of supplying ≥ 150 amps and each Division 2 battery charger be capable of supplying ≥ 110 amps for the 250 VDC subsystems, and ≥ 75 amps for the 125 VDC subsystems at the minimum established float voltage for 4 hours. The ampere requirements for the 250 VDC System are based on the current limit setting of the chargers for Division 1 and a current limit setting reduced to accommodate the rating of the circuit breakers in the associated distribution cabinet for Division 2 (Ref. 11). The ampere requirement for the 125 VDC System is based on the current limit setting of the chargers (Ref. 12). The voltage requirements are based on the charger voltage level after a response to a loss of AC power. The time period is sufficient for the charger temperature to have stabilized and to have been maintained for at least 2 hours.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~The Frequency is acceptable, given the unit conditions required to perform the test and the other administrative controls existing to ensure adequate charger performance during these 24 month intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.~~ [Insert 2]

SR 3.8.4.3

A battery service test is a special test of the battery's capability, as found, to satisfy the design requirements (battery duty cycle) of the DC electrical power system. The discharge rate and test length corresponds to the design duty cycle requirements as specified in Reference 4 for the 250 VDC electrical power system and Reference 5 for the 125 VDC electrical power system.

~~The Frequency of 24 months is acceptable, given plant conditions required to perform the test and the other requirements existing to ensure adequate battery performance during the 24 months intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.~~ [Insert 2]

This SR is modified by two Notes. Note 1 allows the performance of a modified performance discharge test in lieu of a service test.

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

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.6.1

Verifying battery float current while on float charge is used to determine the state of charge of the battery. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery and maintain the battery in a charged state. The float current requirements are based on the float current indicative of a charged battery. Use of float current to determine the state of charge of the battery is consistent with IEEE-450 (Ref. 1). ~~The 7 day Frequency is more conservative than the recommendations of IEEE-450 (Ref. 1).~~ [Insert 2]

This SR is modified by a Note that states the float current requirement is not required to be met when battery terminal voltage is less than the minimum established float voltage of SR 3.8.4.1. When this float voltage is not maintained the Required Actions of LCO 3.8.4 ACTION A are being taken, which provide the necessary and appropriate verifications of the battery condition. Furthermore, the float current limit of 2 amps for 250 VDC batteries and 1 amp for 125 VDC batteries is established based on the nominal float voltage value and is not directly applicable when this voltage is not maintained.

SR 3.8.6.2 and SR 3.8.6.5

Optimal long term battery performance is obtained by maintaining a float voltage greater than or equal to the minimum established design limits provided by the battery manufacturer, which corresponds to 132 V for a 60 cell battery and 127.6 V for a 58 cell battery at the battery terminals, or 2.20 Vpc. This provides adequate over-potential, which limits the formation of lead sulfate and self discharge, which could eventually render the battery inoperable. Float voltages in this range or less, but greater than 2.07 Vpc, are addressed in Specification 5.5.12. SRs 3.8.6.2 and 3.8.6.5 require verification that the cell float voltages are equal to or greater than the short term absolute minimum voltage of 2.07 V, with cell voltage measured to the nearest 0.01 volt. ~~The Frequencies for cell voltage verification every 31 days for pilot cell and 92 days for each connected cell are consistent with IEEE-450 (Ref. 1).~~ [Insert 1]

SR 3.8.6.3

The limit specified for electrolyte level ensures that the plates suffer no physical damage and maintains adequate electron transfer capability. ~~The Frequency is consistent with IEEE-450 (Ref. 1).~~ [Insert 2]

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.6.4

This Surveillance verifies that the pilot cell temperature is greater than or equal to the minimum established design limit (i.e., 60°F). Pilot cell electrolyte temperature is maintained above this temperature to assure the battery can provided the required current and voltage to meet the design requirements. Temperatures lower than assumed in battery sizing calculations act to inhibit or reduce battery capacity. ~~The Frequency is consistent with IEEE-450 (Ref. 1).~~ [Insert 2]

SR 3.8.6.6

A battery performance discharge test is a test of constant current capacity of a battery, normally done in the as found condition, after having been in service, to detect any change in the capacity determined by the acceptance test. The test is intended to determine overall battery degradation due to age and usage.

Either the battery performance discharge test or the modified performance discharge test is acceptable for satisfying SR 3.8.6.6; however, only the modified performance discharge test may be used to satisfy the battery service test requirements of SR 3.8.4.3.

A modified discharge test is a test of the battery capacity and its ability to provide a high rate, short duration load (usually the highest rate of the duty cycle). This will often confirm the battery's ability to meet the critical period of the load duty cycle, in addition to determining its percentage of rated capacity. Initial conditions for the modified performance discharge test should be identical to those specified for a performance discharge test as specified in IEEE-450 (Ref. 1).

It may consist of just two rates; for instance, the one minute rate for the battery or the largest current load of the duty cycle, followed by the test rate employed for the performance test, both of which envelope the duty cycle of the service test. Since the ampere-hours removed by a one minute discharge represents a very small portion of the battery capacity, the test rate can be changed to that for the modified performance discharge test without compromising the results of the performance discharge test. The battery terminal voltage for the modified performance discharge test must remain above the minimum battery terminal voltage specified in the battery service test for the duration of time equal to that of the service test.

BASES

SURVEILLANCE REQUIREMENTS (continued)

The acceptance criteria for this Surveillance are consistent with IEEE-450 (Ref. 1). This reference recommends that the battery be replaced if its capacity is below 80% of the manufacturer's rating if the battery was sized using a 1.25 aging factor. If a lesser aging factor was used, battery replacement will be required before 80% capacity is reached to ensure that the load can be served. The 250 VDC batteries were sized using a 1.11 aging factor, therefore a 90% capacity limit was chosen. While the 125 VDC batteries were sized using a 1.25 aging factor, a similar 90% capacity limit was chosen for conservatism. Furthermore, the 125 VDC and 250 VDC batteries are sized to meet the assumed duty cycle loads when the battery design capacity reaches this 90% limit.

[Insert 2] ~~The Frequency for this test is normally 60 months.~~ If the battery shows degradation, or if the battery has reached 85% of its expected life and capacity is < 100% of the manufacturer's rating, the Surveillance Frequency is reduced to 12 months. However, if the battery shows no degradation but has reached 85% of its expected life, the Surveillance Frequency is only reduced to 24 months for batteries that retain capacity ≥ 100% of the manufacturer's rating. Degradation is indicated, according to IEEE-450 (Ref. 1), when the battery capacity drops by more than 10% relative to its capacity on the previous performance test or when it is below 90% of the manufacturer's rating. The 12 month ~~and 60 month~~ Frequency is ~~Frequencies are~~ consistent with the recommendations in IEEE-450 (Ref. 1). The 24 month Frequency is derived from the recommendations of IEEE-450 (Ref. 1).

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required DC electrical power subsystem from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the Surveillance in MODE 1, 2, or 3 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, or 3. Risk insights or deterministic methods may be used for the assessment. Credit may be taken for unplanned events that satisfy this Surveillance.

BASES

SURVEILLANCE REQUIREMENTS (continued)

buses ensures that the required voltage is readily available for motive as well as control functions for critical system loads connected to these buses. ~~The 7 day Frequency takes into account the redundant capability of the AC and DC electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.~~ [Insert 2]

REFERENCES

1. USAR, Chapter 14.
2. Regulatory Guide 1.93, December 1974.

ACTIONS (continued)

sufficient required features to allow continuation of CORE ALTERATIONS, recently irradiated fuel movement, and operations with a potential for draining the reactor vessel. By allowing the option to declare required features associated with an inoperable distribution subsystem inoperable, appropriate restrictions are implemented in accordance with the affected distribution subsystem LCO's Required Actions. In many instances this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made, (i.e., to suspend CORE ALTERATIONS, movement of recently irradiated fuel assemblies in the secondary containment, and any activities that could result in inadvertent draining of the reactor vessel).

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC and DC electrical power distribution subsystems and to continue this action until restoration is accomplished in order to provide the necessary power to the plant safety systems.

Notwithstanding performance of the above conservative Required Actions, a required residual heat removal-shutdown cooling (RHR-SDC) subsystem may be inoperable. In this case, Required Actions A.2.1 through A.2.4 do not adequately address the concerns relating to coolant circulation and heat removal. Pursuant to LCO 3.0.6, the RHR-SDC ACTIONS would not be entered. Therefore, Required Action A.2.5 is provided to direct declaring RHR-SDC inoperable, which results in taking the appropriate RHR-SDC ACTIONS.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required distribution subsystems should be completed as quickly as possible in order to minimize the time the plant safety systems may be without power.

