Southern Nuclear
Operating Company, Inc.
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201-1295

Tel 205.992.5000

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

Vogtle Electric Generating Plant
License Amendment Request for Adoption of TSTF-425-A, Rev. 3,
Risk-Informed Justification for the Relocation of Specific Surveillance Frequency
Requirements to a Licensee Controlled Program
Using the Consolidated Line Item Improvement Process

Ladies and Gentlemen:

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

In accordance with Technical Specification Task Force (TSTF) 425-A, Revision 3, the proposed amendment would modify the VEGP TS by relocating specific surveillance frequencies to a licensee-controlled program with the implementation of Nuclear Energy Institute (NEI) 04–10, Revision 1 "Risk-Informed Technical Specification Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies." The availability of this TS improvement was announced in the Federal Register on July 6, 2009 (74 FR 31996) as part of the consolidated line item improvement process (CLIIP).

Enclosure 1 provides the basis for the proposed change to the VEGP TS, the requested confirmation of applicability and plant specific verifications. Enclosure 2 provides Documentation of PRA Technical Adequacy. Enclosure 3 provides the existing VEGP TS pages marked-up to show the proposed changes for VEGP. Enclosure 4 provides the clean typed proposed VEGP TS pages. Enclosure 5 provides the proposed TS Bases changes for VEGP.

SNC requests approval of the proposed license amendment by November, 30, 2010 with the amendment being implemented within 120 days of receipt of amendment.

(Affirmation and signature are provided on the following page)

A001
NRR

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

If you should have any questions regarding this submittal, please contact me. Mr. M. J. Ajluni states he is Nuclear Licensing Manager of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and to the best of his knowledge and belief, the facts set forth in this letter are true.

This letter contains no NRC commitments. If you have any questions, please advise.

Respectfully submitted,

Mark J Ajluni

M. J. Ajluni
Nuclear Licensing Manager

Sworn to and subscribed before me this 15th *day of* June, *2010.*

Laura L. Crumpton
Notary Public

My commission expires: 11-02-2013

MJA/SYA/phr

Enclosures:
1. Basis of Proposed Change
2. Documentation of PRA Technical Accuracy
3. Markup for VEGP Proposed TS Changes
4. Clean Typed VEGP Proposed TS Changes
5. Markups for VEGP Proposed TS Bases Changes

cc: Southern Nuclear Operating Company
Mr. J. T. Gasser, Executive Vice President
Mr. T. E. Tynan, Vice President – Vogtle
Ms. P. M. Marino, Vice President – Engineering
RType: CFA04.054; CHA02.004; CVC7000

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

State of Georgia
Mr. C. Clark, Commissioner – Department of Natural Resources

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Enclosure 1

Basis for Proposed Change

Enclosure 1

Basis for Proposed Change

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Enclosure 1

Basis for Proposed Change

1.0 Description

The proposed change would modify the Vogtle Electric Generating Plant (VEGP) Technical Specifications (TS) by relocating specific surveillance frequencies to a licensee-controlled program with the adoption of Technical Specification Task Force (TSTF)-425, Revision 3, "Risk-Informed Justification for the Relocation of Specific Surveillance Frequency Requirements to a Licensee Controlled Program (Risk Informed Technical Specification Task Force (RITSTF) Initiative 5)." Additionally, the change would add a new program, the Surveillance Frequency Control Program, to the VEGP TS Section 5, Administrative Controls.

The changes are consistent with NRC approved Industry/TSTF STS change TSTF-425-A, Revision 3, (ADAMS Accession No. ML080280275). The Federal Register notice published on July 6, 2009 announced the availability of this TS improvement.

2.0 Assessment

2.1 Applicability of Published Safety Evaluation

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

Enclosure 2 includes SNC documentation with regard to PRA technical adequacy consistent with the requirements of Regulatory Guide 1.200, Revision 2 Section 4.2, and describes any PRA models without NRC-endorsed standards, including documentation of the quality characteristics of those models in accordance with Regulatory Guide 1.200.

2.2 Optional Changes and Variations

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

- The definition of STAGGERED TEST BASIS is being retained in VEGP TS Definition Section 1.1 since this terminology is mentioned in Administrative TS Section 5.5.20, "Control Room Habitability," which is not the subject of this amendment request and is not proposed to be changed. This is an administrative deviation from

TSTF-425 with no impact on the NRC staff's model safety evaluation dated July 6, 2009 (74 FR 31996).

- The 18 month Frequency listed for VEGP Surveillance Requirement (SR) 3.1.7.1 is a time-based Frequency and the exclusion criteria do not apply, unlike the STS SR 3.1.7.1 Frequency which is an event driven Frequency and is excluded from relocation by TSTF-425. Therefore, the Frequency and Bases associated with VEGP SR 3.1.7.1 are being relocated to a licensee-controlled document.

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

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

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

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

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

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

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

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

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

3.0 Regulatory Analysis

3.1 No Significant Hazards Consideration

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

4.0 Environmental Evaluation

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

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Enclosure 2

Documentation of PRA Technical Adequacy

Enclosure 2

Documentation of PRA Technical Adequacy

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Enclosure 2

Documentation of PRA Technical Adequacy

1.0 Introduction

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

2.0 Technical Adequacy of VEGP PRA Model

2.1 PRA Model for As-Built As-Operated VEGP

2.1.1 PRA Maintenance and Update

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

- Pertinent modifications to the physical plant (i.e. those potentially affecting the Base Line PRA (BL-PRA) models, calculated core damage frequencies (CDFs), or large early release frequencies (LERFs) to a significant degree) shall be reviewed to determine the scope and necessity of a revision to the baseline model within six months following the Unit 2 refueling outage or a specific major plant modification occurring outside a refueling outage. The BL-PRAs should be updated as necessary in accordance with a schedule approved by the PRA Manager following the scoping review. Upon completion of the lead Unit's BL-PRA, the other Unit's BL-PRA will be regenerated by modification of the updated BL-PRAs to account for Unit differences which significantly impact the results.

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

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

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

- Documentation of the PRA model, PRA products, and bases documents.
- The approach for controlling electronic storage of Risk Management (RM) products including PRA update information, PRA models, and PRA applications.
- Guidelines for updating the full power, internal events PRA models for SNC nuclear generation sites.
- Guidance for use of quantitative and qualitative risk models in support of the On-Line Work Control Process Program for risk evaluations for maintenance tasks (corrective maintenance, preventive maintenance, minor maintenance, surveillance tests and modifications) on systems, structures, and components (SSCs) within the scope of the Maintenance Rule (10 CFR 50.65 (a)(4)).

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

2.1.2 Plant Changes Not Yet Incorporated into the PRA Model

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

Enclosure 2

Documentation of PRA Technical Adequacy

Table 1: History of the Major VEGP PRA Model Updates

Model	Document No.	Scope	Updated Items	CDF and LERF (/yr)
IPE	WCAP-13553 (Westinghouse report) by Westinghouse and SNC, 11/1992	At-power, internal and external, CDF and Level 2 PRA	The original	CDF: 4.9E-5 LERF: 1.78E-6
Rev. 0	SAIC prepared reports, 3/1998.	At-power, internal, CDF and LERF	Conversion from a large Event Tree/small Fault Tree approach to a small Event Tree/large Fault Tree approach (linked fault tree model method). PRA software change from WESQT/GRAFTER (Westinghouse Event Tree and Fault tree software) to CAFTA.	CDF: 3.62E-5 LERF: 1.72E-6 The CDF reduction was mainly due to changes, such as, removal of unrealistic SBO scenarios, addition of more realistic assumptions regarding the effect of loss of room cooling, and removal of a 'guaranteed failure' assumption made during IPE for event CON (operator action to depressurize one SG to cause feed flow from the condensate pumps if AFW failed).
Rev. 1	PSA-V-99-002 by SNC, 9/1999	At-power, internal, CDF and LERF	Enhanced the treatment of operator action dependency, removal of circular logic, and minor corrections/ improvements.	CDF: 3.702E-5 LERF: 2.290E-6

Table 1: History of the Major VEGP PRA Model Updates				
Model	**Document No.**	**Scope**	**Updated Items**	**CDF and LERF (/yr)**
Rev. 2	PSA-V-99-012 by SNC, 1/2000	At-power, internal, CDF and LERF	Update of initiating event frequencies, component failure data, and maintenance unavailablities using plant specific data collected though the end of 1998. Incorporated plant changes.	CDF: 1.48E-5 LERF:1.15E-6 There was a considerable reduction in CDF mainly due to reduction in the transient event frequency. The sum of frequencies of eight transient subcategories was reduced from 4.04/yr to 2.64/yr after the data update. Also, items updated during revision 0a, 0b, and 0c, especially the crediting of the plant Wilson switchyard for a back up AC power source, contributed to the reduction in CDF. The reduction in LERF was mainly due to reduced failure probabilities of some of the components, especially NSCW pumps, which have a significant contribution to the LERF after the Bayesian update of failure data using VEGP specific failure data.
Rev. 2a	PSA-V-00-003 by SNC, 7/2000	At-power, internal, CDF and LERF	Addition of RCP seal LOCA failure modes which were newly identified by the Westinghouse Owners Group (WOG), changes in success criteria for Steam Generator Tube Rupture (SGTR), and minor changes to facilitate Maintenance Rule and MOV/AOV risk ranking.	CDF = 2.40E-5, LERF = 7.34E-7 CDF increase was due to new RCP seal LOCA failure modes. LERF decrease due to changes in success criteria for SGTR
Rev. 2b	PSA-V-00-020 by SNC, 11/2000	At-power, internal, CDF and LERF	Minor improvement in recovery tree for recovery analysis.	CDF = 2.38E-5 LERF = 7.34E-7 No significant changes in CDF and LERF

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Documentation of PRA Technical Adequacy

Table 1: History of the Major VEGP PRA Model Updates

Model	Document No.	Scope	Updated Items	CDF and LERF (/yr)
Rev. 2c	PSA-V-00-030 by SNC, 11/2001	At-power, internal, CDF and LERF	Peer reviewed model by the WOG PRA peer review team. Revised the LERF model based on the new WOG LERF modeling guidelines. Updated the initiating event frequencies using the more recent generic data source (NUREG/CR-5750). Some SGTR scenarios were removed from the LERF scenarios and minor changes were made to facilitate RIS_B analysis. Removed circular logic in normal charging pump fault trees.	CDF: 1.602E-5, LERF:7.802E-8 The CDF decrease was mainly due to a decrease in LOCA frequencies after an update of initiating frequencies using NUREG/CR-5750 data. The decrease in LERF was due to the removal of some SGTR scenarios from the LERF model.
Rev. 3	PRA-BC-V-06-001, by SNC, 2/2006	At-power, internal, CDF and LERF	This is the most extensive upgrade of the VEGP PRA model since the IPE. • All level 1 PRA tasks, from the selection and grouping of initiating events to the final quantification were practically re-done. • Resolved all Westinghouse Owners Group PRA peer review B Facts & Observations (F&Os). There were no A F&O for VEGP.	CDF: 1.28E-5 LERF: 1.10E-7 The CDF changes were due to combined effects of many changes during revision 3. The main cause of the LERF increase was the regrouping of all of the SGTR sequences back into the containment bypass scenarios, and the removal of the credit for mitigating systems for some Interfacing Systems LOCA scenarios (as resolutions of peer review findings).

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Documentation of PRA Technical Adequacy

Table 1: History of the Major VEGP PRA Model Updates

Model	Document No.	Scope	Updated Items	CDF and LERF (/yr)
VEGPL2UP model	P0293060001-2707 (ERIN report) by SNC and ERIN, 11/2006	At-power, internal, CDF and full level 2	Based on the Rev.3 level 1 PRA logic. This model was used for the Severe Accident Management Alternative Analysis for the VEGP license renewal which was submitted in 2007. Upgraded the full Level 2 PRA model, based on WCAP-16341-P guidelines which aim for producing an ASME PRA capability category II LERF model. Incorporated success terms in level 1 and level 2 logic. Corrected an error in the level 1 PRA failure data.	CDF: 1.552E-5 1.529E-5 (after treating success terms) LERF: 1.819E-7 The increase in CDF (before treating success terms) from revision 3 to VEGPL2UP model was due to the correction of a RCP seal LOCA probability from WCAP-16141. The above LERF value is the sum of four LERF release categories: LERF-BYPASS, LERF-ISO, LERF-CFE, and LERF-SGTR.

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Documentation of PRA Technical Adequacy

Table 1: History of the Major VEGP PRA Model Updates				
Model	**Document No.**	**Scope**	**Updated Items**	**CDF and LERF (/yr)**
Rev. 4	PRA-BC-V-07-003 The original was prepared in April 2009 for R.G 1.200 R1 peer review against ASME PRA standard in May 2009. Rev.4 model will be re-issued in the first half of 2010 after resolving all "SR Not met" Finding and Observations (total three).	At power, internal, CDF and full level 2	The following items are complete: • Closed all gaps identified from a self assessment. • Re-performed pre-initiator HFE screening for gap closure. • Update of initiating frequency and component failure data using new plant experiences and new generic failure data base (NUREG/CR-6928). • Re-performed internal flooding PRA. • Update of system notebooks. • Uncertainty analysis considering the state of knowledge correlation.	CDF: mean = 1.40E-5/yr, error factor = 1.8 LERF: mean = 4.96E-8, error factor = 3.1 LERF reduction was due to correct a wrong Steam generator tube condition used in the previous model. SG tube condition affects the probabilities of induced SGTR. Based on the current VEGP SG tube plugging rate, which is less than 2.5%, the current VEGP SG tube condition is "pristine", instead of "average" as assumed in the previous model (ref: WCAP-16341-P) . Also, by use of new generic initiating event frequency, medium LOCA contributions increased significantly because the revised medium LOCA frequency based on new generic data base (NUREG/CR-6928) is almost an order of magnitude higher than previous generic value.