SURVEILLANCE REQUIREMENTS

SR 3.8.8.1

This Surveillance verifies that the AC and DC electrical power distribution subsystems are functioning properly, with the buses energized. The verification of proper voltage availability on the buses ensures that the required power is readily available for motive as well as control functions for critical system loads connected to these buses. ~~The 7 day Frequency takes into account the redundant capability of the electrical power distribution subsystems, as well as other indications available in the control room that alert the operator to subsystem malfunctions.~~ [Insert 2]

REFERENCES

1. USAR, Chapter 14.

BASES

SURVEILLANCE REQUIREMENTS (continued)

contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The CHANNEL FUNCTIONAL TEST may be performed by any series of sequential, overlapping, or total channel steps so that the entire channel is tested.

~~The 7 day Frequency is based on engineering judgment and is considered adequate in view of other indications of refueling interlocks and their associated input status that are available to unit operations personnel.~~ [Insert 2]

REFERENCES

1. USAR, Section 1.2.2.
2. USAR, Section 7.2.1.2.2.1.

BASES

LCO	To prevent criticality during MODE 5, the refuel position one-rod-out interlock ensures no more than one control rod may be withdrawn. Both channels of the refuel position one-rod-out interlock are required to be OPERABLE and the reactor mode switch must be locked in the refuel position to support the OPERABILITY of these channels.
APPLICABILITY	In MODE 5, with the reactor mode switch in the refuel position, the OPERABLE refuel position one-rod-out interlock provides protection against prompt reactivity excursions. In MODES 1, 2, 3, and 4, the refuel position one-rod-out interlock is not required to be OPERABLE and is bypassed. In MODES 1 and 2, the Reactor Protection System (LCO 3.3.1.1, "Reactor Protection System (RPS) Instrumentation") and the control rods (LCO 3.1.3, "Control Rod OPERABILITY") provide mitigation of potential reactivity excursions. In MODES 3, 4, and 5 with the reactor mode switch in the shutdown position, a control rod block (LCO 3.3.2.1, "Control Rod Block Instrumentation") ensures all control rods are inserted, thereby preventing criticality during shutdown conditions.
ACTIONS	<u>A.1 and A.2</u> With the refuel position one-rod-out interlock inoperable, the refueling interlocks may not be capable of preventing more than one control rod from being withdrawn. This condition may lead to criticality. Control rod withdrawal must be immediately suspended, and action must be immediately initiated to fully insert all insertable control rods in core cells containing one or more fuel assemblies. Action must continue until all such control rods are fully inserted. Control rods in core cells containing no fuel assemblies do not affect the reactivity of the core and, therefore, do not have to be inserted.
SURVEILLANCE REQUIREMENTS	<u>SR 3.9.2.1</u> Proper functioning of the refuel position one-rod-out interlock requires the reactor mode switch to be in refuel. During control rod withdrawal in MODE 5, improper positioning of the reactor mode switch could, in some instances, allow improper bypassing of required interlocks. Therefore, this Surveillance imposes an additional level of assurance that the refuel position one-rod-out interlock will be OPERABLE when required. By "locking" the reactor mode switch in the proper position (i.e., removing the reactor mode switch key from the console while the reactor mode switch is positioned in refuel), an additional administrative control is in place to preclude operator errors from resulting in unanalyzed operation. ~~The Frequency of 12 hours is sufficient in view of other administrative controls utilized during refueling operations to ensure safe operation.~~ [Insert 2]

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.9.2.2

Performance of a CHANNEL FUNCTIONAL TEST on each channel demonstrates the associated refuel position one-rod-out interlock will function properly when a simulated or actual signal indicative of a required condition is injected into the logic. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The CHANNEL FUNCTIONAL TEST may be performed by any series of sequential, overlapping, or total channel steps so that the entire channel is tested. ~~The 7 day Frequency is considered adequate because of demonstrated circuit reliability, procedural controls on control rod withdrawals, and visual and audible indications available in the control room to alert the operator to control rods not fully inserted.~~ [Insert 2] To perform the required testing, the applicable condition must be entered (i.e., a control rod must be withdrawn from its full-in position). Therefore, SR 3.9.2.2 has been modified by a Note that states the CHANNEL FUNCTIONAL TEST is not required to be performed until 1 hour after any control rod is withdrawn.

REFERENCES

1. USAR, Section 1.2.2.

2. USAR, Section 7.2.1.2.2.1.

BASES

APPLICABILITY	During MODE 5, loading fuel into core cells with control rods withdrawn may result in inadvertent criticality. Therefore, the control rods must be inserted before loading fuel into a core cell. All control rods must be inserted before loading fuel to ensure that a fuel loading error does not result in loading fuel into a core cell with the control rod withdrawn. In MODES 1, 2, 3, and 4, the reactor pressure vessel head is on, and no fuel loading activities are possible. Therefore, this Specification is not applicable in these MODES.
ACTIONS	A.1 With all control rods not fully inserted during the applicable conditions, an inadvertent criticality could occur that is not analyzed in the USAR. All fuel loading operations must be immediately suspended. Suspension of these activities shall not preclude completion of movement of a component to a safe position.
SURVEILLANCE REQUIREMENTS	SR 3.9.3.1 During refueling, to ensure that the reactor remains subcritical, all control rods must be fully inserted prior to and during fuel loading. Periodic checks of the control rod position ensure this condition is maintained. ~~The 12 hour Frequency takes into consideration the procedural controls on control rod movement during refueling as well as the redundant functions of the refueling interlocks.~~ [Insert 2]
REFERENCES	1. USAR, Section 1.2.2.

BASES

APPLICABILITY (continued

For MODES 1 and 2, control rod requirements are found in LCO 3.1.2, "Reactivity Anomalies," LCO 3.1.3, "Control Rod OPERABILITY," LCO 3.1.4, "Control Rod Scram Times," and LCO 3.1.5, "Control Rod Scram Accumulators." During MODES 3 and 4, control rods are not able to be withdrawn since the reactor mode switch is in shutdown and a control rod block is applied. This provides adequate requirements for control rod OPERABILITY during these conditions.

ACTIONS

A.1

With one or more withdrawn control rods inoperable, action must be immediately initiated to fully insert the inoperable control rod(s). Inserting the control rod(s) ensures the shutdown and scram capabilities are not adversely affected. Actions must continue until the inoperable control rod(s) is fully inserted.

SURVEILLANCE REQUIREMENTS

SR 3.9.5.1 and SR 3.9.5.2

During MODE 5, the OPERABILITY of control rods is primarily required to ensure a withdrawn control rod will automatically insert if a signal requiring a reactor shutdown occurs. Because no explicit analysis exists for automatic shutdown during refueling, the shutdown function is satisfied if the withdrawn control rod is capable of automatic insertion and the associated CRD scram accumulator pressure is ≥ 940 psig.

~~The 7 day Frequency takes into consideration equipment reliability, procedural controls over the scram accumulators, and control room alarms and indicating lights that indicate low accumulator charge pressures.~~ [Insert 1]

SR 3.9.5.1 is modified by a Note that allows 7 days after withdrawal of the control rod to perform the Surveillance. This acknowledges that the control rod must first be withdrawn before performance of the Surveillance, and therefore avoids potential conflicts with SR 3.0.1.

REFERENCES

1. USAR, Section 1.2.2.

BASES

LCO	A minimum water level of 21 ft 11 inches above the top of the RPV flange is required to ensure that the radiological consequences of a postulated fuel handling accident are within acceptable limits, as provided by the guidance of Reference 2.
APPLICABILITY	LCO 3.9.6 is applicable when moving fuel assemblies or handling control rods (i.e., movement with other than the normal control rod drive) within the RPV. The LCO minimizes the possibility of a fuel handling accident that is beyond the assumptions of the safety analysis. Requirements for fuel handling accidents in the spent fuel storage pool are covered by LCO 3.7.8, "Spent Fuel Storage Pool Water Level."
ACTIONS	A.1 If the water level is < 21 ft 11 inches above the top of the RPV flange, all operations involving movement of fuel assemblies and handling of control rods within the RPV shall be suspended immediately to ensure that a fuel handling accident cannot occur. The suspension of fuel movement and control rod handling shall not preclude completion of movement of a component to a safe position.
SURVEILLANCE REQUIREMENTS	SR 3.9.6.1 Verification of a minimum water level of 21 ft 11 inches above the top of the RPV flange ensures that the design basis for the postulated fuel handling accident analysis during refueling operations is met. Water at the required level limits the consequences of damaged fuel rods, which are postulated to result from a fuel handling accident (Ref. 2). ~~The Frequency of 24 hours is based on engineering judgment and is considered adequate in view of the large volume of water and the normal procedural controls on valve positions, which make significant unplanned level changes unlikely.~~ [Insert 2]
REFERENCES	1. Regulatory Guide 1.25, March 23, 1972. 2. USAR, Section 14.7.6. 3. Regulatory Guide 1.183, July 2000. 4. 10 CFR 50.67. 5. NUREG-0800, Section 15.7.4.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.7.1

This Surveillance demonstrates that the RHR shutdown cooling subsystem is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability.

~~The Frequency of 12 hours is sufficient in view of other visual and audible indications available to the operator for monitoring the RHR shutdown cooling subsystem in the control room.~~ [Insert 2]

SR 3.9.7.2

RHR Shutdown Cooling System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the required RHR shutdown cooling subsystem(s) and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of RHR Shutdown Cooling System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

The RHR Shutdown Cooling System is OPERABLE when it is sufficiently filled with water. Acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criteria for gas volume at the suction or discharge of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR Shutdown Cooling System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits.

BASES

SURVEILLANCE REQUIREMENTS (continued)

RHR Shutdown Cooling System locations susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative subset of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety. For these locations alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

This SR is modified by a Note that states the SR is not required to be performed until 12 hours after entering MODE 3, with the reactor steam dome pressure less than the RHR shutdown cooling supply isolation interlock. In a rapid shutdown, there may be insufficient time to verify all susceptible locations prior to entering the Applicability.

~~The 31 day Frequency takes into consideration the gradual nature of gas accumulation in the RHR Shutdown Cooling System piping and the procedural controls governing system operation.~~ [Insert 2]

REFERENCES

1. USAR, Section 10.2.4.2.

2. Amendment No. 189, Monticello Nuclear Generating Plant – Issuance of Amendment Re: Technical Specifications Task Force Standard Technical Specifications Change Traveler TSTF-523, Revision 2, “Generic Letter 2008-01, Managing Gas Accumulation,” June 21, 2016 (ADAMS Accession No. ML16125A165)

BASES

ACTIONS (continued)

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR shutdown cooling subsystem), the reactor coolant temperature must be periodically monitored to ensure proper functioning of the alternate method. The once per hour Completion Time is deemed appropriate.

SURVEILLANCE REQUIREMENTS

SR 3.9.8.1

This Surveillance demonstrates that one RHR shutdown cooling subsystem is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability.

~~The Frequency of 12 hours is sufficient in view of other visual and audible indications available to the operator for monitoring the RHR shutdown cooling subsystems in the control room.~~ [Insert 2]

SR 3.9.8.2

RHR Shutdown Cooling System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the RHR shutdown cooling subsystems and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of RHR Shutdown Cooling System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

The RHR Shutdown Cooling System is OPERABLE when it is sufficiently filled with water. Acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criteria for gas volume at the suction or discharge of a pump), the Surveillance is not met. If it is determined

BASES

SURVEILLANCE REQUIREMENTS (continued)

by subsequent evaluation that the RHR Shutdown Cooling System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits.

RHR Shutdown Cooling System locations susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative sub-set of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety. For these locations alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

~~The 31 day Frequency takes into consideration the gradual nature of gas accumulation in the RHR Shutdown Cooling System piping and the procedural controls governing system operation.~~ [Insert 2]

REFERENCES

1. USAR, Section 10.2.4.2.
2. Amendment No. 189, Monticello Nuclear Generating Plant – Issuance of Amendment Re: Technical Specifications Task Force Standard Technical Specifications Change Traveler TSTF-523, Revision 2, "Generic Letter 2008-01, Managing Gas Accumulation," June 21, 2016 (ADAMS Accession No. ML16125A165)

BASES

ACTIONS (continued)

rods remain inserted and result in operating in accordance with Table 1.1-1. Alternatively, if in MODE 5, the reactor mode switch may be placed in the refuel position, which will also result in operating in accordance with Table 1.1-1. A Note is added to Required Action A.3.2 to indicate that this Required Action is not applicable in MODES 3 and 4, since only the shutdown position is allowed in these MODES. The allowed Completion Time of 1 hour for Required Action A.2, Required Action A.3.1, and Required Action A.3.2 provides sufficient time to normally insert the control rods and place the reactor mode switch in the required position, based on operating experience, and is acceptable given that all operations that could increase core reactivity have been suspended.

SURVEILLANCE REQUIREMENTS

SR 3.10.2.1 and SR 3.10.2.2

Meeting the requirements of this Special Operations LCO maintains operation consistent with or conservative to operating with the reactor mode switch in the shutdown position (or the refuel position for MODE 5). The functions of the reactor mode switch interlocks that are not in effect, due to the testing in progress, are adequately compensated for by the Special Operations LCO requirements. The administrative controls are to be periodically verified to ensure that the operational requirements continue to be met. ~~The Surveillances performed at the 12 hour and 24 hour Frequencies are intended to provide appropriate assurance that each operating shift is aware of and verifies compliance with these Special Operations LCO requirements.~~ [Insert 1]

REFERENCES

1. USAR, Section 7.6.1.2.7.

BASES

SURVEILLANCE REQUIREMENTS (continued)

disconnecting power to all four directional control valve solenoids. SR 3.10.3.2 has been modified by a Note, which clarifies that this SR is not required to be met if SR 3.10.3.1 is satisfied for LCO 3.10.3.d.1 requirements, since SR 3.10.3.2 demonstrates that the alternative LCO 3.10.3.d.2 requirements are satisfied. Also, SR 3.10.3.3 verifies that all control rods other than the control rod being withdrawn are fully inserted. ~~The 24 hour Frequency is acceptable because of the administrative controls on control rod withdrawal, the protection afforded by the LCOs involved, and hardwire interlocks that preclude additional control rod withdrawals.~~ [Insert 1]

REFERENCES None.

BASES

ACTIONS (continued)

B.1, B.2.1, and B.2.2

If one or more of the requirements of this Special Operations LCO are not met with the affected control rod not insertable, withdrawal of the control rod and removal of the associated CRD must be immediately suspended. If the CRD has been removed, such that the control rod is not insertable, the Required Actions require the most expeditious action be taken to either initiate action to restore the CRD and insert its control rod, or initiate action to restore compliance with this Special Operations LCO.

SURVEILLANCE REQUIREMENTS

SR 3.10.4.1, SR 3.10.4.2, SR 3.10.4.3, and SR 3.10.4.4

The other LCOs made applicable by this Special Operations LCO are required to have their associated surveillances met to establish that this Special Operations LCO is being met. If the local array of control rods is inserted and disarmed while the scram function for the withdrawn rod is not available, periodic verification is required to ensure that the possibility of criticality remains precluded. The control rods can be hydraulically disarmed by closing the drive water and exhaust water isolation valves. Electrically, the control rods can be disarmed by disconnecting power to all four directional control valve solenoids. Verification that all the other control rods are fully inserted is required to meet the SDM requirements. Verification that a control rod withdrawal block has been inserted ensures that no other control rods can be inadvertently withdrawn under conditions when position indication instrumentation is inoperable for the affected control rod. ~~The 24 hour Frequency is acceptable because of the administrative controls on control rod withdrawals, the protection afforded by the LCOs involved, and hardwire interlocks to preclude an additional control rod withdrawal.~~ [Insert 1]

SR 3.10.4.2 and SR 3.10.4.4 have been modified by Notes, which clarify that these SRs are not required to be met if the alternative requirements demonstrated by SR 3.10.4.1 are satisfied.

REFERENCES

None.

BASES

SURVEILLANCE REQUIREMENTS (continued)

that no other control rods can be inadvertently withdrawn under conditions when position indication instrumentation is inoperable for the withdrawn control rod. The Surveillance for LCO 3.1.1, which is made applicable by this Special Operations LCO, is required in order to establish that this Special Operations LCO is being met. Verification that no other CORE ALTERATIONS are being made is required to ensure the assumptions of the safety analysis are satisfied.

Periodic verification of the administrative controls established by this Special Operations LCO is prudent to preclude the possibility of an inadvertent criticality. ~~The 24 hour Frequency is acceptable, given the administrative controls on control rod removal and hardwire interlock to block an additional control rod withdrawal.~~ [Insert 1]

REFERENCES None.

BASES

SURVEILLANCE REQUIREMENTS	SR 3.10.6.1, SR 3.10.6.2, and SR 3.10.6.3 Periodic verification of the administrative controls established by this Special Operations LCO is prudent to preclude the possibility of an inadvertent criticality. ~~The 24 hour Frequency is acceptable, given the administrative controls on fuel assembly and control rod removal, and takes into account other indications of control rod status available in the control room.~~ [Insert 1]
REFERENCES	None.

BASES

ACTIONS (continued)

Condition A is modified by a Note allowing separate Condition entry for each uncoupled control rod. This is acceptable since the Required Actions for this Condition provide appropriate compensatory actions for each uncoupled control rod. Complying with the Required Actions may allow for continued operation. Subsequent uncoupled control rods are governed by subsequent entry into the Condition and application of the Required Actions.

B.1

With one or more of the requirements of this LCO not met for reasons other than an uncoupled control rod, the testing should be immediately stopped by placing the reactor mode switch in the shutdown or refuel position. This results in a condition that is consistent with the requirements for MODE 5 where the provisions of this Special Operations LCO are no longer required.