2.2 Consistency with Applicable ASME PRA Standard Requirements

2.2.1 Previous peer review and Self Assessment for VEGP PRA Model

In addition to independent internal and external review during each VEGP PRA model development and update, several assessments of the technical capability have been made before the PWR Owners Group (PWROG) peer review against ASME PRA Standard and R.G. 1.200, Revision 1 in May of 2009. Listed below are the previous assessments for VEGP PRA:

- An independent PRA peer review was conducted under the auspices of the Westinghouse Owners Group (WOG) in December 2001, following the Industry PRA Peer Review process (Reference 1). This peer review included an assessment of the PRA model maintenance and an update process. This assessment did not identify any "A" Facts & Observations (F&Os). All "B" F&Os from the 2001 Industry PRA Peer Review for VEGP PRA were addressed in VEGP PRA model Revision 3.

- During 2005, the VEGP PRA model results were evaluated in the WOG PRA cross-comparisons study performed in support of implementation of the mitigating systems performance indicator (MSPI) process. Results of this cross-comparison are presented in WCAP-16464, Westinghouse Owner's Group Mitigating Systems Performance Index Cross Comparison. The PRA Cross comparison Candidate Outlier Status was described in section 3.4 of VEGP MSPI base document. Noted in this document was the fact that, after allowing for plant-specific features, there are no MSPI cross-comparison outliers for VEGP PRA.

- In 2006, a gap analysis was performed against the available versions of the ASME PRA Standard (Reference 2) and Regulatory Guide 1.200, Revision 0 (2003 trial version).

- In 2008, VEGP PRA model (draft Revision 4) was benchmarked with three Westinghouse PWRs (Comanche peak, Callaway, Wolf Creek) as a part of MSPI margin study. The benchmarking concluded that there were no significant issues in the VEGP PRA model which would impact MSPI calculations

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

The VEGP PRA model for internal events (including internal flooding) at power was updated to Revision 4 early in 2009 to close the gaps from the 2006 self assessment, to meet the ASME PRA standard supporting requirements, and to represent as-built as-operated plant.

In May of 2009, the VEGP PRA model Revision 4 was reviewed per RG 1.200 Revision 1 (Reference 3) against ASME PRA Standard Requirements (Reference 4). A summary of this peer review is provided below:

1. The ASME PRA Standard (Reference 4) contains a total of 327 numbered supporting requirements (SRs) in nine technical elements and the configuration control element. Eleven of the SRs represent deleted requirements (IE-A8, IE-A9, SC-A3, SY-A9, SY-B9, HR-G8, IF-A2, IF-B4, IF-D2, IF-E2, and QU-D2) and 20 were determined to be not applicable to the VEGP PRA.

2. Among 296 applicable SRs, 99% of SRs met Capability Category II or higher as follows:

Capability Category Met	No. of SRs	% of total applicable SRs
CC-I/II/III (or SR Met)	210	70.9%
CC I	0	0%
CC II	38	12.8%
CC III	7	2.4%
CC I/II	14	4.7%
CC II/III	24	8.1%
SR Not Met	3	1.0%
SR (CC-I/II/III) Met	296	100

3. Three SRs were judged to be not met. These are HR-G6, QU-D3, and LE-G5. HR-G6 was not met because the reasonableness check of Human Reliability Analyses (HRA) was done for the previous revision of the PRA and not the latest revision. QU-D3 was not met because the SR requires the PRA results to be compared with those from similar plants. The VEGP PRA report cites the MSPI benchmark report as evidence of meeting this requirement, which is an outdated comparison. SR LE-G5 was characterized as "Not Met" because the limitation of the LERF calculations that could impact risk-informed applications was not identified

2.2.3 Resolution of Findings from RG 1.200 PRA Peer Review

Table 2 shows details of the three "SR Not Met" findings and resolutions after the peer review. As shown in Table 2, the three not met SRs have been resolved.

Table 2 Resolution of the VEGP PRA Peer Review F&Os associated three "SR not Met" SRs				
F&O #	**Review Element**	**Level[1]**	**Resolution**	**The Status of Resolution by the SNC**
HR-G6-01	HR-G6 (SR not met CC-I/II/III)	Finding	Check of consistency and review for reasonableness is missing in the Revision 4 updated HRA draft and the prior revision document information related to these items is not appropriate to use in light of the updates performed and changes to the results. Section 8 includes a table of HFEs and HEPs but does not include HEP reasonableness check, as is documented in Section 8.3 of the November 2005 HRA update for Revision 3.	Reasonableness check for all HRAs for Revision 4 model was re-performed. All HRAs have been determined to be reasonable or have been appropriately revised.

Table 2 Resolution of the VEGP PRA Peer Review F&Os associated three "SR not Met" SRs				
F&O #	**Review Element**	**Level[1]**	**Resolution**	**The Status of Resolution by the SNC**
QU-D3-01	QU-D3 (SR CC-II Not met)	Finding	Reviewer asked the VEGP Staff to provide evidence of comparison of the VEGP results to those from similar plants. The VEGP staff presented the benchmark report for MSPI as evidence of comparison. Reviewers concluded that report is not sufficient evidence for demonstrating compliance to this SR.	In order to resolve this F&O, a new comparison study was performed by comparing VEGP PRA results with two PWR PRAs (Callaway and Wolf Creek) which are considered relatively similar to VEGP. In addition to the comparison of PRA reports, a plant visit to Callaway was performed to identify more details of Callaway systems and PRA modeling. The comparison showed that all three plants have LOSP/Station black out as the most dominant contributors which indicated that the VEGP PRA results are not an outlier as compared to similar PWRs. Differences in dominant CDF contributors were investigated and it was found that those differences are due to differences in details of system configuration/operation and physical barriers for internal flooding, and in the sources for generic initiating event frequency data (VEGP PRA used the latest generic initiating frequency and failure data along with VEGP specific experience data for its data update). Therefore, this F&O has been resolved.

Table 2 Resolution of the VEGP PRA Peer Review F&Os associated three "SR not Met" SRs				
F&O #	**Review Element**	**Level[1]**	**Resolution**	**The Status of Resolution by the SNC**
LE-G5-01	LE-G5 (SR Not met CC I/II/III)	Finding	Limitations in the LERF analysis that would impact applications are not identified. LERF analysis documentation is incomplete because limitations in the LERF analysis that would impact applications, as required by SR LE-G5, are not identified.	A comparison of Vogtle LERF scenarios with those in Table 4.5.9.3 of the ASME PRA standard revealed that the Vogtle PRA included more potential LERF scenarios than as required for a large dry containment plant in ASME PRA standard. The LERF scenarios modeled in VEGP PRA include containment bypass core damage scenarios (steam generator tube rupture and Interfacing systems LOCA), thermally or pressure induced steam generator tube rupture after core damage, containment isolation failure with core damage, and various early containment failure modes. Therefore, this F&O has been resolved.

2.3 Identification of Key Assumptions

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

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

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

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

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

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

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

3.0 External Event Considerations

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

External hazards were evaluated in the VEGP Individual Plant Examination of External Events (IPEEE) submitted in response to the NRC IPEEE program (Generic Letter 88-20, Supplement 4) (Reference 5). The IPEEE program was a one-time review of external hazard risk and was limited in its purpose to the identification of potential plant vulnerabilities and the understanding of associated severe accident risks. The results of the VEGP IPEEE study are documented in the VEGP IPEEE main report. The primary areas of external event evaluation at VEGP were internal fire and seismic.

The internal fire events were addressed by a scenario-based PRA approach that meets the requirements of NUREG-1407 (Reference 6) to systematically and successively evaluate fire and smoke hazards and their associated risk impact to VEGP. The IPEEE Fire PRA study provided estimates of CDF and LERF. However, the original IPEEE Fire PRA has not been updated. Currently, a state-of-the-art VEGP Fire PRA model, which will meet all Capability Category II (CC-II) requirements in ASME PRA standard is being developed. When, and if, the IPEEE Fire PRA model is used, consistent with NEI-04-10, the fire risk insights will be complemented by conservative qualitative potential impact of the fire hazard.

In the VEGP IPEEE, the seismic risk evaluation was performed in accordance with EPRI Seismic Margins Analysis (SMA) methodology. Since the SMA approach was used, there are no comprehensive CDF and LERF values available from the seismic analysis in the VEGP IPEEE to support the STI risk evaluations. One of the insights from the VEGP SMA was that VEGP is one of the most seismically rugged nuclear power plants. A conclusion from the SMA was that VEGP has a high-confidence-low-probability-of-failure (HCLPF) capacity of at least 0.3 pga.

In addition to internal fires and seismic events, the VEGP IPEEE analysis of high winds, floods, and other (HFO) external hazards was accomplished by using a progressive screening approach described in NUREG-1407. The VEGP IPEEE concluded that the existing VEGP design was in conformance with the 1975 Standard Review Plan (SRP), NUREG-75-087 (Reference 7), criteria, in all reviewed areas and no potential vulnerabilities were identified. HFO events were screened out by compliance with the SRP. As such these hazards were determined to be negligible contributors to the 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. Therefore, for fire risk assessment, until a new VEGP fire PRA model which meets all CC-II requirements in the ASME PRA standard, the impacts on fire risk of a STI change will be assessed using a qualitative or a bounding approach supplemented with insights from IPEEE fire PRA and from the VEGP internal events PRA model. In performing the assessment for the other external events, a qualitative or a bounding approach will also be utilized in most cases.

4.0 General Conclusion Regarding PRA Capability

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

5.0 References

1. "Probabilistic Risk Assessment (PRA) Peer Review Process Guidance," NEI-00-02, 2000.
2. "Standard for Probabilistic Risk Assessment for Nuclear Power Plant Applications, ASME RA-S-2002, April 2002 and Addenda to Standard for Probabilistic Risk Assessment for Nuclear Power Plant Applications," ASME RA-Sa-2003, American Society of Mechanical Engineers 2003.
3. "An Approach for Determining Technical Adequacy of PRA Results for Risk-Informed Activities," Regulatory Guide 1.200 Revision 1, USNRC, January 2007.
4. "Addenda to ASME RA-S-2002 Standard for PRA for Nuclear power Plant Applications," RA-SB-2005, American Society of Mechanical Engineers, New York, NY, December 2005.
5. "Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities - 10 CFR 50.54(f), Supplement 4," NRC Generic Letter 88-20, June 1991
6. "Procedural and Submittal Guidance for the Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities," NUREG-1407, US NRC, June 1991.
7. "Standard Review Plan for the Review of Safety Analysis Report for Nuclear Power Plants," LWR edition, NUREG-75-087, USNRC, December 1975.

Vogtle Electric Generating Plant
License Amendment Request for Adoption of TSTF-425-A, Rev. 3,
Risk-Informed Justification for the Relocation of Specific Surveillance
Frequency Requirements to a Licensee Controlled Program
Using the Consolidated Line Item Improvement Process

Enclosure 3

Markup for VEGP Proposed TS Changes

INSERT 1

5.5.21 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.

3.1 REACTIVITY CONTROL SYSTEMS

3.1.1 SHUTDOWN MARGIN (SDM)

LCO 3.1.1 SDM shall be ≥ the limit specified in the COLR.

APPLICABILITY: MODES 3, 4, and 5.

ACTIONS

-----NOTE-----
While this LCO is not met, transition to a lower MODE within the Applicability is not permitted.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SDM not within limit.	A.1 Initiate boration to restore SDM to within limit.	15 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.1.1	Verify SDM is ≥ the limit specified in the COLR.	~~24 hours~~ In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.2.1	-----------------------------NOTE----------------------------- The predicted reactivity values may be adjusted (normalized) to correspond to the measured core reactivity prior to exceeding a fuel burnup of 60 effective full power days (EFPD) after each fuel loading. ---	
	Verify measured core reactivity is within ± 1% Δk/k of predicted values.	Once prior to entering MODE 1 after each refueling <u>AND</u> ~~31 EFPD thereafter upon achieving 60 EFPD~~ In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 3	6 hours
D. More than one rod not within alignment limit.	D.1.1 Verify SDM is ≥ the limit specified in the COLR. OR D.1.2 Initiate boration to restore required SDM to within limit. AND D.2 Be in MODE 3.	1 hour 1 hour 6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.4.1	Verify individual rod positions within alignment limit. In accordance with the Surveillance Frequency Control Program	~~12 hours~~ AND Once within 4 hours and every 4 hours thereafter when the rod position deviation monitor is inoperable

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.1.4.2	Verify rod freedom of movement by moving each rod not fully inserted in the core ≥ 10 steps in either direction.	~~92 days~~
SR 3.1.4.3	Verify rod drop time of each rod, from the physical fully withdrawn position, is ≤ 2.7 seconds from the beginning of decay of stationary gripper coil voltage to dashpot entry, with: a. $T_{avg} \geq 551°F$; and b. All reactor coolant pumps operating.	Prior to reactor criticality after each removal of the reactor head

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.1.6.2	Verify each control bank insertion is within the limits specified in the COLR.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program AND Once within 4 hours and every 4 hours thereafter when the rod insertion limit monitor is inoperable
SR 3.1.6.3	Verify sequence and overlap limits specified in the COLR are met for control banks not fully withdrawn from the core.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.7.1	Verify each DRPI agrees within 12 steps of the group demand position for the full indicated range of rod travel.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.8.1	Perform a CHANNEL OPERATIONAL TEST on power range and intermediate range channels per SR 3.3.1.7, SR 3.3.1.8, and Table 3.3.1-1.	Within 12 hours prior to initiation of PHYSICS TESTS
SR 3.1.8.2	Verify the RCS lowest loop average temperature is ≥ 541°F.	~~30 minutes~~
SR 3.1.8.3	Verify SDM is ≥ the limit specified in the COLR.	~~24 hours~~

In accordance with the Surveillance Frequency Control Program

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.1.1	Verify $F_Q(Z)$ is within steady state limit.	Once after each refueling after achieving equilibrium conditions at any power level exceeding 50% RTP <u>AND</u> Once after achieving equilibrium conditions after exceeding, by ≥ 20% RTP, the THERMAL POWER at which $F_Q(Z)$ was last verified <u>AND</u> ~~31 EFPD thereafter~~

(continued)

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.1.2 (continued) In accordance with the Surveillance Frequency Control Program	Once after achieving equilibrium conditions after exceeding, by ≥ 20% RTP, the THERMAL POWER at which $F_Q(Z)$ was last verified <u>AND</u> ~~31 EFPD thereafter~~

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.2.2.1	Verify $F^N_{\Delta H}$ is within limits specified in the COLR. In accordance with the Surveillance Frequency Control Program	Once after each refueling prior to THERMAL POWER exceeding 75% RTP <u>AND</u> ~~31 EFPD thereafter~~

3.2 POWER DISTRIBUTION LIMITS

3.2.3 AXIAL FLUX DIFFERENCE (AFD) (Relaxed Axial Offset Control (RAOC) Methodology)

LCO 3.2.3 The AFD shall be maintained within the limits specified in the COLR.