SURVEILLANCE REQUIREMENTS

SR 3.10.8.1

Periodic verification that the RPS shorting links are removed will help ensure the IRM trips are in non-coincidence mode and that when any SRM reaches its trip setpoint, a reactor scram will be initiated. This will ensure that the reactor is operated within the bounds of the safety analysis. ~~The 12 hour Frequency is intended to provide appropriate assurance that each operating shift is aware of and verifies compliance with these Special Operations LCO requirements.~~ [Insert 2]

SR 3.10.8.2 and SR 3.10.8.3

The control rod withdrawal sequences during the SDM tests may be enforced by the RWM (LCO 3.3.2.1, Function 2, MODE 2 requirements) or by a second licensed operator (Operator or Senior Operator) or other qualified member of the technical staff (i.e., engineer). As noted, either the applicable SRs for the RWM (LCO 3.3.2.1) must be satisfied according to the applicable Frequencies (SR 3.10.8.2), or the proper movement of control rods must be verified (SR 3.10.8.3). This latter verification (i.e., SR 3.10.8.3) must be performed during control rod movement to prevent deviations from the specified sequence. These surveillances provide adequate assurance that the specified test sequence is being followed.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.10.8.4

Periodic verification of the administrative controls established by this LCO will ensure that the reactor is operated within the bounds of the safety analysis. ~~The 12 hour Frequency is intended to provide appropriate assurance that each operating shift is aware of and verifies compliance with these Special Operations LCO requirements.~~ [Insert 2]

SR 3.10.8.5

Coupling verification is performed to ensure the control rod is connected to the control rod drive mechanism and will perform its intended function when necessary. The verification is required to be performed any time a control rod is withdrawn to the "full-out" notch position, or prior to declaring the control rod OPERABLE after work on the control rod or CRD System that could affect coupling. This Frequency is acceptable, considering the low probability that a control rod will become uncoupled when it is not being moved as well as operating experience related to uncoupling events.

SR 3.10.8.6

CRD charging water header pressure verification is performed to ensure the motive force is available to scram the control rods in the event of a scram signal. Since the reactor is depressurized in MODE 5, there is insufficient reactor pressure to scram the control rods. Verification of charging water header pressure ensures that if a scram were required, capability for rapid control rod insertion would exist. The minimum pressure of 940 psig is well below the expected pressure of approximately 1500 psig while still ensuring sufficient pressure for rapid control rod insertion. ~~The 7 day Frequency has been shown to be acceptable through operating experience and takes into account indications available in the control room.~~ [Insert 2]

ATTACHMENT 5

Monticello Nuclear Generating Plant

License Amendment Request: Application for Technical Specification Change Regarding Risk-Informed Justification for the Relocation of Specific Surveillance Frequency Requirements to a Licensee Controlled Program

TSTF-425 (NUREG-1433) VERSUS MONTICELLO NUCLEAR GENERATING PLANT (MNGP) SURVEILLANCES CROSS-REFERENCE (FOR INFORMATION ONLY)

(15 pages to follow)

Technical Specification Cross Reference for
TSTF-425 (NUREG-1433) and Monticello (MNGP)
(FOR INFORMATION ONLY)

Technical Specification Section Title/Surveillance Description[1]	TSTF-425	MNGP
Definitions		
Staggered Test Basis	1.1	1.1
Reactivity Anomalies	**3.1.2**	**3.1.2**
Verify core reactivity	N/A	3.1.2.1
Control Rod OPERABILITY	**3.1.3**	**3.1.3**
Determine control rod position	3.1.3.1	3.1.3.1
Perform notch test - fully withdrawn control rods	3.1.3.2	N/A
Perform notch test - withdrawn control rods	3.1.3.3	3.1.3.2
Control Rod Scram Times	**3.1.4**	**3.1.4**
Perform scram time testing	3.1.4.2	3.1.4.2
Control Rod Scram Accumulators	**3.1.5**	**3.1.5**
Verify control rod scram accumulator pressure	3.1.5.1	3.1.5.1
Rod Pattern Control	**3.1.6**	**3.1.6**
Verify control rods comply with withdrawal sequence	3.1.6.1	3.1.6.1
Standby Liquid Control (SLC) System	**3.1.7**	**3.1.7**
Verify volume of sodium pentaborate solution	3.1.7.1	3.1.7.1
Verify temperature of sodium pentaborate solution	3.1.7.2	3.1.7.2
Verify temperature of SLC piping	3.1.7.3	3.1.7.3
Verify continuity of explosive charge	3.1.7.4	3.1.7.4
Verify concentration of boron solution	3.1.7.5	3.1.7.5
Verify manual/power operated valve positon	3.1.7.6	3.1.7.6
Verify pump flow rate	3.1.7.7	3.1.7.7[2]
Verify flow through SLC subsystem	3.1.7.8	3.1.7.8
Verify heat traced piping is unblocked	3.1.7.9	3.1.7.9
Scram Discharge Volume (SDV) Vent and Drain Valves	**3.1.8**	**3.1.8**
Verify each SDV vent and drain valve is open	3.1.8.1	3.1.8.1
Cycle each SDV vent and drain valve	3.1.8.2	3.1.8.2
Verify automatic operation of each SDV vent and drain valve	3.1.8.3	3.1.8.3
Average Planar Linear Heat Generation Rate (APLHGR)	**3.2.1**	**3.2.1**
Verify all APLHGRs are less than or equal to limits	3.2.1.1	3.2.1.1
Minimum Critical Power Ratio (MCPR)	**3.2.2**	**3.2.2**
Verify all MCPRs are greater than or equal to limits	3.2.2.1	3.2.2.1

Technical Specification Section Title/Surveillance Description[1]	TSTF-425	MNGP
Linear Heat Generation Rate (LHGR)	**3.2.3**	**3.2.3**
Verify all LHGRs are less than or equal to limits	3.2.3.1	3.2.3.1
Average Power Range Monitor (APRM) Gain and Setpoints	**3.2.4**	**N/A**
Verify MFLPD is within limits	3.2.4.1	N/A
Verify APRM setpoints or gains are adjusted FLPD	3.2.4.2	N/A
Reactor Protection System (RPS) Instrumentation	**3.3.1.1**	**3.3.1.1**
Perform CHANNEL CHECK	3.3.1.1.1	3.3.1.1.1
Verify absolute difference between APRM channels and calculated power	3.3.1.1.2	3.3.1.1.2
Adjust the channel to conform to a calibrated flow signal	3.3.1.1.3	N/A
Perform CHANNEL FUNCTIONAL TEST	3.3.1.1.4	3.3.1.1.3
Perform a functional test of each automatic scram contactor	N/A	3.3.1.1.4
Perform CHANNEL FUNCTIONAL TEST	3.3.1.1.5	3.3.1.1.5
Calibrate the local power range monitors	3.3.1.1.6	3.3.1.1.6
Perform CHANNEL FUNCTIONAL TEST	3.3.1.1.7	3.3.1.1.7
Calibrate the trip units	3.3.1.1.8	3.3.1.1.8
Perform CHANNEL CALIBRATION	3.3.1.1.9	3.3.1.1.9
Perform CHANNEL FUNCTIONAL TEST	3.3.1.1.10	3.3.1.1.10
Perform CHANNEL CALIBRATION	3.3.1.1.11	3.3.1.1.11
Verify the APRM Flow Biased Simulated Thermal Power	3.3.1.1.12	N/A
Perform LOGIC SYSTEM FUNCTIONAL TEST	3.3.1.1.13	3.3.1.1.12
Verify Turbine Stop Valve - Closure and Turbine Control Valve Fast Closure, Trip Oil Pressure - Low Functions are not bypassed	3.3.1.1.14	3.3.1.1.13
Verify the RPS RESPONSE TIME is within limits	3.3.1.1.15	3.3.1.1.14
Perform CHANNEL FUNCTIONAL TEST	N/A	3.3.1.1.15
Verify oscillation power range monitor (OPRM) is not bypassed when APRM Simulated Thermal Power is ≥ 25% rated thermal power (RTP) and recirculation drive flow is ≤ 60%	N/A	3.3.1.1.16
Source Range Monitor (SRM) Instrumentation	**3.3.1.2**	**3.3.1.2**
Perform CHANNEL CHECK	3.3.1.2.1	3.3.1.2.1
Verify an OPERABLE SRM detector	3.3.1.2.2	3.3.1.2.2
Perform CHANNEL CHECK	3.3.1.2.3	3.3.1.2.3
Verify count rate	3.3.1.2.4	3.3.1.2.4
Perform CHANNEL FUNCTIONAL TEST	3.3.1.2.5	3.3.1.2.5
Perform CHANNEL FUNCTIONAL TEST	3.3.1.2.6	3.3.1.2.6
Perform CHANNEL CALIBRATION	3.3.1.2.7	3.3.1.2.7

Technical Specification Section Title/Surveillance Description[1]	TSTF-425	MNGP
Control Rod Block Instrumentation	**3.3.2.1**	**3.3.2.1**
Perform CHANNEL FUNCTIONAL TEST	3.3.2.1.1	3.3.2.1.1
Perform CHANNEL FUNCTIONAL TEST	3.3.2.1.2	3.3.2.1.2
Perform CHANNEL FUNCTIONAL TEST	3.3.2.1.3	3.3.2.1.3
Verify the RBM	3.3.2.1.4	3.3.2.1.5
Verify the RWM is not bypassed	3.3.2.1.5	3.3.2.1.6
Perform CHANNEL FUNCTIONAL TEST	3.3.2.1.6	3.3.2.1.7
Perform CHANNEL CALIBRATION	3.3.2.1.7	3.3.2.1.4
Feedwater and Main Turbine High Water Level Trip Instrumentation	**3.3.2.2**	**3.3.2.2**
Perform CHANNEL CHECK	3.3.2.2.1	3.3.2.2.1
Perform CHANNEL FUNCTIONAL TEST	3.3.2.2.2	3.3.2.2.2
Calibrate the trip units	N/A	3.3.2.2.3
Perform CHANNEL CALIBRATION	3.3.2.2.3	3.3.2.2.4
Perform LOGIC SYSTEM FUNCTIONAL TEST	3.3.2.2.4	3.3.2.2.5
Post Accident Monitoring (PAM) Instrumentation	**3.3.3.1**	**3.3.3.1**
Perform CHANNEL CHECK	3.3.3.1.1	3.3.3.1.1
Perform CHANNEL CALIBRATION	3.3.3.1.2	3.3.3.1.2
Remote Shutdown Monitoring Instrumentation / Alternate Shutdown System	**3.3.3.2**	**3.3.3.2**
Perform CHANNEL CHECK	3.3.3.2.1	3.3.3.2.1
Verify each required control circuit and transfer switch	3.3.3.2.2	3.3.3.2.2
Perform CHANNEL CALIBRATION	3.3.3.2.3	3.3.3.2.3
End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation	**3.3.4.1**	**N/A**
Perform CHANNEL FUNCTIONAL TEST	3.3.4.1.1	N/A
Calibrate trip units	3.3.4.1.2	N/A
Perform CHANNEL CALIBRATION	3.3.4.1.3	N/A
Perform LOGIC SYSTEM FUNCTIONAL TEST	3.3.4.1.4	N/A
Verify TSV - Closure and TCV Fast Closure, Trip Oil Pressure - Low Functions are not bypassed	3.3.4.1.5	N/A
Verify the EOC-RPT SYSTEM RESPONSE TIME	3.3.4.1.6	N/A
Determine RPT breaker interruption time	3.3.4.1.7	N/A
Anticipated Transient Without Scram Recirculation Pump Trip (ATWS-RPT) Instrumentation	**3.3.4.2**	**3.3.4.1**
Perform CHANNEL CHECK	3.3.4.2.1	3.3.4.1.1
Perform CHANNEL FUNCTIONAL TEST	3.3.4.2.2	3.3.4.1.2
Calibrate the trip units	3.3.4.2.3	3.3.4.1.3
Perform CHANNEL CALIBRATION of Reactor Vessel	N/A	3.3.4.1.4

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Water Level - Low Low time delay relays		
Perform CHANNEL CALIBRATION	3.3.4.2.4	3.3.4.1.5
Perform LOGIC SYSTEM FUNCTIONAL TEST	3.3.4.2.5	3.3.4.1.6
Emergency Core Cooling System (ECCS) Instrumentation	**3.3.5.1**	**3.3.5.1**
Perform CHANNEL CHECK	3.3.5.1.1	3.3.5.1.1
Perform CHANNEL FUNCTIONAL TEST	3.3.5.1.2	3.3.5.1.2
Calibrate the trip unit	3.3.5.1.3	3.3.5.1.3
Perform CHANNEL CALIBRATION	3.3.5.1.4	3.3.5.1.4
Perform CHANNEL FUNCTIONAL TEST	N/A	3.3.5.1.5
Perform CHANNEL CALIBRATION	3.3.5.1.5	3.3.5.1.6
Perform CHANNEL CALIBRATION	N/A	3.3.5.1.7
Perform LOGIC SYSTEM FUNCTIONAL TEST	3.3.5.1.6	3.3.5.1.8
Perform CHANNEL FUNCTIONAL TEST	N/A	3.3.5.1.9
Verify the ECCS RESPONSE TIME is within limits	3.3.5.1.7	N/A
Reactor Core Isolation Cooling (RCIC) System Instrumentation	**3.3.5.2**	**3.3.5.2**
Perform CHANNEL CHECK	3.3.5.2.1	3.3.5.2.1
Perform CHANNEL FUNCTIONAL TEST	3.3.5.2.2	3.3.5.2.2
Calibrate the trip units	3.3.5.2.3	3.3.5.2.3
Perform CHANNEL CALIBRATION	3.3.5.2.4	N/A
Perform CHANNEL CALIBRATION	3.3.5.2.5	3.3.5.2.4
Perform LOGIC SYSTEM FUNCTIONAL TEST	3.3.5.2.6	3.3.5.2.5
Primary Containment Isolation Instrumentation	**3.3.6.1**	**3.3.6.1**
Perform CHANNEL CHECK	3.3.6.1.1	3.3.6.1.1
Perform CHANNEL FUNCTIONAL TEST	3.3.6.1.2	3.3.6.1.2
Calibrate the trip unit	3.3.6.1.3	3.3.6.1.3
Perform CHANNEL CALIBRATION	3.3.6.1.4	3.3.6.1.4
Perform CHANNEL FUNCTIONAL TEST	3.3.6.1.5	N/A
Perform CHANNEL CALIBRATION	3.3.6.1.6	3.3.6.1.5
Perform LOGIC SYSTEM FUNCTIONAL TEST	3.3.6.1.7	3.3.6.1.6
Verify the ISOLATION SYSTEM RESPONSE TIME is within limits	3.3.6.1.8	N/A
Secondary Containment Isolation Instrumentation	**3.3.6.2**	**3.3.6.2**
Perform CHANNEL CHECK	3.3.6.2.1	3.3.6.2.1
Perform CHANNEL FUNCTIONAL TEST	3.3.6.2.2	3.3.6.2.2
Calibrate the trip unit	3.3.6.2.3	3.3.6.2.3
Perform CHANNEL CALIBRATION	3.3.6.2.4	3.3.6.2.4
Perform CHANNEL CALIBRATION	3.3.6.2.5	3.3.6.2.5

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Perform LOGIC SYSTEM FUNCTIONAL TEST	3.3.6.2.6	3.3.6.2.6
Verify the ISOLATION SYSTEM RESPONSE TIME is within limits	3.3.6.2.7	N/A
Low-Low Set (LLS) Instrumentation	**3.3.6.3**	**3.3.6.3**
Perform CHANNEL CHECK	3.3.6.3.1	3.3.6.3.1
Perform CHANNEL FUNCTIONAL TEST	3.3.6.3.2	3.3.6.3.2
Perform CHANNEL FUNCTIONAL TEST	3.3.6.3.3	N/A
Perform CHANNEL FUNCTIONAL TEST	3.3.6.3.4	N/A
Calibrate the trip unit	3.3.6.3.5	3.3.6.3.3
Perform CHANNEL CALIBRATION	3.3.6.3.6	3.3.6.3.4
Perform CHANNEL CALIBRATION	N/A	3.3.6.3.5
Perform LOGIC SYSTEM FUNCTIONAL TEST	3.3.6.3.7	3.3.6.3.6
Main Control Room Environmental Control (MCREC) System Instrumentation / Control Room Emergency Filtration (CREF) System Instrumentation)	**3.3.7.1**	**3.3.7.1**
Perform CHANNEL CHECK	3.3.7.1.1	3.3.7.1.1
Perform CHANNEL FUNCTIONAL TEST	3.3.7.1.2	3.3.7.1.2
Calibrate the trip units	3.3.7.1.3	3.3.7.1.3
Perform CHANNEL CALIBRATION	N/A	3.3.7.1.4
Perform CHANNEL CALIBRATION	3.3.7.1.4	3.3.7.1.5
Perform LOGIC SYSTEM FUNCTIONAL TEST	3.3.7.1.5	3.3.7.1.6
Mechanical Vacuum Pump Isolation Instrumentation	**N/A**	**3.3.7.2**
Perform CHANNEL CHECK	N/A	3.3.7.2.1
Perform CHANNEL FUNCTIONAL TEST	N/A	3.3.7.2.2
Perform CHANNEL CALIBRATION	N/A	3.3.7.2.3
Perform LOGIC SYSTEM FUNCTIONAL TEST	N/A	3.3.7.2.4
Loss of Power (LOP) Instrumentation	**3.3.8.1**	**3.3.8.1**
Perform CHANNEL CHECK	3.3.8.1.1	N/A
Perform CHANNEL FUNCTIONAL TEST	3.3.8.1.2	3.3.8.1.1
Perform CHANNEL CALIBRATION	N/A	3.3.8.1.2
Perform CHANNEL CALIBRATION	3.3.8.1.3	3.3.8.1.3
Perform LOGIC SYSTEM FUNCTIONAL TEST	3.3.8.1.4	3.3.8.1.4
Reactor Protection System (RPS) Electric Power Monitoring	**3.3.8.2**	**3.3.8.2**
Perform CHANNEL FUNCTIONAL TEST	3.3.8.2.1	3.3.8.2.1
Perform CHANNEL CALIBRATION	3.3.8.2.2	3.3.8.2.2
Perform CHANNEL CALIBRATION	N/A	3.3.8.2.3
Perform a system functional test	3.3.8.2.3	3.3.8.2.4