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

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.3.1	Verify AFD within limits for each OPERABLE excore channel.	~~7 days~~ In accordance with the Surveillance Frequency Control Program AND Once within 1 hour and every 1 hour thereafter with the AFD monitor alarm inoperable

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.4.1	-----------------------------NOTE----------------------------- With one power range channel inoperable, the remaining three power range channels can be used for calculating QPTR. -- Verify QPTR is within limit by calculation.	~~7 days~~ In accordance with the Surveillance Frequency Control Program <u>AND</u> Once within 12 hours and every 12 hours thereafter with the QPTR alarm inoperable
SR 3.2.4.2	-----------------------------NOTE----------------------------- Only required to be performed if input to QPTR from one or more Power Range Neutron Flux channels is inoperable with THERMAL POWER ≥ 75% RTP. -- Confirm that the normalized symmetric power distribution is consistent with QPTR.	Once within 12 hours <u>AND</u> ~~12 hours thereafter~~ In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1	Perform CHANNEL CHECK.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.1.2	-----NOTES----- Not required to be performed until 12 hours after THERMAL POWER is ≥ 15% RTP. ---------- Compare results of calorimetric heat balance calculation to power range channel output. Adjust power range channel output if calorimetric heat balance calculation results exceed power range channel output by more than +2% RTP.	~~24 hours~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.1.3	-----NOTES----- Not required to be performed until 24 hours after THERMAL POWER is ≥ 15% RTP. ---------- Compare results of the incore detector measurements to Nuclear Instrumentation System (NIS) AFD. Adjust NIS channel if absolute difference is ≥ 3%.	~~31 effective full power days (EFPD)~~ In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.4	---NOTE--- This Surveillance must be performed on the reactor trip bypass breaker prior to placing the bypass breaker in service. ------ Perform TADOT.	~~62 days on a STAGGERED TEST BASIS~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.1.5	Perform ACTUATION LOGIC TEST.	~~92 days on a STAGGERED TEST BASIS~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.1.6	---NOTES--- 1. Not required to be performed until 7 days after THERMAL POWER is ≥ 75% RTP. 2. Neutron detectors are excluded from CHANNEL CALIBRATION. ------ Calibrate excore channels to agree with incore detector measurements.	~~92 EFPD~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.1.7	---NOTES--- 1. For the Source Range Instrumentation this surveillance shall include verification that interlocks P-6 and P-10 are in their required state for existing unit conditions. 2. Not required to be performed for Source Range Instrumentation prior to entering MODE 3 from MODE 2 until 4 hours after entry into MODE 3. ------ Perform COT.	~~184 days~~ In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.8	-----NOTE----- Only required when not performed within previous ~~31 days~~. In accordance with the Surveillance Frequency Control Program ----- Perform COT.	Prior to Reactor Startup
SR 3.3.1.9	-----NOTE----- Verification of setpoint is not required. ----- Perform TADOT.	~~92 days~~
SR 3.3.1.10	-----NOTE----- This Surveillance shall include verification that the time constants are adjusted to the prescribed values. ----- Perform CHANNEL CALIBRATION.	~~18 months~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.1.11	-----NOTE----- Neutron detectors are excluded from CHANNEL CALIBRATION. ----- Perform CHANNEL CALIBRATION.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

(continued)

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.12	Perform COT.	~~18 months~~
SR 3.3.1.13	------NOTE------ Verification of setpoint is not required. ------ Perform TADOT.	~~18 months~~
SR 3.3.1.14	------NOTES------ 1. Only required when not performed within previous 31 days. 2. Verification of setpoint is not required. ------ Perform TADOT. In accordance with the Surveillance Frequency Control Program	After each MODE 3 entry for unit shutdown and prior to exceeding the P-9 interlock trip setpoint.
SR 3.3.1.15	------NOTE------ Neutron detectors are excluded from response time testing. ------ Verify RTS RESPONSE TIME is within limits.	~~18 months on a STAGGERED TEST BASIS~~

(continued)

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

	SURVEILLANCE	FREQUENCY
SR 3.3.2.1	Perform CHANNEL CHECK.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.2.2	Perform ACTUATION LOGIC TEST.	~~92 days on a STAGGERED TEST BASIS~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.2.3	Perform MASTER RELAY TEST.	~~92 days on a STAGGERED TEST BASIS~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.2.4	Perform COT.	~~184 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.2.5	Perform SLAVE RELAY TEST.	~~18 months~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.2.6	-----NOTE----- Verification of setpoint not required for manual initiation functions. ---------- Perform TADOT.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.2.7	---NOTE--- This Surveillance shall include verification that the time constants used for the Steam Line Pressure instrument functions are adjusted to the prescribed values. Perform CHANNEL CALIBRATION.	~~18 months~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.2.8	---NOTE--- Not required to be performed for the turbine driven AFW pump until 24 hours after SG pressure is ≥ 900 psig. Verify ESFAS RESPONSE TIMES are within limit.	~~18 months on a STAGGERED TEST BASIS~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.2.9	---NOTE--- Verification of setpoint not required. Perform TADOT.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE		FREQUENCY
SR 3.3.3.1	Perform CHANNEL CHECK for each required instrumentation channel.	~~31 days~~
SR 3.3.3.2	---------------------------NOTE--------------------------- Neutron detectors are excluded from CHANNEL CALIBRATION. --- Perform CHANNEL CALIBRATION.	~~18 months~~

In accordance with the Surveillance Frequency Control Program

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

In accordance with the Surveillance Frequency Control Program

In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Actions and associated Completion Times not met in MODES 1, 2, 3, or 4.	D.1 Be in MODE 3. <u>AND</u> D.2 Be in MODE 5.	6 hours 36 hours
E. Required Action and associated Completion Time not met when the associated DG is required OPERABLE by LCO 3.8.2.	E.1 Enter applicable Condition(s) and Required Action(s) for the associated DG made inoperable by LOP DG start instrumentation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.5.1	Perform COT.	~~92 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.5.2	Perform CHANNEL CALIBRATION with Nominal Trip Setpoint and Allowable Value as follows: A. Loss of voltage Allowable Value ≥ 2912 V with a time delay of ≤ 0.8 second. Loss of voltage Nominal Trip Setpoint 2975 V with a time delay of ≤ 0.8 second. B. Degraded voltage Allowable Value ≥ 3683 V with a time delay of ≤ 20 seconds. Degraded voltage Nominal Trip Setpoint 3746 V with a time delay of ≤ 20 seconds.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.5.3	-----------------------------NOTE-------------------------------- Not required to be performed for the turbine-driven Auxiliary Feedwater (AFW) pump until 24 hours after Steam Generator pressure is ≥ 900 psig. --- Verify AFW system ESF RESPONSE TIME for loss of voltage and degraded voltage on the 4.16 kV ESF buses within limit.	~~18 months on a STAGGERED TEST BASIS~~

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

	SURVEILLANCE	FREQUENCY
SR 3.3.6.1	Perform CHANNEL CHECK.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.6.2	Perform ACTUATION LOGIC TEST.	~~92 days on a STAGGERED TEST BASIS~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.6.3	Perform MASTER RELAY TEST.	~~92 days on a STAGGERED TEST BASIS~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.6.4	Perform COT.	~~92 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.6.5	Perform SLAVE RELAY TEST.	~~18 months~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.6.6	-----NOTE----- Verification of setpoint not required. ----- Perform TADOT.	~~18 months~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.6.7	Perform CHANNEL CALIBRATION.	~~18 months~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.6.8	Verify RESPONSE TIMES are within limits.	~~18 months on a STAGGERED TEST BASIS~~ In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

	SURVEILLANCE	FREQUENCY
SR 3.3.7.1	Perform CHANNEL CHECK.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.7.2	Perform COT.	~~92 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.7.3	Perform ACTUATION LOGIC TEST.	~~31 days on a STAGGERED TEST BASIS~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.7.4	------------------------NOTE------------------------ Verification of setpoint is not required. --- Perform TADOT.	~~18 months~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.7.5	Perform CHANNEL CALIBRATION.	~~18 months~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.7.6	Verify ESF RESPONSE TIME for radio-gas monitors within limit.	~~18 months on a STAGGERED TEST BASIS~~ In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
	-----NOTE----- Not required to be performed prior to entering MODE 3 from MODE 2 until 4 hours after entry into MODE 3.	
SR 3.3.8.1	Perform COT.	~~184 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.8.2	Perform CHANNEL CALIBRATION.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.1.1	Verify pressurizer pressure is ≥ 2199 psig.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program
SR 3.4.1.2	Verify RCS average temperature is ≤ 592.5°F.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program
SR 3.4.1.3	Monitor RCS total flow rate for degradation.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program
SR 3.4.1.4	--------------------------NOTE-------------------------- Not required to be performed until 7 days after ≥ 90% RTP. --- Verify by precision heat balance that RCS total flow rate is ≥ 384,509 gpm.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.3.1	---------------------------NOTE---------------------------- Only required to be performed during RCS heatup and cooldown operations and RCS inservice leak and hydrostatic testing. --- Verify RCS pressure, RCS temperature, and RCS heatup and cooldown rates are within the limits specified in the PTLR.	 ~~30 minutes~~

In accordance with the Surveillance Frequency Control Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.4 RCS Loops - MODES 1 and 2

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

APPLICABILITY: MODES 1 and 2.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.5.1	Verify required RCS loops are in operation.	~~12 hours~~

(continued)

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.5.2	Verify steam generator secondary side water levels are above the highest point of the steam generator U-tubes for required RCS loops.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program
SR 3.4.5.3	Verify correct breaker alignment and indicated power are available to the required pump that is not in operation.	~~7 days~~ In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

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

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.6.1	Verify one RHR or RCS loop is in operation.	~~12 hours~~
SR 3.4.6.2	Verify SG secondary side water levels are above the highest point of the steam generator U-tubes for required RCS loops.	~~12 hours~~

(continued)

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.6.3	Verify correct pump breaker alignment and indicated power are available to the required pump that is not in operation.	~~7 days~~ In accordance with the Surveillance Frequency Control Program

ACTIONS

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

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.7.1	Verify one RHR loop is in operation.	~~12 hours~~
SR 3.4.7.2	Verify SG secondary side water level is above the highest point of the steam generator U-tubes for the required SGs.	~~12 hours~~

(continued)

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

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

In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One RHR loop inoperable.	A.1	Initiate action to restore RHR loop to OPERABLE status.	Immediately
B. Required RHR loops inoperable. <u>OR</u> No RHR loop in operation.	B.1	Suspend all operations involving reduction in RCS boron concentration.	Immediately
	<u>AND</u>		
	B.2	Initiate action to restore one RHR loop to OPERABLE status and to operation.	Immediately
C. One or more valves used to isolate unborated water sources not secured in closed position.	C.1	Initiate action to secure valve(s) in closed position.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify one RHR loop is in operation.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program
SR 3.4.8.2	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	~~7 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.4.8.3	Verify each valve that isolates unborated water sources is secured in the closed position.	~~31 days~~ In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	Verify pressurizer water level is ≤ 92%.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program
SR 3.4.9.2	Verify capacity of each required group of pressurizer heaters is ≥ 150 kW.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
F. (continued)	F.2	Restore one block valve to OPERABLE status.	2 hours
	AND		
	F.3	Restore remaining block valve to OPERABLE status.	72 hours
G. Required Action and associated Completion Time of Condition F not met.	G.1	Be in MODE 3.	6 hours
	AND		
	G.2	Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.11.1	------------------------NOTE------------------------------ Not required to be performed with block valve closed in accordance with the Required Action of Conditions A, B, or E. --- Perform a complete cycle of each block valve.	~~92 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.4.11.2	Perform a complete cycle of each PORV.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.12.1	Verify both safety injection pumps are incapable of injecting into the RCS.	~~12 hours~~
SR 3.4.12.2	Verify each accumulator is isolated.	~~12 hours~~
SR 3.4.12.3	Verify RHR suction valves are open for each required RHR suction relief valve.	~~72 hours~~
SR 3.4.12.4	---------------------------NOTE--------------------------- Only required to be performed when complying with LCO 3.4.12.b. -- Verify RCS vent size within specified limits.	~~12 hours for unlocked open vent valve(s)~~ ~~AND~~ ~~31 days for locked open vent valve(s)~~

In accordance with the Surveillance Frequency Control Program

In accordance with the Surveillance Frequency Control Program

In accordance with the Surveillance Frequency Control Program

(continued)

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.4.12.5	Verify PORV block valve is open for each required PORV.	~~72 hours~~
SR 3.4.12.6	-----------------------------NOTE----------------------------- Not required to be performed until 12 hours after decreasing RCS cold leg temperature to ≤ the COPS arming temperature specified in the PTLR. -- Perform a COT on each required PORV, excluding actuation.	 ~~31 days~~
SR 3.4.12.7	Perform CHANNEL CALIBRATION for each required PORV actuation channel.	~~18 months~~

In accordance with the Surveillance Frequency Control Program

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.13.1	-----NOTES----- 1. Not required to be performed in MODE 3 or 4 until 12 hours of steady state operation. 2. Only required to be performed during steady state operation. 3. Not applicable to primary to secondary LEAKAGE. ---------- Perform RCS water inventory balance.	Once within 12 hours after achieving steady state operation <u>AND</u> ~~72 hours thereafter~~ In accordance with the Surveillance Frequency Control Program
SR 3.4.13.2	-----NOTE----- Not required to be performed until 12 hours after establishment of steady state operation. ---------- Verify primary to secondary LEAKAGE is ≤ 150 gallons per day through any one SG.	~~72 hours~~ In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.14.1 (continued)		For systems rated at less than 50% RCS design pressure, within 24 hours following valve actuation (except for valves HV-8701A/B and HV-8702A/B).
SR 3.4.14.2	Verify RHR System suction isolation valve interlock prevents the valves from being opened with a simulated or actual RCS pressure signal ≥ 450 psig.	~~18 months~~

In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
E. Required containment atmosphere radioactivity monitor inoperable. AND Required containment air cooler condensate flow rate monitor inoperable.	E.1	Restore required containment atmosphere radioactivity monitor to OPERABLE status.	30 days
	OR		
	E.2	Restore required containment air cooler condensate flow rate monitor to OPERABLE status.	30 days
F. Required Action and associated Completion Time not met.	F.1	Be in MODE 3.	6 hours
	AND		
	F.2	Be in MODE 5.	36 hours
G. All required leakage detection systems inoperable.	G.1	Enter LCO 3.0.3.	Immediately

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.15.1	Perform CHANNEL CHECK of containment normal sumps level and reactor cavity sump level monitors.	~~12 hours~~

(continued)

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.15.2	Perform CHANNEL CHECK of the required containment atmosphere radioactivity monitor.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program
SR 3.4.15.3	Perform COT of the required containment atmosphere radioactivity monitor.	~~92 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.4.15.4	Perform CHANNEL CALIBRATION of the containment sump monitors.	~~18 months~~ In accordance with the Surveillance Frequency Control Program
SR 3.4.15.5	Perform CHANNEL CALIBRATION of the required containment atmosphere radioactivity monitor.	~~18 months~~ In accordance with the Surveillance Frequency Control Program
SR 3.4.15.6	Perform CHANNEL CALIBRATION of the required containment air cooler condensate flow rate monitor.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.16.1	Verify reactor coolant gross specific activity ≤ 100/Ē μCi/gm.	~~7 days~~
SR 3.4.16.2	----------NOTE---------- Only required to be performed in MODE 1. -------------------- Verify reactor coolant DOSE EQUIVALENT I-131 specific activity ≤ 1.0 μCi/gm.	~~14 days~~ <u>AND</u> Between 2 and 6 hours after a THERMAL POWER change of ≥ 15% RTP within a 1 hour period

In accordance with the Surveillance Frequency Control Program

(continued)

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

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

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.5.1.1	Verify each accumulator isolation valve is fully open.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program
SR 3.5.1.2	Verify borated water volume in each accumulator is ≥ 6555 gallons and ≤ 6909 gallons.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program
SR 3.5.1.3	Verify nitrogen cover pressure in each accumulator is ≥ 617 psig and ≤ 678 psig.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program
SR 3.5.1.4	Verify boron concentration in each accumulator is ≥ 1900 ppm and ≤ 2600 ppm.	~~31 days~~ In accordance with the Surveillance Frequency Control Program AND For each affected accumulator, once within 6 hours after each solution volume increase of ≥ 67 gallons, that is not the result of addition from the refueling water storage tank
SR 3.5.1.5	Verify power is removed from each accumulator isolation valve operator when pressurizer pressure is ≥ 1000 psig.	~~31 days~~ In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.2.1	Verify the following valves are in the listed position with the power lockout switches in the lockout position. Valve Number / Valve Function / Valve Position HV-8835 / SI Pump Cold Leg Inj. / OPEN HV-8840 / RHR Pump Hot Leg Inj. / CLOSED HV-8813 / SI Pump Mini Flow Isol. / OPEN HV-8806 / SI Pump Suction from RWST / OPEN HV-8802A, B / SI Pump Hot Leg Inj. / CLOSED HV-8809A, B / RHR Pump Cold Leg Inj. / OPEN	~~12 hours~~ In accordance with the Surveillance Frequency Control Program
SR 3.5.2.2	Verify each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.5.2.3	Verify ECCS piping is full of water.	~~31 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.5.2.4	Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.5.2.5	Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position actuates to the correct position on an actual or simulated actuation signal.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.5.2.6	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	~~18 months~~ In accordance with the Surveillance Frequency Control Program
SR 3.5.2.7	Verify, by visual inspection, each ECCS train containment sump suction inlet is not restricted by debris and the suction inlet trash racks and screens show no evidence of structural distress or abnormal corrosion.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.5.4.1	------------NOTE------------ Only required to be performed when ambient air temperature is < 40°F. ---------------------------- Verify RWST borated water temperature is ≥ 44°F and ≤ 116°F.	~~24 hours~~ In accordance with the Surveillance Frequency Control Program
SR 3.5.4.2	Verify RWST borated water volume is ≥ 686,000 gallons.	~~7 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.5.4.3	Verify RWST boron concentration is ≥ 2400 ppm and ≤ 2600 ppm.	~~7 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.5.4.4	Verify each sludge mixing pump isolation valve automatically closes on an actual or simulated RWST Low-Level signal.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.5.1	-----------------------------NOTE----------------------------- Not required to be performed until 8 hours after the Reactor Coolant System pressure stabilizes at ≥ 2215 psig and ≤ 2255 psig. --- Verify manual seal injection throttle valves are adjusted to give a flow within the ECCS safety analysis limits.	~~31 days~~

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.6.1	Perform a visual inspection of the Recirculation Fluid pH Control System and verify the following: a) Three storage baskets are in place, and b) have maintained their integrity, and c) the baskets contain a total of ≥ 11,484 pounds (220 cubic feet) and ≤ 14,612 pounds (260 cubic feet) of trisodium phosphate crystals.	~~18 months~~

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.2.1	---------------------------NOTES--------------------------- 1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. 2. Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1. --- Perform required air lock leakage rate testing in accordance with the Containment Leakage Rage Testing Program.	In accordance with the Containment Leakage Rate Testing Program
SR 3.6.2.2	Verify only one door in the air lock can be opened at a time.	~~18 months~~

In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.3.1	Verify each 24 inch purge valve is sealed closed, except for one purge valve in a penetration flow path while in Condition C of this LCO.	~~31 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.6.3.2	Verify each 14 inch purge valve is closed, except when the associated penetration(s) is (are) permitted to be open for purge or venting operations and purge system surveillance and maintenance testing under administrative control.	~~31 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.6.3.3	-----------------------------NOTE----------------------------- Valves and blind flanges in high radiation areas may be verified by use of administrative controls. --- Verify each containment isolation manual valve and blind flange that is located outside containment and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	~~31 days~~ In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.6.3.4	---NOTES--- 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. The fuel transfer tube blind flange is only required to be verified closed once after refueling prior to entering MODE 4 from MODE 5. ------ Verify each containment isolation manual valve and blind flange that is located inside containment and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days
SR 3.6.3.5	Verify the isolation time of each power operated and each automatic containment isolation valve is within limits.	In accordance with the Inservice Testing Program
SR 3.6.3.6	Perform leakage rate testing for containment purge valves with resilient seals.	~~18 months~~ In accordance with the Surveillance Frequency Control Program
SR 3.6.3.7	Verify each automatic containment isolation valve that is not locked, sealed, or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.4 Containment Pressure

LCO 3.6.4 Containment pressure shall be ≥ -0.3 psig and ≤ +1.8 psig.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.5 Containment Air Temperature

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

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

In accordance with the Surveillance Frequency Control Program

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.6.1	Verify each containment spray manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	~~31 days~~
SR 3.6.6.2	Operate each containment cooling train fan unit for ≥ 15 minutes.	~~31 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.6.6.3	Verify each pair of containment fan coolers cooling water flow rate is ≥ 1359 gpm.	~~31 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.6.6.4	Verify each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.6.6.5	Verify each automatic containment spray valve in the flow path that is not locked, sealed, or otherwise secured in position actuates to the correct position on an actual or simulated actuation signal.	~~18 months~~
SR 3.6.6.6	Verify each containment spray pump starts automatically on an actual or simulated actuation signal.	~~18 months~~

(continued)

In accordance with the Surveillance Frequency Control Program

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.6.7	Verify each containment cooling train starts automatically on an actual or simulated actuation signal.	~~18 months~~ In accordance with the Surveillance Frequency Control Program
SR 3.6.6.8	Verify each spray nozzle is unobstructed.	~~10 years~~ In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Verify one complete cycle of each ARV.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.5.1	Verify each AFW manual, power operated, and automatic valve in each water flow path, and in both steam supply flow paths to the steam turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.7.5.2	------------------------------NOTE------------------------------ Not required to be performed for the turbine driven AFW pump until 24 hours after ≥ 900 psig in the steam generator. --- Verify the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head.	In accordance with the Surveillance Frequency Control Program ~~31 days on a STAGGERED TEST BASIS~~
SR 3.7.5.3	Verify each AFW automatic valve that is not locked, sealed, or otherwise secured in position actuates to the correct position on an actual or simulated actuation signal.	~~18 months~~ In accordance with the Surveillance Frequency Control Program
SR 3.7.5.4	------------------------------NOTE------------------------------ Not required to be performed for the turbine driven AFW pump until 24 hours after ≥ 900 psig in the steam generator. --- Verify each AFW pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program ~~18 months~~

(continued)

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.7.5.5	Verify that each AFW pumphouse ESF supply fan starts and associated dampers actuate on a simulated or actual actuation signal.	~~18 months~~
SR 3.7.5.6	Verify that the ESF outside air intake and exhaust dampers for the turbine-driven AFW pump actuate on a simulated or actual actuation signal.	~~18 months~~

In accordance with the Surveillance Frequency Control Program

THIS PAGE APPLICABLE TO UNIT 1 ONLY

3.7 PLANT SYSTEMS

3.7.6 Condensate Storage Tank (CST)

LCO 3.7.6 One CST shall be OPERABLE with a safety-related volume ≥ 340,000 gallons.

APPLICABILITY: MODES 1, 2, and 3,

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CST volume not within limit.	A.1 Align Auxiliary Feedwater pumps to OPERABLE CST.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.6.1 Verify the CST volume is within limit.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program

THIS PAGE APPLICABLE TO UNIT 2 ONLY

3.7 PLANT SYSTEMS

3.7.6 Condensate Storage Tank (CST)

LCO 3.7.6 Two CSTs shall be OPERABLE with:

a. A combined safety-related volume of ≥ 378,000 gallons; and

b. The CST aligned to supply the auxiliary feedwater pumps shall have a safety-related volume ≥ 340,000 gallons.

APPLICABILITY: MODES 1, 2, and 3,

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CST volume(s) not within limit(s).	A.1 Restore volume(s) to within limit(s).	2 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.6.1	Verify CST volumes within limits.	~~12 hours~~

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.8.1	------------NOTE------------ Isolation of NSCW system flow to individual components does not render the NSCW system inoperable. -------------------------------- Verify each NSCW system manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.7.8.2	Verify each NSCW system automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	~~18 months~~ In accordance with the Surveillance Frequency Control Program
SR 3.7.8.3	Verify each NSCW system pump starts automatically on an actual or simulated actuation signal.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.9.1	Verify water level of NSCW basin is ≥ 80.25 ft.	~~24 hours~~ In accordance with the Surveillance Frequency Control Program
SR 3.7.9.2	Verify water temperature of NSCW basin is ≤ 90°F.	~~24 hours~~
SR 3.7.9.3	Operate each required NSCW cooling tower fan for ≥ 15 minutes.	~~31 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.7.9.4	Verify NSCW basin transfer pump operation.	In accordance with the Inservice Testing Program
SR 3.7.9.5	Verify ambient wet-bulb temperature ≤ 63°F when one NSCW tower fan is out-of-service and daily high temperature (dry-bulb) is forecasted to be > 48°F.	~~24 hours~~

In accordance with the Surveillance Frequency Control Program

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.10.1	Verify control room air temperature ≤ 85°F.	~~12 hours~~
SR 3.7.10.2	Operate each CREFS train for ≥ 10 continuous hours with the heater control circuit energized.	~~31 days~~
SR 3.7.10.3	Perform required CREFS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.10.4	Verify each CREFS train actuates (switches to emergency mode) on an actual or simulated actuation signal.	~~18 months~~
SR 3.7.10.5	Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.	In accordance with the Control Room Envelope Habitability Program

In accordance with the Surveillance Frequency Control Program

In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.13 Piping Penetration Area Filtration and Exhaust System (PPAFES)

LCO 3.7.13 Two PPAFES trains shall be OPERABLE.