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Recirculation Loops Operating	**3.4.1**	**3.4.1**
Verify recirculation loop jet pump flow mismatch with both loops operating	3.4.1.1	3.4.1.1
Jet Pumps	**3.4.2**	**3.4.2**
Verify at least of one the following criteria satisfied for each operating recirculation loop	3.4.2.1	3.4.2.1
Safety/Relief Valves (SRVs)	**3.4.3**	**3.4.3**
Verify the safety function lift setpoints	3.4.3.1	3.4.3.1[2]
Verify each SRV opens when manually actuated	3.4.3.2	3.4.3.2[2]
Reactor Coolant System (RCS) Operational Leakage	**3.4.4**	**3.4.4**
Verify RCS unidentified and total leakage increase within limits	3.4.4.1	3.4.4.1
RCS Pressure Isolation Valve (PIV) Leakage	**3.4.5**	**N/A**
Verify equivalent leakage of each PIV	3.4.5.1	N/A
RCS Leakage Detection Instrumentation	**3.4.6**	**3.4.5**
Perform CHANNEL CHECK	3.4.6.1	3.4.5.1
Perform CHANNEL FUNCTIONAL TEST	3.4.6.2	3.4.5.2
Perform CHANNEL CALIBRATION	3.4.6.3	3.4.5.3
RCS Specific Activity	**3.4.7**	**3.4.6**
Verify RCS DOSE EQUIVALENT I-131 specific activity	3.4.7.1	3.4.6.1
RHR Shutdown Cooling System– Hot Shutdown	**3.4.8**	**3.4.7**
Verify one subsystem operating	3.4.8.1	3.4.7.1
Verify RHR Shutdown cooling subsystem locations susceptible to gas accumulation sufficiently filled	N/A	3.4.7.2
RHR Shutdown Cooling - Cold Shutdown	**3.4.9**	**3.4.8**
Verify one subsystem operating	3.4.9.1	3.4.8.1
Verify RHR Shutdown cooling subsystem locations susceptible to gas accumulation sufficiently filled	N/A	3.4.8.2
RCS Pressure/Temperature Limit	**3.4.10**	**3.4.9.1**
Verify RCS pressure, temperature, heatup and cooldown rates	3.4.10.1	3.4.9.1
Verify reactor vessel flange/head flange temperatures (tensioning)	3.4.10.7	3.4.9.4
Verify reactor vessel flange/head flange temperatures (after RCS temp ≤ 80°F)	3.4.10.8	3.4.9.5
RPV flange/head flange temperatures (after RCS temp ≤ 100°F)	3.4.10.9	3.4.9.6
Reactor Steam Dome Pressure	**3.4.11**	**3.4.10**
Verify reactor steam dome pressure	3.4.11.1	3.4.10.1

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ECCS - Operating	**3.5.1**	**3.5.1**
Verify injection/spray piping filled with water	3.5.1.1	3.5.1.1
Verify each valve in flow path is in correct position	3.5.1.2	3.5.1.2
Verify ADS header pressure	3.5.1.3	3.5.1.3
Verify system cross tie [intertie return line] valves closed and power removed	3.5.1.4	3.5.1.4
Verify each LPCI inverter output voltage [Verify correct breaker alignment to the LPCI swing bus]	3.5.1.5	3.5.1.5
Verify ECCS pumps develop specified flow rate	3.5.1.6	3.5.1.7[2]
Verify HPCI pump can develop a flow rate	3.5.1.8	3.5.1.8[2]
Verify HPCI pump can develop a flow rate	3.5.1.9	3.5.1.9
Verify each ECCS injection spray subsystem actuates	3.5.1.10	3.5.1.10
Verify ADS actuates on actual or simulated signal	3.5.1.11	3.5.1.11
Verify each ADS valve opens when manually actuated	3.5.1.12	3.5.1.12[2]
Verify auto transfer capability of LPCI swing bus power supply from the normal to the back up source	N/A	3.5.1.13
ECCS - Shutdown	**3.5.2**	**3.5.2**
Verify suppression pool water level	3.5.2.1	N/A
Verify, for core spray, suppression pool and CST water level	3.5.2.2	3.5.2.1
Verify ECCS piping filled with water	3.5.2.3	3.5.2.2
Verify each valve in flow path is in correct position	3.5.2.4	3.5.2.3
Verify each ECCS pump develops flow	3.5.2.5	3.5.2.4[2]
Verify each required ECCS injection/spray subsystem actuates on initiation signal	3.5.2.6	3.5.2.5
RCIC System	**3.5.3**	**3.5.3**
Verify RCIC piping filled with water	3.5.3.1	N/A
Verify each valve in flow path is in correct position	3.5.3.2	3.5.3.1
Verify RCIC flow rate (Reactor press ≥ [920] and ≤ [1020])	3.5.3.3	3.5.3.2[2]
Verify RCIC flow rate (Reactor press ≤ [165])	3.5.3.4	3.5.3.3
Verify RCIC actuates on initiation signal	3.5.3.5	3.5.3.4
Verify RCIC system locations susceptible to gas accumulation sufficiently filled	N/A	3.5.3.5
Primary Containment	**3.6.1.1**	**3.6.1.1**
Verify drywell to suppression chamber differential pressure	3.6.1.1.2	3.6.1.1.2
Primary Containment Air Lock	**3.6.1.2**	**3.6.1.2**
Verify only one door can be opened	3.6.1.2.2	3.6.1.2.2

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Primary Containment Isolation Valves (PCIVs)	**3.6.1.3**	**3.6.1.3**
Verify purge valve closed except one valve in penetration	3.6.1.3.1	N/A
Verify each [18] inch purge valve is closed	3.6.1.3.2	3.6.1.3.1
Verify each manual PCIV outside containment is closed	3.6.1.3.3	3.6.1.3.2
Verify continuity of the traversing incore probe shear isolation valve explosive charge	3.6.1.3.5	3.6.1.3.4
Verify the isolation time of each power operated automatic PCIV, [except for MSIVs], is within limits	3.6.1.3.6	3.6.1.3.5
Perform leakage rate testing for each primary containment purge valve with resilient seals	3.6.1.3.7	3.6.1.3.11[2]
Verify the isolation time of each MSIV	3.6.1.3.8	3.6.1.3.6
Verify each automatic PCIV actuates to isolation position	3.6.1.3.9	3.6.1.3.7
Verify each [a representative sample of] reactor instrumentation line EFCV actuates	3.6.1.3.10	3.6.1.3.8
Remove and test the explosive squib from each shear isolation valve	3.6.1.3.11	3.6.1.3.10
Verify each [ ] inch primary containment purge valve is blocked to restrict the valve from opening > [50]% [Verify each 18 inch primary containment purge and vent valve is blocked to restrict the valve from opening > 40°]	3.6.1.3.15	3.6.1.3.9
Drywell Pressure	**3.6.1.4**	**N/A**
Verify drywell pressure is within limit.	3.6.1.4.1	N/A
Drywell Air Temperature	**3.6.1.5**	**3.6.1.4**
Verify drywell average air temperature is within limit	3.6.1.5.1	3.6.1.4.1
LLS Valves	**3.6.1.6**	**3.6.1.5**
Verify each LLS valve opens when manually actuated	3.6.1.6.1	3.6.1.5.1[2]
Verify LLS system actuates on initiation signal	3.6.1.6.2	3.6.1.5.2
Reactor Building-to-Suppression Chamber Vacuum Breakers	**3.6.1.7**	**3.6.1.6**
Verify each vacuum breaker closed	3.6.1.7.1	3.6.1.6.1
Perform functional test of each vacuum breaker	3.6.1.7.2	3.6.1.6.2
Verify the opening setpoint of each vacuum breaker	3.6.1.7.3	3.6.1.6.3
Suppression Chamber-to-Drywell Vacuum Breakers	**3.6.1.8**	**3.6.1.7**
Verify each vacuum breaker closed	3.6.1.8.1	3.6.1.7.1
Perform functional test of each vacuum breaker	3.6.1.8.2	3.6.1.7.2
Verify the opening setpoint of each vacuum breaker	3.6.1.8.3	3.6.1.7.3
Main Steam Isolation Valve (MSIV) Leakage Control System (LCS)]	**3.6.1.9**	**N/A**
Operate each MSIV LCS blower	3.6.1.9.1	N/A
Verify continuity of inboard MSIV LCS heater element	3.6.1.9.2	N/A