-----NOTE-----
The PPAFES boundary may be opened intermittently under administrative control.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.13.1 Operate each PPAFES train for ≥ 15 minutes.	~~31 days~~ In accordance with the Surveillance Frequency Control Program

(continued)

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.7.13.2	Perform required PPAFES filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.13.3	Verify each PPAFES train actuates on an actual or simulated actuation signal.	~~18 months~~
SR 3.7.13.4	Verify one PPAFES train can maintain a negative pressure ≥ 0.250 inches water gauge relative to atmospheric pressure during the post accident mode of operation at a flow rate of 15,500 cfm ± 10%.	~~18 months on a STAGGERED TEST BASIS~~

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.14.1	Verify each ESF room cooler and safety-related chiller system manual, power-operated and automatic valve servicing safety-related equipment that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.7.14.2	Verify each ESF room cooler and safety-related chiller system automatic valve servicing safety-related equipment that is not locked, sealed, or otherwise secured in position actuates to the correct position on an actual or simulated actuation signal.	~~18 months~~ In accordance with the Surveillance Frequency Control Program
SR 3.7.14.3	Verify each ESF room cooler fan and safety-related chiller system (pump and chiller) start automatically on an actual or simulated actuation signal.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.15 Fuel Storage Pool Water Level

LCO 3.7.15 The fuel storage pool water level shall be ≥ 23 ft over the top of irradiated fuel assemblies seated in the storage racks.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.15.1	Verify the fuel storage pool water level is ≥ 23 ft above the top of the irradiated fuel assemblies seated in the storage racks.	~~7 days~~ In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.16 Secondary Specific Activity

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

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.17 Fuel Storage Pool Boron Concentration

LCO 3.7.17 The fuel storage pool boron concentration shall be ≥ 2000 ppm.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.17.1	Verify the fuel storage pool boron concentration is within limit.	~~7 days~~

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each required offsite circuit.	~~7 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.8.1.2	-----------------------------NOTES----------------------------- 1. Performance of SR 3.8.1.7 satisfies this SR. 2. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 3. A modified DG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. When modified start procedures are not used, the time, voltage, and frequency tolerances of SR 3.8.1.7 must be met. --- Verify each DG starts from standby conditions and achieves steady state voltage ≥ 4025 V and ≤ 4330 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	~~31 days~~ In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.3	-----------------------------NOTES----------------------------- 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow without shutdown a successful performance of SR 3.8.1.2 or SR 3.8.1.7. --- Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 6500 kW and ≤ 7000 kW.	~~31 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.8.1.4	Verify each day tank contains ≥ 650 gal of fuel oil.	~~31 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.8.1.5	Check for and remove accumulated water from each day tank.	~~31 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.8.1.6	Verify the fuel oil transfer system operates to automatically transfer fuel oil from storage tanks to the day tank.	~~31 days~~ In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.7	------------------------------NOTE------------------------------ All DG starts may be preceded by an engine prelube period. -- Verify each DG starts from standby condition and achieves in ≤ 11.4 seconds, voltage ≥ 4025 V and ≤ 4330 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	~~184 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.8.1.8	------------------------------NOTE------------------------------ Credit may be taken for unplanned events that satisfy this SR. -- Verify each DG rejects a load ≥ its associated single largest post accident load, and: a. Following load rejection, the frequency is ≤ 64.5 Hz; b. Within 3 seconds following load rejection, the voltage is ≥ 3750 V and ≤ 4330 V or ≤ 4550 V when performing the test synchronized with offsite power; and c. Within 3 seconds following load rejection, the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.9	-----------------------------NOTE----------------------------- Credit may be taken for unplanned events that satisfy this SR. --- Verify each DG operating as close as practicable to 3390 kVAR while maintaining voltage ≤ 4330 V does not trip and voltage is maintained ≤ 5000 V during and following a load rejection of ≥ 6500 kW and ≤ 7000 kW.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.10	------------------------------NOTES------------------------------ 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. --- Verify on an actual or simulated loss of offsite power signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 11.5 seconds, 2. energizes auto-connected shutdown loads through automatic load sequencer, 3. maintains steady state voltage ≥ 3750 V and ≤ 4330 V, 4. maintains steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected shutdown loads for ≥ 5 minutes.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.11	-----------------------------NOTES------------------------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. --- Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and: a. In ≤ 11.4 seconds after auto-start and during tests, achieves voltage ≥ 3750 V and ≤ 4330 V; b. In ≤ 11.4 seconds after auto-start and during tests, achieves frequency ≥ 58.8 Hz and ≤ 61.2 Hz; c. Operates for ≥ 5 minutes; d. Permanently connected loads remain energized from the offsite power system; and e. Emergency loads are energized or auto-connected through the automatic load sequencer from the offsite power system.	In accordance with the Surveillance Frequency Control Program ~~18 months~~

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.12	-----------------------------NOTE---------------------------- This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. --- Verify each DG's automatic trips are bypassed on actual or simulated loss of voltage signal on the emergency bus concurrent with an actual or simulated ESF actuation signal except: a. Engine overspeed; b. Generator differential current; and c. Low lube oil pressure;	~~18 months~~ In accordance with the Surveillance Frequency Control Program
SR 3.8.1.13	-----------------------------NOTES---------------------------- 1. Momentary transients outside the kW and kVAR load ranges do not invalidate this test. 2. Credit may be taken for unplanned events that satisfy this SR. --- Verify each DG operates for ≥ 24 hours while maintaining voltage ≤ 4330 V: a. For ≥ 2 hours loaded ≥ 6900 kW and ≤ 7700 kW and operating as close as practicable to 3390 kVAR; and b. For the remaining hours of the test loaded ≥ 6500 kW and ≤ 7000 kW and operating as close as practicable to 3390 kVAR.	~~24 months~~ In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.14	-----NOTES----- 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 6500 kW and ≤ 7000 kW. Momentary transients outside of load range do not invalidate this test. 2. All DG starts may be preceded by an engine prelube period. ----- Verify each DG starts and achieves, in ≤ 11.4 seconds, voltage ≥ 4025 V, and ≤ 4330 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	In accordance with the Surveillance Frequency Control Program ~~18 months~~
SR 3.8.1.15	-----NOTE----- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. ----- Verify each DG: a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation.	In accordance with the Surveillance Frequency Control Program ~~18 months~~

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.16	-----NOTE----- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. ---------- Verify, with a DG operating in test mode and connected to its bus, an actual or simulated ESF actuation signal overrides the test mode by: a. Returning DG to ready-to-load operation; and b. Automatically energizing the emergency load from offsite power.	In accordance with the Surveillance Frequency Control Program ~~18 months~~
SR 3.8.1.17	-----NOTE----- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. ---------- Verify interval between each sequenced load block is within ± 10% of design interval for each load sequencer.	In accordance with the Surveillance Frequency Control Program ~~18 months~~

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.18	-----------------------------NOTES----------------------------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, 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 ESF actuation signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 11.5 seconds, 2. energizes auto-connected emergency loads through load sequencer, 3. achieves steady state voltage: ≥ 3750 V and ≤ 4330 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.	In accordance with the Surveillance Frequency Control Program ~~18 months~~
SR 3.8.1.19	Verify fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross-connection lines.	In accordance with the Surveillance Frequency Control Program ~~18 months~~

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.20	------------------------------NOTE------------------------------ All DG starts may be preceded by an engine prelube period. -- Verify when started simultaneously from standby condition, each DG achieves, in ≤ 11.4 seconds, voltage ≥ 4025 V and ≤ 4330 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	~~10 years~~

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.3.1	Verify each fuel oil storage tank contains ≥ 68,000 gal of fuel.	~~31 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.8.3.2	Verify lube oil inventory is ≥ 336 gal.	~~31 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.8.3.3	Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.4	Verify each DG has one air start receiver with a pressure ≥ 210 psig.	~~31 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.8.3.5	Check for and remove accumulated water from each fuel oil storage tank.	~~31 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.8.3.6	Verify each DG ventilation supply fan starts and the necessary dampers actuate on a simulated or actual actuation signal.	~~18 months~~ In accordance with the Surveillance Frequency Control Program
SR 3.8.3.7	---NOTE--- Not required to be performed when DG is required OPERABLE in accordance with Specification 3.8.2. ------ For each fuel oil storage tank: a. Drain the fuel oil; b. Remove the sediment; and c. Clean the tank.	~~10 years~~ In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One DC electrical power source inoperable for reasons other than Condition A or B.	C.1	Restore DC electrical power source to OPERABLE status.	2 hours
D. Required Action and Associated Completion Time not met.	D.1	Be in MODE 3.	6 hours
	AND		
	D.2	Be in MODE 5.	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~~ In accordance with the Surveillance Frequency Control Program
SR 3.8.4.2	Verify the battery charger supplies: ≥ 400 amps for System A and B ≥ 300 amps for System C, and ≥ 200 amps for System D at greater than or equal to the minimum established float voltage for ≥ 8 hours for Systems A and B and ≥ 3 hours for Systems C and D. OR Verify each battery charger can recharge the battery to the fully charged state within 12 hours while supplying the largest combined demands of the various continuous steady state loads, after a battery discharge to the bounding design basis event discharge state.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

(continued)

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 the service test in SR 3.8.4.3. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, 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.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

ACTIONS

SURVEILLANCE		FREQUENCY
F. (continued) One battery with one or more battery cells float voltage < 2.07 V and float current > 2 amps for systems A or B batteries, or > 1 amp for system C or D.		

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 system A and B battery float current is ≤ 2 amps. Verify each system C and D battery float current is ≤ 1 amp.	~~7 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.8.6.2	Verify each battery pilot cell voltage is ≥ 2.07 V.	~~31 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.8.6.3	Verify each battery connected cell electrolyte level is greater than or equal to minimum established design limits.	~~31 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.8.6.4	Verify each battery pilot cell temperature is greater than or equal to minimum established design limits.	~~31 days~~ In accordance with the Surveillance Frequency Control Program

(continued)

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.6.5	Verify each battery connected cell voltage is ≥ 2.07 V.	~~92 days~~
SR 3.8.6.6	-----NOTE----- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. ----- Verify battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test. In accordance with the Surveillance Frequency Control Program	~~60 months~~ AND 12 months when battery shows degradation or has reached 85% of expected life with capacity < 100% of manufacturer's rating AND 24 months when battery has reached 85% of the expected life with capacity ≥ 100% of manufacturer's rating

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.7.1	Verify correct inverter voltage and alignment to required AC vital buses.	~~7 days~~ In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One or more DC electrical power distribution subsystems inoperable.	C.1	Restore DC electrical power distribution subsystems to OPERABLE status.	2 hours <u>AND</u> 16 hours from discovery of failure to meet LCO
D. Required Action and associated Completion Time not met.	D.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	D.2	Be in MODE 5.	36 hours
E. Two or more electrical power distribution subsystems inoperable that result in a loss of function.	E.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

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

In accordance with the Surveillance Frequency Control Program

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

In accordance with the Surveillance Frequency Control Program

3.9 REFUELING OPERATIONS

3.9.1 Boron Concentration

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

APPLICABILITY: MODE 6.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.1.1	Verify boron concentration is within the limit specified in the COLR.	~~72 hours~~ In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.9.2.1	Verify each valve that isolates unborated water sources is secured in the closed position.	~~31 days~~ In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.3.1	Perform CHANNEL CHECK.	~~12 hours~~
SR 3.9.3.2	----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION.	~~18 months~~

In accordance with the Surveillance Frequency Control Program

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.4.1	Verify each required containment penetration is in the required status.	~~7 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.9.4.2	-------------------------NOTE-------------------------- Only required for unisolated penetrations. --- Verify at least two containment ventilation valves in each open containment ventilation penetration providing direct access from the containment atmosphere to the outside atmosphere are capable of being closed from the control room.	~~18 months~~ In accordance with the Surveillance Frequency Control Program
SR 3.9.4.3	-------------------------NOTE-------------------------- Only required for an open equipment hatch. --- Verify the capability to install the equipment hatch.	~~7 days~~ In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.4	Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.5.1	Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ 3000 gpm.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2 Initiate action to restore one RHR loop to operation.	Immediately
	AND	
	B.3 Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.	4 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.9.6.1	Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ 3000 gpm.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.7.1	Verify refueling cavity water level is ≥ 23 ft above the top of reactor vessel flange.	~~24 hours~~ In accordance with the Surveillance Frequency Control Program

5.5 Programs and Manuals

5.5.20 Control Room Envelope Habitability Program (continued)

f. The provisions of SR 3.0.2 are applicable to the Frequencies for assessing CRE habitability, determining CRE unfiltered inleakage, and measuring CRE pressure and assessing the CRE boundary as required by paragraphs c and d, respectively.

INSERT 1

Vogtle Electric Generating Plant
License Amendment Request for Adoption of TSTF-425-A, Rev. 3,
Risk-Informed Justification for the Relocation of Specific Surveillance
Frequency Requirements to a Licensee Controlled Program
Using the Consolidated Line Item Improvement Process

Enclosure 4

Clean Typed Pages for VEGP Proposed TS Changes

3.1 REACTIVITY CONTROL SYSTEMS

3.1.1 SHUTDOWN MARGIN (SDM)

LCO 3.1.1 SDM shall be ≥ the limit specified in the COLR.

APPLICABILITY: MODES 3, 4, and 5.