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Perform functional test of each MSIV LCS subsystem	3.6.1.9.3	N/A
Suppression Pool Average Temperature	**3.6.2.1**	**3.6.2.1**
Verify suppression pool average temperature within limits	3.6.2.1.1	3.6.2.1.1
Suppression Pool Water Level	**3.6.2.2**	**3.6.2.2**
Verify suppression pool water level within limits	3.6.2.2.1	3.6.2.2.1
RHR Suppression Pool Cooling	**3.6.2.3**	**3.6.2.3**
Verify each valve in flow path is in correct position	3.6.2.3.1	3.6.2.3.1
Verify each RHR pump develops flow rate	3.6.2.3.2	3.6.2.3.2[2]
Verify RHR suppression pool cooling subsystem locations susceptible to gas accumulation sufficiently filled	N/A	3.6.2.3.3
RHR Suppression Pool Spray [Residual Heat Removal (RHR) Drywell Spray]	**3.6.2.4**	**3.6.1.8**
Verify each valve is in the correct position or can be aligned to the correct position	3.6.2.4.1	3.6.1.8.1
Verify each RHR pump a flow rate	3.6.2.4.2	N/A
Verify RHR drywell spray subsystem locations susceptible to gas accumulation sufficiently filled	N/A	3.6.1.8.3
Drywell-to-Suppression Chamber Differential Pressure	**3.6.2.5**	**N/A**
Verify drywall-to-suppression chamber differential pressure is within limits	3.6.2.5.1	N/A
Drywell Cooling System Fans	**3.6.3.1**	**N/A**
Operate each required drywell cooling system fan	3.6.3.1.1	N/A
Verify each required drywell cooling system fan flow rate	3.6.3.1.2	N/A
Primary Containment Oxygen Concentration	**3.6.3.2**	**3.6.3.1**
Verify primary containment oxygen concentration is within limits	3.6.3.2.1	3.6.3.1.1
Containment Atmosphere Dilution (CAD) System	**3.6.3.3**	**N/A**
Verify volume of liquid nitrogen	3.6.3.3.1	N/A
Verify each CAD subsystem valve is in the correct position or can be aligned to the correct position	3.6.3.3.2	N/A
Secondary Containment	**3.6.4.1**	**3.6.4.1**
Verify secondary containment vacuum	3.6.4.1.1	3.6.4.1.1
Verify all secondary containment equipment hatches are closed and sealed	3.6.4.1.2	3.6.4.1.2
Verify one secondary containment access door is closed in each access opening	3.6.4.1.3	3.6.4.1.3
Verify secondary containment can be drawn down using one SGT subsystem	3.6.4.1.4	N/A

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Verify each SGT subsystem can maintain vacuum water gauge in the secondary containment for 1 hour	3.6.4.1.5	3.6.4.1.3
Secondary Containment Isolation Valves (SCIVs)	**3.6.4.2**	**3.6.4.2**
Verify each SC isolation manual valve is closed	3.6.4.2.1	3.6.4.2.1
Verify isolation time of each SCIV	3.6.4.2.2	3.6.4.2.2
Verify each automatic SCIV actuates to isolation position	3.6.4.2.3	3.6.4.2.3
Standby Gas Treatment (SGT) System	**3.6.4.3**	**3.6.4.3**
Operate each SGT subsystem continuously	3.6.4.3.1	3.6.4.3.1
Verify each SGT subsystem actuates on initiation signal	3.6.4.3.3	3.6.4.3.3
Verify each SGT filter cooler bypass damper can be opened	3.6.4.3.4	N/A
Residual Heat Removal Service Water (RHRSW) System	**3.7.1**	**3.7.1**
Verify each RHRSW manual, power operated, and automatic valve is in the correct position or can be aligned to the correct position	3.7.1.1	3.7.1.1
Plant Service Water (PSW) System/Service Water (SW) System and Ultimate Heat Sink (UHS) [Emergency Service Water (ESW)]	**3.7.2**	**3.7.2**
Verify cooling tower water level	3.7.2.1	N/A
Verify intake structure pump well water level	3.7.2.2	3.7.2.1
Verify water temperature of the UHS	3.7.2.3	3.7.2.2
Operate each cooling tower fan	3.7.2.4	N/A
Verify each SW manual, power operated, and automatic valve is in the correct position	3.7.2.5	3.7.2.3
Verify each required SW System automatic actuation	3.7.2.6	3.7.2.4
Diesel Generator (DG) Standby Service Water (SSW) System) [Emergency Service water (ESW)]	**3.7.3**	**3.7.3**
Verify each DG SSW System manual, power operated, and automatic valve in the flow path, is in the correct position	3.7.3.1	3.7.3.1
Verify the DG SSW System pump starts automatically and energizes the respective bus	3.7.3.2	3.7.3.2
Main Control Room Environmental Control (MCREC) System [Control Room Emergency Filtration (CREF) System]	**3.7.4**	**3.7.4**
Operate each MCREC subsystem	3.7.4.1	3.7.4.1
Verify each MCREC subsystem actuates	3.7.4.3	3.7.4.3
Verify each MCREC subsystem can maintain a positive pressure	3.7.4.4	3.7.4.4[2]

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Control Room Air Conditioning (AC) System	**3.7.5**	**3.7.5**
Verify each control room AC subsystem can remove the assumed heat load	3.7.5.1	3.7.5.1
Main Condenser Offgas	**3.7.6**	**3.7.6**
Verify the gross gamma activity rate of the noble gases	3.7.6.1	3.7.6.1
Main Turbine Bypass System	**3.7.7**	**3.7.7**
Verify one complete cycle of each main turbine bypass valve	3.7.7.1	3.7.7.1
Perform a system functional test	3.7.7.2	3.7.7.2
Verify the TURBINE BYPASS SYSTEM RESPONSE TIME is within limits	3.7.7.3	3.7.7.3
Spent Fuel Storage Pool Water Level	**3.7.8**	**3.7.8**
Verify the spent fuel storage pool water level	3.7.8.1	3.7.8.1
AC Sources - Operating	**3.8.1**	**3.8.1**
Verify correct breaker alignment	3.8.1.1	3.8.1.1
Verify each DG starts from standby conditions	3.8.1.2	3.8.1.2
Verify each DG is synchronized and loaded and operates	3.8.1.3	3.8.1.3
Verify each day tank fuel oil	3.8.1.4	N/A
Check for and remove accumulated water from each day tank	3.8.1.5	3.8.1.4
Verify the fuel oil transfer system operates to transfer oil	3.8.1.6	3.8.1.5
Verify each DG starts from standby condition and achieves and maintains voltage and frequency	3.8.1.7	N/A
Verify automatic and manual transfer of the unit power supplies	3.8.1.8	3.8.1.6
Verify each DG rejects a load greater than or equal to its associated single largest post-accident load	3.8.1.9	3.8.1.7
Verify each DG does not trip and voltage is maintained during and following a load rejection	3.8.1.10	N/A
Verify on an actual or simulated loss of offsite power signal: de-energization of emergency buses, load shedding from emergency buses, and DG auto-starts	3.8.1.11	N/A
Verify on an actual or simulated ECCS initiation signal each DG auto-starts from standby condition	3.8.1.12	3.8.1.8
Verify each DG's automatic trips are bypassed on an actual or simulated ECCS initiation signal	3.8.1.13	N/A
Verify each DG operates for greater than or equal to 24 [8] hours	3.8.1.14	3.8.1.9
Verify each DG starts and achieves voltage/frequency	3.8.1.15	3.8.1.10

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Verify each DG: synchronizes with offsite power source, transfers loads to offsite power source, and returns to ready-to-load operation	3.8.1.16	3.8.1.11
Verify with a DG operating in test mode and connected to its bus, an actual or simulated ECCS initiation signal overrides the test mode	3.8.1.17	N/A
Verify interval between each sequenced load block is within ± 10% of design interval	3.8.1.18	3.8.1.13
Verify, on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ECCS initiation signal: de-energization of emergency buses, load shedding from emergency buses, and DG auto-starts	3.8.1.19	3.8.1.12
Verify, when started simultaneously from standby condition, each DG achieves voltage and frequency	3.8.1.20	N/A
Diesel Fuel Oil, Lube Oil, and Starting Air	**3.8.3**	**3 8.3**
Verify fuel oil storage tanks inventory	3.8.3.1	3.8.3.1
Verify Lube Oil inventory	3.8.3.2	3.8.3.2
Verify each DG air start receiver pressure	3.8.3.4	3.8.3.4
Check for and remove water from each fuel oil storage tank	3.8.3.5	3.8.3.5
DC Sources - Operating	**3.8.4**	**3.8.4**
Verify battery terminal voltage	3.8.4.1	3.8.4.1
Verify each required battery charger	3.8.4.2	3.8.4.2
Verify battery capacity is adequate to supply the required emergency loads	3.8.4.3	3.8.4.3
Battery Parameters/Battery Cell Parameters	**3.8.6**	**3.8.6**
Verify each battery float current	3.8.6.1	3.8.6.1
Verify each battery pilot cell voltage	3.8.6.2	3.8.6.2
Verify each battery connected cell electrolyte level	3.8.6.3	3.8.6.3
Verify each battery pilot cell temperature	3.8.6.4	3.8.6.4
Verify each battery connected cell voltage	3.8.6.5	3.8.6.5
Verify battery capacity is greater than or equal to [80]% of the manufacturer's rating	3.8.6.6	3.8.6.6
Inverters – Operating	**3.8.7**	**N/A**
Verify correct inverter voltage, frequency, and alignment	3.8.7.1	N/A
Inverters - Shutdown	**3.8.8**	**N/A**
Verify correct inverter voltage, frequency, and alignment	3.8.8.1	N/A

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Distribution Systems - Operating	**3.8.9**	**3.8.7**
Verify correct breaker alignments and indicated power availability to required AC and DC electrical power distribution subsystems	3.8.9.1	3.8.7.1
Distribution Systems - Shutdown	**3.8.10**	**3.8.8**
Verify correct breaker alignments and indicated power availability to required AC and DC electrical power distribution subsystems	3.8.10.1	3.8.8.1
Refueling Equipment Interlocks	**3.9.1**	**3.9.1**
Perform CHANNEL FUNCTIONAL TEST on required refueling equipment interlock inputs	3.9.1.1	3.9.1.1
Refuel Position One-Rod-Out Interlock	**3.9.2**	**3.9.2**
Verify reactor mode switch locked in Refuel position	3.9.2.1	3.9.2.1
Perform CHANNEL FUNCTIONAL TEST	3.9.2.2	3.9.2.2
Control Rod Position	**3.9.3**	**3.9.3**
Verify all control rods are fully inserted	3.9.3.1	3.9.3.1
Control Rod Operability - Refueling	**3.9.5**	**3.9.5**
Insert Each withdrawn control rod at least one notch	3.9.5.1	3.9.5.1
Verify each withdrawn control rod scram accumulator pressure	3.9.5.2	3.9.5.2
Reactor Pressure Vessel (RPV) Water Level - Irradiated Fuel	**3.9.6**	**3.9.6**
Verify RPV water level	3.9.6.1	3.9.6.1
Reactor Pressure Vessel (RPV) Water Level - New Fuel or Control Rods	**3.9.7**	**N/A**
Verify RPV water level	3.9.7.1	N/A
Residual Heat Removal (RHR) - High Water level	**3.9.8**	**3.9.7**
Verify one RHR shutdown cooling subsystem is operating	3.9.8.1	3.9.7.1
Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation sufficiently filled	N/A	3.9.7.2
Residual Heat Removal (RHR) - Low Water Level	**3.9.9**	**3.9.8**
Verify one RHR shutdown cooling subsystem is operating	3.9.9.1	3.9.8.1
Verify RHR shutdown cooling subsystem locations susceptible to gas accumulation sufficiently filled	N/A	3.9.8.2
Reactor Mode Switch Interlock Testing	**3.10.2**	**3.10.2**
Verify all control rods are fully inserted in core cells containing one or more fuel assemblies	3.10.2.1	3.10.2.1

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Verify no CORE ALTERATIONS are in progress	3.10.2.2	3.10.2.2
Single Control Rod Withdrawal - Hot Shutdown	**3.10.3**	**3.10.3**
Verify all control rods, other than the control rod being withdrawn, in a five by five array centered on the control rod being withdrawn, are disarmed	3.10.3.2	3.10.3.2
Verify all control rods, other than the control rod being withdrawn, are fully inserted	3.10.3.3	3.10.3.3
Single Control Rod Withdrawal - Cold Shutdown	**3.10.4**	**3.10.4**
Verify all control rods, other than the control rod being withdrawn, in a five by five array centered on the control rod being withdrawn, are disarmed	3.10.4.2	3.10.4.2
Verify all control rods, other than the control rod being withdrawn, are fully inserted	3.10.4.3	3.10.4.3
Verify a control rod withdrawal block is inserted	3.10.4.4	3.10.4.4
Single Control Rod Drive (CRD) Removal - Refueling	**3.10.5**	**3.10.5**
Verify all control rods, other than the control rod withdrawn for the removal of the associated CRD, are fully inserted	3.10.5.1	3.10.5.1
Verify all control rods, other than the control rod withdrawn for the removal of the associated CRD, in a five by five array centered on the control rod withdrawn for the removal of the associated CRD, are disarmed	3.10.5.2	3.10.5.2
Verify a control rod withdrawal block is inserted	3.10.5.3	3.10.5.3
Verify no other CORE ALTERATIONS are in progress	3.10.5.5	3.10.5.5
Multiple Control Rod Withdrawal - Refueling	**3.10.6**	**3.10.6**
Verify the four fuel assemblies are removed from core cells associated with each control rod or CRD removed	3.10.6.1	3.10.6.1
Verify all other control rods in core cells containing one or more fuel assemblies are fully inserted	3.10.6.2	3.10.6.2
Verify fuel assemblies being loaded are in compliance with an approved reload sequence	3.10.6.3	3.10.6.3
Shutdown Margin Test - Refueling	**3.10.8**	**3.10.8**
Verify all RPS shorting links are removed	N/A	3.10.8.1
Verify no other core alterations in progress	3.10.8.4	3.10.8.4
Verify CRD charging water header pressure	3.10.8.6	3.10.8.6
Recirculation Loops - Testing	**3.10.9**	**N/A**
Verify LCO 3.4.1 requirements suspended for < 24 hours	3.10.9.1	N/A
Verify Thermal power < [5]% RTP during Physics Test	3.10.9.2	N/A
Training Startups	**3.10.10**	**N/A**
Verify all operable IRM channels are <25/40 div. of full scale	3.10.10.1	N/A

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Verify average reactor coolant temperature < 200 F	3.10.10.2	N/A
Programs (Surveillance Frequency Control Program)	**5.5.15**	**5.5.15**

Notes on Table:

1. The Technical Specification Section Title/Surveillance Description portion of this attachment is a summary description of the referenced TSTF-425 (NUREG-1433)/MNGP TS Surveillances, is provided for information purposes only, and is not intended to be a verbatim description of the TS Surveillances.
2. This MNGP Surveillance Frequency is provided in another program, is event driven, or is related to a certain condition.

ATTACHMENT 6

Monticello Nuclear Generating Plant

License Amendment Request:
Application for Technical Specification Change Regarding Risk-Informed Justification for the Relocation of Specific Surveillance Frequency Requirements to a Licensee Controlled Program

PROPOSED NO SIGNIFICANT HAZARDS CONSIDERATION

(3 pages to follow)

NO SIGNIFICANT HAZARDS CONSIDERATION

Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, has reviewed the proposed no significant hazards consideration (NSHC) determination published in the Federal Register dated July 6, 2009 (74 FR 31996). NSPM has concluded that the proposed NSHC presented in the Federal Register notice is applicable to the Monticello Nuclear Generating Plant (MNGP). The NSHC is provided below and satisfies the requirements of 10 CFR 50.91(a).

Description of Amendment Request:

The change requests the adoption of an approved change to the standard technical specifications (STS) for General Electric Plants, Boiling Water Reactor (BWR)/4 (NUREG–1433) to allow relocation of specific Technical Specification (TS) surveillance frequencies to a licensee-controlled program. The proposed change is described in Technical Specification Task Force (TSTF) Traveler, TSTF–425, Revision 3 (ADAMS Accession No. ML080280275) related to the relocation of surveillance frequencies to licensee control, or the Risk Informed Technical Specification Task Force (RITSTF) Initiative 5b, which was described in the Notice of Availability published in the Federal Register on July 6, 2009 (74 FR 31966).

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 change relocates surveillance frequencies to a licensee-controlled program, called the Surveillance Frequency Control Program (SFCP). This change is applicable to licensees using probabilistic risk guidelines contained in NRC-approved Nuclear Energy Institute (NEI) 04–10, ‘‘Risk- Informed Technical Specifications Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies,’’ (ADAMS Accession No. 071360456).

Basis for proposed no significant hazards consideration:

As required by 10 CFR 50.91(a), the NSPM analysis of the issue of no significant hazards consideration is presented below:

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

   Response: No.

   The proposed change relocates the specified frequencies for periodic surveillance requirements to licensee control under a new SFCP. 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 technical specifications 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 change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   Response: No.

   No new or different accidents result from utilizing the proposed change. 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. Does the proposed change involve a significant reduction in the margin of safety?

   Response: No.

   The design, operation, testing methods, and acceptance criteria for systems, structures, and components (SSCs), 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, [Licensee] will perform a probabilistic risk evaluation using the guidance contained in NRC approved NEI 04–10, Rev. 1 in accordance with the TS SFCP. 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, NSPM concludes that the requested change does not involve a significant hazards consideration as set forth in 10 CFR 50.92(c), Issuance of Amendment.