ACTIONS

------------------------------NOTE------------------------------
While this LCO is not met, transition to a lower MODE within the Applicability is not permitted.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SDM not within limit.	A.1 Initiate boration to restore SDM to within limit.	15 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.1.1 Verify SDM is ≥ the limit specified in the COLR.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 3	6 hours
D. More than one rod not within alignment limit.	D.1.1 Verify SDM is ≥ the limit specified in the COLR.	1 hour
	<u>OR</u>	
	D.1.2 Initiate boration to restore required SDM to within limit.	1 hour
	<u>AND</u>	
	D.2 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.4.1	Verify individual rod positions within alignment limit.	In accordance with the Surveillance Frequency Control Program <u>AND</u> Once within 4 hours and every 4 hours thereafter when the rod position deviation monitor is inoperable

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.1.4.2	Verify rod freedom of movement by moving each rod not fully inserted in the core ≥ 10 steps in either direction.	In accordance with the Surveillance Frequency Control Program
SR 3.1.4.3	Verify rod drop time of each rod, from the physical fully withdrawn position, is ≤ 2.7 seconds from the beginning of decay of stationary gripper coil voltage to dashpot entry, with: a. $T_{avg} \geq 551°F$; and b. All reactor coolant pumps operating.	Prior to reactor criticality after each removal of the reactor head

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.1.6.2	Verify each control bank insertion is within the limits specified in the COLR.	In accordance with the Surveillance Frequency Control Program AND Once within 4 hours and every 4 hours thereafter when the rod insertion limit monitor is inoperable
SR 3.1.6.3	Verify sequence and overlap limits specified in the COLR are met for control banks not fully withdrawn from the core.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.7.1	Verify each DRPI agrees within 12 steps of the group demand position for the full indicated range of rod travel.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.8.1	Perform a CHANNEL OPERATIONAL TEST on power range and intermediate range channels per SR 3.3.1.7, SR 3.3.1.8, and Table 3.3.1-1.	Within 12 hours prior to initiation of PHYSICS TESTS
SR 3.1.8.2	Verify the RCS lowest loop average temperature is ≥ 541°F.	In accordance with the Surveillance Frequency Control Program
SR 3.1.8.3	Verify SDM is ≥ the limit specified in the COLR.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.1.1	Verify $F_Q(Z)$ is within steady state limit.	Once after each refueling after achieving equilibrium conditions at any power level exceeding 50% RTP <u>AND</u> Once after achieving equilibrium conditions after exceeding, by ≥ 20% RTP, the THERMAL POWER at which $F_Q(Z)$ was last verified <u>AND</u> In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE REQUIREMENTS

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

3.2 POWER DISTRIBUTION LIMITS

3.2.3 AXIAL FLUX DIFFERENCE (AFD) (Relaxed Axial Offset Control (RAOC) Methodology)

LCO 3.2.3 The AFD shall be maintained within the limits specified in the COLR.

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

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.3.1	Verify AFD within limits for each OPERABLE excore channel.	In accordance with the Surveillance Frequency Control Program AND Once within 1 hour and every 1 hour thereafter with the AFD monitor alarm inoperable

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.2.4.1	-------------------------NOTE---------------------------- With one power range channel inoperable, the remaining three power range channels can be used for calculating QPTR. --	
	Verify QPTR is within limit by calculation.	In accordance with the Surveillance Frequency Control Program AND Once within 12 hours and every 12 hours thereafter with the QPTR alarm inoperable
SR 3.2.4.2	--------------------------NOTE--------------------------- Only required to be performed if input to QPTR from one or more Power Range Neutron Flux channels is inoperable with THERMAL POWER ≥ 75% RTP. --	
	Confirm that the normalized symmetric power distribution is consistent with QPTR.	Once within 12 hours AND In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE		FREQUENCY
SR 3.3.1.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.2	-----NOTES----- Not required to be performed until 12 hours after THERMAL POWER is ≥ 15% RTP. ----- Compare results of calorimetric heat balance calculation to power range channel output. Adjust power range channel output if calorimetric heat balance calculation results exceed power range channel output by more than +2% RTP.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.3	-----NOTES----- Not required to be performed until 24 hours after THERMAL POWER is ≥ 15% RTP. ----- Compare results of the incore detector measurements to Nuclear Instrumentation System (NIS) AFD. Adjust NIS channel if absolute difference is ≥ 3%.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.4	----------NOTE---------- This Surveillance must be performed on the reactor trip bypass breaker prior to placing the bypass breaker in service. ---------- Perform TADOT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.5	Perform ACTUATION LOGIC TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.6	----------NOTES---------- 1. Not required to be performed until 7 days after THERMAL POWER is ≥ 75% RTP. 2. Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Calibrate excore channels to agree with incore detector measurements.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.7	-----NOTES----- 1. For the Source Range Instrumentation this surveillance shall include verification that interlocks P-6 and P-10 are in their required state for existing unit conditions. 2. Not required to be performed for Source Range Instrumentation prior to entering MODE 3 from MODE 2 until 4 hours after entry into MODE 3. ---------- Perform COT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.8	-----NOTE----- Only required when not performed within previous 31 days. ---------- Perform COT.	Prior to Reactor Startup
SR 3.3.1.9	-----NOTE----- Verification of setpoint is not required. ---------- Perform TADOT.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.10	------------------------------NOTE------------------------------ This Surveillance shall include verification that the time constants are adjusted to the prescribed values. -- Perform CHANNEL CALIBRATION.	 In accordance with the Surveillance Frequency Control Program
SR 3.3.1.11	------------------------------NOTE------------------------------ Neutron detectors are excluded from CHANNEL CALIBRATION. -- Perform CHANNEL CALIBRATION.	 In accordance with the Surveillance Frequency Control Program
SR 3.3.1.12	Perform COT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.13	------------------------------NOTE------------------------------ Verification of setpoint is not required. -- Perform TADOT.	 In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.14	----------NOTES---------- 1. Only required when not performed within previous 31 days. 2. Verification of setpoint is not required. ----------------------------- Perform TADOT.	After each MODE 3 entry for unit shutdown and prior to exceeding the P-9 interlock trip setpoint.
SR 3.3.1.15	----------NOTE---------- Neutron detectors are excluded from response time testing. ----------------------------- Verify RTS RESPONSE TIME is within limits.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.16	----------NOTES---------- 1. Only required when not performed within previous 31 days. 2. Verification of setpoint is not required. ----------------------------- Perform COT.	After each MODE 3 entry for unit shutdown and prior to exceeding the P-9 interlock trip setpoint.

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE		FREQUENCY
SR 3.3.2.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.2	Perform ACTUATION LOGIC TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.3	Perform MASTER RELAY TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.4	Perform COT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.5	Perform SLAVE RELAY TEST.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.2.6	-----NOTE----- Verification of setpoint not required for manual initiation functions. -----	
	Perform TADOT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.7	-----NOTE----- This Surveillance shall include verification that the time constants used for the Steam Line Pressure instrument functions are adjusted to the prescribed values. -----	
	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.8	-----NOTE----- Not required to be performed for the turbine driven AFW pump until 24 hours after SG pressure is ≥ 900 psig. -----	
	Verify ESFAS RESPONSE TIMES are within limit.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.9	-----NOTE----- Verification of setpoint not required. -----	
	Perform TADOT.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE		FREQUENCY
SR 3.3.3.1	Perform CHANNEL CHECK for each required instrumentation channel.	In accordance with the Surveillance Frequency Control Program
SR 3.3.3.2	---------------------------NOTE------------------------------ Neutron detectors are excluded from CHANNEL CALIBRATION. --	
	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Actions and associated Completion Times not met in MODES 1, 2, 3, or 4.	D.1 Be in MODE 3. AND D.2 Be in MODE 5.	6 hours 36 hours
E. Required Action and associated Completion Time not met when the associated DG is required OPERABLE by LCO 3.8.2.	E.1 Enter applicable Condition(s) and Required Action(s) for the associated DG made inoperable by LOP DG start instrumentation.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.5.1	Perform COT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.2	Perform CHANNEL CALIBRATION with Nominal Trip Setpoint and Allowable Value as follows: A. Loss of voltage Allowable Value ≥ 2912 V with a time delay of ≤ 0.8 second. Loss of voltage Nominal Trip Setpoint 2975 V with a time delay of ≤ 0.8 second. B. Degraded voltage Allowable Value ≥ 3683 V with a time delay of ≤ 20 seconds. Degraded voltage Nominal Trip Setpoint 3746 V with a time delay of ≤ 20 seconds.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.5.3	-----------------------------NOTE--------------------------------- Not required to be performed for the turbine-driven Auxiliary Feedwater (AFW) pump until 24 hours after Steam Generator pressure is ≥ 900 psig. ---	
	Verify AFW system ESF RESPONSE TIME for loss of voltage and degraded voltage on the 4.16 kV ESF buses within limit.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE		FREQUENCY
SR 3.3.6.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.2	Perform ACTUATION LOGIC TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.3	Perform MASTER RELAY TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.4	Perform COT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.5	Perform SLAVE RELAY TEST.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.6.6	-----------------------NOTE----------------------- Verification of setpoint not required. -- Perform TADOT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.7	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.8	Verify RESPONSE TIMES are within limits.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE		FREQUENCY
SR 3.3.7.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.7.2	Perform COT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.7.3	Perform ACTUATION LOGIC TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.7.4	-----NOTE----- Verification of setpoint is not required. ----- Perform TADOT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.7.5	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.7.6	Verify ESF RESPONSE TIME for radio-gas monitors within limit.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
	-----------------------NOTE---------------------------- Not required to be performed prior to entering MODE 3 from MODE 2 until 4 hours after entry into MODE 3. --	
SR 3.3.8.1	Perform COT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.8.2	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.1.1	Verify pressurizer pressure is ≥ 2199 psig.	In accordance with the Surveillance Frequency Control Program
SR 3.4.1.2	Verify RCS average temperature is ≤ 592.5°F.	In accordance with the Surveillance Frequency Control Program
SR 3.4.1.3	Monitor RCS total flow rate for degradation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.1.4	-----NOTE----- Not required to be performed until 7 days after ≥ 90% RTP. ----- Verify by precision heat balance that RCS total flow rate is ≥ 384,509 gpm.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

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

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.4 RCS Loops - MODES 1 and 2

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

APPLICABILITY: MODES 1 and 2.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.5.1	Verify required RCS loops are in operation.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.5.2	Verify steam generator secondary side water levels are above the highest point of the steam generator U-tubes for required RCS loops.	In accordance with the Surveillance Frequency Control Program
SR 3.4.5.3	Verify correct breaker alignment and indicated power are available to the required pump that is not in operation.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.6.1	Verify one RHR or RCS loop is in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.6.2	Verify SG secondary side water levels are above the highest point of the steam generator U-tubes for required RCS loops.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.6.3	Verify correct pump breaker alignment and indicated power are available to the required pump that is not in operation.	In accordance with the Surveillance Frequency Control Program

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	Verify one RHR loop is in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.2	Verify SG secondary side water level is above the highest point of the steam generator U-tubes for the required SGs.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RHR loop inoperable.	A.1 Initiate action to restore RHR loop to OPERABLE status.	Immediately
B. Required RHR loops inoperable. OR No RHR loop in operation.	B.1 Suspend all operations involving reduction in RCS boron concentration. AND B.2 Initiate action to restore one RHR loop to OPERABLE status and to operation.	Immediately Immediately
C. One or more valves used to isolate unborated water sources not secured in closed position.	C.1 Initiate action to secure valve(s) in closed position.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify one RHR loop is in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.8.2	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.8.3	Verify each valve that isolates unborated water sources is secured in the closed position.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	Verify pressurizer water level is ≤ 92%.	In accordance with the Surveillance Frequency Control Program
SR 3.4.9.2	Verify capacity of each required group of pressurizer heaters is ≥ 150 kW.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. (continued)	F.2 Restore one block valve to OPERABLE status. <u>AND</u> F.3 Restore remaining block valve to OPERABLE status.	2 hours 72 hours
G. Required Action and associated Completion Time of Condition F not met.	G.1 Be in MODE 3. <u>AND</u> G.2 Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.11.1	-------------------------NOTE------------------------------ Not required to be performed with block valve closed in accordance with the Required Action of Conditions A, B, or E. --- Perform a complete cycle of each block valve.	In accordance with the Surveillance Frequency Control Program
SR 3.4.11.2	Perform a complete cycle of each PORV.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.12.1	Verify both safety injection pumps are incapable of injecting into the RCS.	In accordance with the Surveillance Frequency Control Program
SR 3.4.12.2	Verify each accumulator is isolated.	In accordance with the Surveillance Frequency Control Program
SR 3.4.12.3	Verify RHR suction valves are open for each required RHR suction relief valve.	In accordance with the Surveillance Frequency Control Program
SR 3.4.12.4	-------------------------NOTE------------------------------ Only required to be performed when complying with LCO 3.4.12.b. --- Verify RCS vent size within specified limits.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.4.12.5	Verify PORV block valve is open for each required PORV.	In accordance with the Surveillance Frequency Control Program
SR 3.4.12.6	-----------------------------NOTE----------------------------- Not required to be performed until 12 hours after decreasing RCS cold leg temperature to ≤ the COPS arming temperature specified in the PTLR. ---	
	Perform a COT on each required PORV, excluding actuation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.12.7	Perform CHANNEL CALIBRATION for each required PORV actuation channel.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.14.1 (continued)		For systems rated at less than 50% RCS design pressure, within 24 hours following valve actuation (except for valves HV-8701A/B and HV-8702A/B).
SR 3.4.14.2	Verify RHR System suction isolation valve interlock prevents the valves from being opened with a simulated or actual RCS pressure signal ≥ 450 psig.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required containment atmosphere radioactivity monitor inoperable. <u>AND</u> Required containment air cooler condensate flow rate monitor inoperable.	E.1 Restore required containment atmosphere radioactivity monitor to OPERABLE status. <u>OR</u> E.2 Restore required containment air cooler condensate flow rate monitor to OPERABLE status.	30 days 30 days
F. Required Action and associated Completion Time not met.	F.1 Be in MODE 3. <u>AND</u> F.2 Be in MODE 5.	6 hours 36 hours
G. All required leakage detection systems inoperable.	G.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.15.1	Perform CHANNEL CHECK of containment normal sumps level and reactor cavity sump level monitors.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.15.2	Perform CHANNEL CHECK of the required containment atmosphere radioactivity monitor.	In accordance with the Surveillance Frequency Control Program
SR 3.4.15.3	Perform COT of the required containment atmosphere radioactivity monitor.	In accordance with the Surveillance Frequency Control Program
SR 3.4.15.4	Perform CHANNEL CALIBRATION of the containment sump monitors.	In accordance with the Surveillance Frequency Control Program
SR 3.4.15.5	Perform CHANNEL CALIBRATION of the required containment atmosphere radioactivity monitor.	In accordance with the Surveillance Frequency Control Program
SR 3.4.15.6	Perform CHANNEL CALIBRATION of the required containment air cooler condensate flow rate monitor.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.16.1	Verify reactor coolant gross specific activity ≤ 100/Ē μCi/gm.	In accordance with the Surveillance Frequency Control Program
SR 3.4.16.2	---------------------------NOTE--------------------------- Only required to be performed in MODE 1. --- Verify reactor coolant DOSE EQUIVALENT I-131 specific activity ≤ 1.0 μCi/gm.	In accordance with the Surveillance Frequency Control Program AND Between 2 and 6 hours after a THERMAL POWER change of ≥ 15% RTP within a 1 hour period

(continued)

SURVEILLANCE REQUIREMENTS (continued)

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify each accumulator isolation valve is fully open.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.2	Verify borated water volume in each accumulator is ≥ 6555 gallons and ≤ 6909 gallons.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.3	Verify nitrogen cover pressure in each accumulator is ≥ 617 psig and ≤ 678 psig.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.4	Verify boron concentration in each accumulator is ≥ 1900 ppm and ≤ 2600 ppm.	In accordance with the Surveillance Frequency Control Program <u>AND</u> For each affected accumulator, once within 6 hours after each solution volume increase of ≥ 67 gallons, that is not the result of addition from the refueling water storage tank
SR 3.5.1.5	Verify power is removed from each accumulator isolation valve operator when pressurizer pressure is > 1000 psig.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE			FREQUENCY
SR 3.5.2.1	Verify the following valves are in the listed position with the power lockout switches in the lockout position.		In accordance with the Surveillance Frequency Control Program
Valve Number	Valve Function	Valve Position	
HV-8835	SI Pump Cold Leg Inj.	OPEN	
HV-8840	RHR Pump Hot Leg Inj.	CLOSED	
HV-8813	SI Pump Mini Flow Isol.	OPEN	
HV-8806	SI Pump Suction from RWST	OPEN	
HV-8802A, B	SI Pump Hot Leg Inj.	CLOSED	
HV-8809A, B	RHR Pump Cold Leg Inj.	OPEN	
SR 3.5.2.2	Verify each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.		In accordance with the Surveillance Frequency Control Program
SR 3.5.2.3	Verify ECCS piping is full of water.		In accordance with the Surveillance Frequency Control Program
SR 3.5.2.4	Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.		In accordance with the Inservice Testing Program
SR 3.5.2.5	Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position actuates to the correct position on an actual or simulated actuation signal.		In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.2.6	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.7	Verify, by visual inspection, each ECCS train containment sump suction inlet is not restricted by debris and the suction inlet trash racks and screens show no evidence of structural distress or abnormal corrosion.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.5.4.1	-------------------------NOTE------------------------------ Only required to be performed when ambient air temperature is < 40°F. --- Verify RWST borated water temperature is $\geq$ 44°F and $\leq$ 116°F.	In accordance with the Surveillance Frequency Control Program
SR 3.5.4.2	Verify RWST borated water volume is $\geq$ 686,000 gallons.	In accordance with the Surveillance Frequency Control Program
SR 3.5.4.3	Verify RWST boron concentration is $\geq$ 2400 ppm and $\leq$ 2600 ppm.	In accordance with the Surveillance Frequency Control Program
SR 3.5.4.4	Verify each sludge mixing pump isolation valve automatically closes on an actual or simulated RWST Low-Level signal.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.5.5.1	-------------------------------NOTE--------------------------- Not required to be performed until 8 hours after the Reactor Coolant System pressure stabilizes at ≥ 2215 psig and ≤ 2255 psig. -- Verify manual seal injection throttle valves are adjusted to give a flow within the ECCS safety analysis limits.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.6.1	Perform a visual inspection of the Recirculation Fluid pH Control System and verify the following: a) Three storage baskets are in place, and b) have maintained their integrity, and c) the baskets contain a total of ≥ 11,484 pounds (220 cubic feet) and ≤ 14,612 pounds (260 cubic feet) of trisodium phosphate crystals.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.3.1	Verify each 24 inch purge valve is sealed closed, except for one purge valve in a penetration flow path while in Condition C of this LCO.	In accordance with the Surveillance Frequency Control Program
SR 3.6.3.2	Verify each 14 inch purge valve is closed, except when the associated penetration(s) is (are) permitted to be open for purge or venting operations and purge system surveillance and maintenance testing under administrative control.	In accordance with the Surveillance Frequency Control Program
SR 3.6.3.3	----------------------------NOTE---------------------------- Valves and blind flanges in high radiation areas may be verified by use of administrative controls. --	
	Verify each containment isolation manual valve and blind flange that is located outside containment and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.3.4	-----------------------------NOTES----------------------------- 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. The fuel transfer tube blind flange is only required to be verified closed once after refueling prior to entering MODE 4 from MODE 5. -- Verify each containment isolation manual valve and blind flange that is located inside containment and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days
SR 3.6.3.5	Verify the isolation time of each power operated and each automatic containment isolation valve is within limits.	In accordance with the Inservice Testing Program
SR 3.6.3.6	Perform leakage rate testing for containment purge valves with resilient seals.	In accordance with the Surveillance Frequency Control Program
SR 3.6.3.7	Verify each automatic containment isolation valve that is not locked, sealed, or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.4 Containment Pressure

LCO 3.6.4 Containment pressure shall be ≥ -0.3 psig and ≤ +1.8 psig.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

3.6 CONTAINMENT SYSTEMS

3.6.5 Containment Air Temperature

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

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.6.1	Verify each containment spray manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.2	Operate each containment cooling train fan unit for ≥ 15 minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.3	Verify each pair of containment fan coolers cooling water flow rate is ≥ 1359 gpm.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.4	Verify each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.6.6.5	Verify each automatic containment spray valve in the flow path that is not locked, sealed, or otherwise secured in position actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.6	Verify each containment spray pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.6.7	Verify each containment cooling train starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.8	Verify each spray nozzle is unobstructed.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Verify one complete cycle of each ARV.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.5.1	Verify each AFW manual, power operated, and automatic valve in each water flow path, and in both steam supply flow paths to the steam turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.7.5.2	-----NOTE----- Not required to be performed for the turbine driven AFW pump until 24 hours after ≥ 900 psig in the steam generator. ----------	
	Verify the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head.	In accordance with the Surveillance Frequency Control Program
SR 3.7.5.3	Verify each AFW automatic valve that is not locked, sealed, or otherwise secured in position actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.7.5.4	-----NOTE----- Not required to be performed for the turbine driven AFW pump until 24 hours after ≥ 900 psig in the steam generator. ----------	
	Verify each AFW pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.7.5.5	Verify that each AFW pumphouse ESF supply fan starts and associated dampers actuate on a simulated or actual actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.7.5.6	Verify that the ESF outside air intake and exhaust dampers for the turbine-driven AFW pump actuate on a simulated or actual actuation signal.	In accordance with the Surveillance Frequency Control Program

THIS PAGE APPLICABLE TO UNIT 1 ONLY

3.7 PLANT SYSTEMS

3.7.6 Condensate Storage Tank (CST)

LCO 3.7.6 One CST shall be OPERABLE with a safety-related volume ≥ 340,000 gallons.

APPLICABILITY: MODES 1, 2, and 3,

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CST volume not within limit.	A.1 Align Auxiliary Feedwater pumps to OPERABLE CST.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.6.1	Verify the CST volume is within limit.	In accordance with the Surveillance Frequency Control Program

THIS PAGE APPLICABLE TO UNIT 2 ONLY

3.7 PLANT SYSTEMS

3.7.6 Condensate Storage Tank (CST)

LCO 3.7.6 Two CSTs shall be OPERABLE with:

a. A combined safety-related volume of ≥ 378,000 gallons; and

b. The CST aligned to supply the auxiliary feedwater pumps shall have a safety-related volume ≥ 340,000 gallons.

APPLICABILITY: MODES 1, 2, and 3,

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CST volume(s) not within limit(s).	A.1 Restore volume(s) to within limit(s).	2 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.6.1 Verify CST volumes within limits.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.9.1	Verify water level of NSCW basin is ≥ 80.25 ft.	In accordance with the Surveillance Frequency Control Program
SR 3.7.9.2	Verify water temperature of NSCW basin is ≤ 90°F.	In accordance with the Surveillance Frequency Control Program
SR 3.7.9.3	Operate each required NSCW cooling tower fan for ≥ 15 minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.7.9.4	Verify NSCW basin transfer pump operation.	In accordance with the Inservice Testing Program
SR 3.7.9.5	Verify ambient wet-bulb temperature ≤ 63°F when one NSCW tower fan is out-of-service and daily high temperature (dry-bulb) is forecasted to be > 48°F.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.10.1	Verify control room air temperature ≤ 85°F.	In accordance with the Surveillance Frequency Control Program
SR 3.7.10.2	Operate each CREFS train for ≥ 10 continuous hours with the heater control circuit energized.	In accordance with the Surveillance Frequency Control Program
SR 3.7.10.3	Perform required CREFS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.10.4	Verify each CREFS train actuates (switches to emergency mode) on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.7.10.5	Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.	In accordance with the Control Room Envelope Habitability Program

3.7 PLANT SYSTEMS

3.7.13 Piping Penetration Area Filtration and Exhaust System (PPAFES)

LCO 3.7.13 Two PPAFES trains shall be OPERABLE.

-----NOTE-----
The PPAFES boundary may be opened intermittently under administrative control.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.13.1 Operate each PPAFES train for ≥ 15 minutes.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.7.13.2	Perform required PPAFES filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.13.3	Verify each PPAFES train actuates on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.7.13.4	Verify one PPAFES train can maintain a negative pressure ≥ 0.250 inches water gauge relative to atmospheric pressure during the post accident mode of operation at a flow rate of 15,500 cfm ± 10%.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.14.1	Verify each ESF room cooler and safety-related chiller system manual, power-operated and automatic valve servicing safety-related equipment that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.7.14.2	Verify each ESF room cooler and safety-related chiller system automatic valve servicing safety-related equipment that is not locked, sealed, or otherwise secured in position actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.7.14.3	Verify each ESF room cooler fan and safety-related chiller system (pump and chiller) start automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.15 Fuel Storage Pool Water Level

LCO 3.7.15 The fuel storage pool water level shall be $\geq$ 23 ft over the top of irradiated fuel assemblies seated in the storage racks.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.15.1	Verify the fuel storage pool water level is $\geq$ 23 ft above the top of the irradiated fuel assemblies seated in the storage racks.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.16 Secondary Specific Activity

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

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

3.7 PLANT SYSTEMS

3.7.17 Fuel Storage Pool Boron Concentration

LCO 3.7.17 The fuel storage pool boron concentration shall be ≥ 2000 ppm.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Fuel storage pool boron concentration not within limit.	------------------NOTE------------------ LCO 3.0.3 is not applicable. ---	
	A.1 Suspend movement of fuel assemblies in the fuel storage pool.	Immediately
	<u>AND</u>	
	A.2.1 Initiate action to restore fuel storage pool boron concentration to within limit.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.17.1	Verify the fuel storage pool boron concentration is within limit.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each required offsite circuit.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.2	-------------------------------NOTES-------------------------- 1. Performance of SR 3.8.1.7 satisfies this SR. 2. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 3. A modified DG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. When modified start procedures are not used, the time, voltage, and frequency tolerances of SR 3.8.1.7 must be met. ---	
	Verify each DG starts from standby conditions and achieves steady state voltage ≥ 4025 V and ≤ 4330 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.3	------------------------------NOTES------------------------------ 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow without shutdown a successful performance of SR 3.8.1.2 or SR 3.8.1.7. --- Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 6500 kW and ≤ 7000 kW.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.4	Verify each day tank contains ≥ 650 gal of fuel oil.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.5	Check for and remove accumulated water from each day tank.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.6	Verify the fuel oil transfer system operates to automatically transfer fuel oil from storage tanks to the day tank.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.7	-----------------------------NOTE---------------------------- All DG starts may be preceded by an engine prelube period. --- Verify each DG starts from standby condition and achieves in ≤ 11.4 seconds, voltage ≥ 4025 V and ≤ 4330 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.8	-----------------------------NOTE---------------------------- Credit may be taken for unplanned events that satisfy this SR. --- Verify each DG rejects a load ≥ its associated single largest post accident load, and: a. Following load rejection, the frequency is ≤ 64.5 Hz; b. Within 3 seconds following load rejection, the voltage is ≥ 3750 V and ≤ 4330 V or ≤ 4550 V when performing the test synchronized with offsite power; and c. Within 3 seconds following load rejection, the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.9	-----------------------------NOTE----------------------------- Credit may be taken for unplanned events that satisfy this SR. --- Verify each DG operating as close as practicable to 3390 kVAR while maintaining voltage ≤ 4330 V does not trip and voltage is maintained ≤ 5000 V during and following a load rejection of ≥ 6500 kW and ≤ 7000 kW.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.10	------------------------------NOTES------------------------------ 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. --	
	Verify on an actual or simulated loss of offsite power signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 11.5 seconds, 2. energizes auto-connected shutdown loads through automatic load sequencer, 3. maintains steady state voltage ≥ 3750 V and ≤ 4330 V, 4. maintains steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected shutdown loads for ≥ 5 minutes.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.11	-----NOTES----- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. -----	
	Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and: a. In ≤ 11.4 seconds after auto-start and during tests, achieves voltage ≥ 3750 V and ≤ 4330 V; b. In ≤ 11.4 seconds after auto-start and during tests, achieves frequency ≥ 58.8 Hz and ≤ 61.2 Hz; c. Operates for ≥ 5 minutes; d. Permanently connected loads remain energized from the offsite power system; and e. Emergency loads are energized or auto-connected through the automatic load sequencer from the offsite power system.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.12	------------------------------NOTE------------------------------ This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. -- Verify each DG's automatic trips are bypassed on actual or simulated loss of voltage signal on the emergency bus concurrent with an actual or simulated ESF actuation signal except: a. Engine overspeed; b. Generator differential current; and c. Low lube oil pressure;	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.13	------------------------------NOTES------------------------------ 1. Momentary transients outside the kW and kVAR load ranges do not invalidate this test. 2. Credit may be taken for unplanned events that satisfy this SR. -- Verify each DG operates for ≥ 24 hours while maintaining voltage ≤ 4330 V: a. For ≥ 2 hours loaded ≥ 6900 kW and ≤ 7700 kW and operating as close as practicable to 3390 kVAR; and b. For the remaining hours of the test loaded ≥ 6500 kW and ≤ 7000 kW and operating as close as practicable to 3390 kVAR.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.14	-----------------------------NOTES------------------------- 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 6500 kW and ≤ 7000 kW. Momentary transients outside of load range do not invalidate this test. 2. All DG starts may be preceded by an engine prelube period. --- Verify each DG starts and achieves, in ≤ 11.4 seconds, voltage ≥ 4025 V, and ≤ 4330 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.15	----------------------------NOTE---------------------------- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. --- Verify each DG: a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.16	---NOTE--- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. --- Verify, with a DG operating in test mode and connected to its bus, an actual or simulated ESF actuation signal overrides the test mode by: a. Returning DG to ready-to-load operation; and b. Automatically energizing the emergency load from offsite power.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.17	---NOTE--- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. --- Verify interval between each sequenced load block is within ± 10% of design interval for each load sequencer.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.18	-----------------------------NOTES-------------------------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, 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 ESF actuation signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 11.5 seconds, 2. energizes auto-connected emergency loads through load sequencer, 3. achieves steady state voltage: ≥ 3750 V and ≤ 4330 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.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.19	Verify fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross-connection lines.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.20	-----------------------------NOTE---------------------------- All DG starts may be preceded by an engine prelube period. --- Verify when started simultaneously from standby condition, each DG achieves, in ≤ 11.4 seconds, voltage ≥ 4025 V and ≤ 4330 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	Verify each fuel oil storage tank contains $\geq$ 68,000 gal of fuel.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.2	Verify lube oil inventory is $\geq$ 336 gal.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.3	Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.4	Verify each DG has one air start receiver with a pressure $\geq$ 210 psig.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.5	Check for and remove accumulated water from each fuel oil storage tank.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.6	Verify each DG ventilation supply fan starts and the necessary dampers actuate on a simulated or actual actuation signal.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.3.7	-----NOTE----- Not required to be performed when DG is required OPERABLE in accordance with Specification 3.8.2. ----- For each fuel oil storage tank: a. Drain the fuel oil; b. Remove the sediment; and c. Clean the tank.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One DC electrical power source inoperable for reasons other than Condition A or B.	C.1	Restore DC electrical power source to OPERABLE status.	2 hours
D. Required Action and Associated Completion Time not met.	D.1	Be in MODE 3.	6 hours
	AND		
	D.2	Be in MODE 5.	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.	In accordance with the Surveillance Frequency Control Program
SR 3.8.4.2	Verify the battery charger supplies: ≥ 400 amps for System A and B ≥ 300 amps for System C, and ≥ 200 amps for System D at greater than or equal to the minimum established float voltage for ≥ 8 hours for Systems A and B and ≥ 3 hours for Systems C and D. OR Verify each battery charger can recharge the battery to the fully charged state within 12 hours while supplying the largest combined demands of the various continuous steady state loads, after a battery discharge to the bounding design basis event discharge state.	In accordance with the Surveillance Frequency Control Program

(continued)

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 the service test in SR 3.8.4.3. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, 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.	In accordance with the Surveillance Frequency Control Program

ACTIONS

SURVEILLANCE		FREQUENCY
F. (continued) One battery with one or more battery cells float voltage < 2.07 V and float current > 2 amps for systems A or B batteries, or > 1 amp for system C or D.		

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 system A and B battery float current is ≤ 2 amps. Verify each system C and D battery float current is ≤ 1 amp.	In accordance with the Surveillance Frequency Control Program
SR 3.8.6.2	Verify each battery pilot cell voltage is ≥ 2.07 V.	In accordance with the Surveillance Frequency Control Program
SR 3.8.6.3	Verify each battery connected cell electrolyte level is greater than or equal to minimum established design limits.	In accordance with the Surveillance Frequency Control Program

(continued)

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.	In accordance with the Surveillance Frequency Control Program
SR 3.8.6.5	Verify each battery connected cell voltage is ≥ 2.07 V.	In accordance with the Surveillance Frequency Control Program
SR 3.8.6.6	-----NOTE----- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. ----- Verify battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	In accordance with the Surveillance Frequency Control Program AND 12 months when battery shows degradation or has reached 85% of expected life with capacity < 100% of manufacturer's rating AND 24 months when battery has reached 85% of the expected life with capacity ≥ 100% of manufacturer's rating

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE REQUIREMENTS

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

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One or more DC electrical power distribution subsystems inoperable.	C.1	Restore DC electrical power distribution subsystems to OPERABLE status.	2 hours <u>AND</u> 16 hours from discovery of failure to meet LCO
D. Required Action and associated Completion Time not met.	D.1 <u>AND</u> D.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours
E. Two or more electrical power distribution subsystems inoperable that result in a loss of function.	E.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

3.9 REFUELING OPERATIONS

3.9.1 Boron Concentration

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

APPLICABILITY: MODE 6.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.2.1	Verify each valve that isolates unborated water sources is secured in the closed position.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.3.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.9.3.2	----------------------------NOTE--------------------------- Neutron detectors are excluded from CHANNEL CALIBRATION. --- Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.9.4.1	Verify each required containment penetration is in the required status.	In accordance with the Surveillance Frequency Control Program
SR 3.9.4.2	-------------------------NOTE--------------------------- Only required for unisolated penetrations. -- Verify at least two containment ventilation valves in each open containment ventilation penetration providing direct access from the containment atmosphere to the outside atmosphere are capable of being closed from the control room.	In accordance with the Surveillance Frequency Control Program
SR 3.9.4.3	-------------------------NOTE-------------------------- Only required for an open equipment hatch. -- Verify the capability to install the equipment hatch.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.4 Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.5.1	Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ 3000 gpm.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2 Initiate action to restore one RHR loop to operation.	Immediately
	<u>AND</u>	
	B.3 Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.6.1	Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ 3000 gpm.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.7.1	Verify refueling cavity water level is ≥ 23 ft above the top of reactor vessel flange.	In accordance with the Surveillance Frequency Control Program

5.5 Programs and Manuals

5.5.20 Control Room Envelope Habitability Program (continued)

f. The provisions of SR 3.0.2 are applicable to the Frequencies for assessing CRE habitability, determining CRE unfiltered inleakage, and measuring CRE pressure and assessing the CRE boundary as required by paragraphs c and d, respectively.

5.5.21 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.

Vogtle Electric Generating Plant
License Amendment Request for Adoption of TSTF-425-A, Rev. 3,
Risk-Informed Justification for the Relocation of Specific Surveillance
Frequency Requirements to a Licensee Controlled Program
Using the Consolidated Line Item Improvement Process

Enclosure 5

Markup for VEGP Proposed TS Bases Changes

BASES

SURVEILLANCE REQUIREMENTS

SR 3.1.1.1 (continued)

a. RCS boron concentration;

b. Control bank position;

c. RCS average temperature;

d. Fuel burnup based on gross thermal energy generation;

e. Xenon concentration;

f. Samarium concentration; and

g. Isothermal temperature coefficient (ITC).

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

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

REFERENCES

1. 10 CFR 50, Appendix A, GDC 26.
2. FSAR, Subsection 15.4.9.
3. FSAR, Subsection 15.4.6.
4. 10 CFR 100.

Insert 2

BASES

ACTIONS

B.1 (continued)

LCO 3.1.1 Required Action A.1 would occur. The allowed Completion Time is reasonable, based on operating experience, for reaching MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.1.2.1

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

REFERENCES

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

Insert 2

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.1.4.1

Insert 2

~~Verification that individual rod positions are within alignment limits at a Frequency of 12 hours provides a history that allows the operator to detect a rod that is beginning to deviate from its expected position. If the rod position deviation monitor is inoperable, a Frequency of 4 hours accomplishes the same goal. The specified Frequency takes into account other rod position information that is continuously available to the operator in the control room, so that during actual rod motion, deviations can immediately be detected.~~

SR 3.1.4.2

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

SR 3.1.4.3

Verification of rod drop times from the physical fully withdrawn position allows the operator to determine that the maximum rod drop time permitted is consistent with the assumed rod drop time used in the safety analysis. Measuring rod drop times prior to reactor criticality, after reactor vessel head removal, ensures that the reactor internals and rod drive mechanism will not interfere with rod motion or rod drop time, and that no degradation in these systems has occurred that would adversely affect

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.1.5.1 (continued)

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

Insert 2

REFERENCES

1. 10 CFR 50, Appendix A, GDC 10, GDC 26, and GDC 28.
2. 10 CFR 50.46.
3. FSAR, Subsection 15.4.3.

BASES

ACTIONS

C.1 (continued)

full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.1.6.1

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

Among the factors that impact the estimated critical position (ECP) is Xenon concentration, which varies with time, either increasing or decreasing depending on the amount of time since the trip occurred. The 4 hour limit within which the ECP must be verified within the insertion limits ensures that changes in Xenon concentration will be limited and, hence, it ensures that criticality will not occur with control rods outside of the insertion limits due to Xenon decay.

SR 3.1.6.2

~~With an OPERABLE bank insertion limit monitor, verification of the control bank insertion limits at a Frequency of 12 hours is sufficient to ensure OPERABILITY of the bank insertion limit monitor and to detect control banks that may be approaching the insertion limits. since, normally, very little rod motion occurs in 12 hours.~~ If the insertion limit monitor becomes inoperable, verification of the control bank position at a Frequency of 4 hours is sufficient to detect control banks that may be approaching the insertion limits.

SR 3.1.6.3

When control banks are maintained within their insertion limits as checked by SR 3.1.6.2 above, it is unlikely that their sequence and overlap will not be in accordance with requirements provided in the COLR. This surveillance is accomplished from the control room by verifying via the

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.1.6.3 (continued)

demand step counters that, for the plant conditions at that time, the sequence and overlap limits are satisfied. ~~A Frequency of 12 hours is consistent with the insertion limit check above in SR 3.1.6.2.~~ For the purposes of this surveillance, "fully withdrawn" is the defined all rods out (ARO) position.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 10, GDC 26, and GDC 28.
2. 10 CFR 50.46.
3. FSAR, Subsection 15.4.3.

Insert 2

BASES

SURVEILLANCE REQUIREMENTS

SR 3.1.8.1 (continued)

core protection during the performance of the PHYSICS TESTS. The 12 hour time limit is sufficient to ensure that the instrumentation is OPERABLE shortly before initiating PHYSICS TESTS.

SR 3.1.8.2

Verification that the RCS lowest loop Tavg is ≥ 541°F (TI-0412, TI-0422, TI-0432, and TI-0442) will ensure that the unit is not operating in a condition that could invalidate the safety analyses. ~~Verification of the RCS temperature at a Frequency of 30 minutes during the performance of the PHYSICS TESTS will ensure that the initial conditions of the safety analyses are not violated.~~

SR 3.1.8.3

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

a. RCS boron concentration;

b. Control bank position;

c. RCS average temperature;

d. Fuel burnup based on gross thermal energy generation;

e. Xenon concentration;

f. Samarium concentration; and

g. Isothermal temperature coefficient (ITC).

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

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.1.8.3 (continued)

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

Insert 2

REFERENCES

1. 10 CFR 50, Appendix B, Section XI.
2. 10 CFR 50.59.
3. Regulatory Guide 1.68, Revision 2, August 1978.
4. WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology Report," July 1985.
5. WCAP-11618, including Addendum 1, April 1989.
6. WCAP-13360-P-A, "Westinghouse Dynamic Rod Worth Measurement Technique," January 1996.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.2.1.1

Verification that $F_Q(Z)$ is within its specified limits involves increasing $F_Q^M(Z)$ to allow for manufacturing tolerance and measurement uncertainties in order to obtain $F_Q(Z)$. Specifically, $F_Q^M(Z)$ is the measured value of $F_Q(Z)$ obtained from incore flux map results and $F_Q(Z) = F_Q^M(Z)$ 1.0815 (Ref. 4). $F_Q(Z)$ is then compared to its steady state and transient limits specified in the COLR.

Performing this Surveillance in MODE 1 after exceeding 50% RTP following refueling ensures that the $F_Q(Z)$ limit is met when RTP is achieved, because peaking factors generally decrease as power level is increased. In addition, at power levels above 50% RTP, equilibrium Xenon conditions approach those more closely at RTP. Therefore, performing the Surveillance at a power level above 50% RTP ensures a more accurate measurement of $F_Q(Z)$.

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

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

Insert 2

SR 3.2.1.2

This surveillance determines if $F_Q(Z)$ will remain within its limit during a normal operational transient. If $F_Q(Z)$ is determined to exceed the transient limit, Action B.1 requires that the AFD limit be reduced 1% for each 1% $F_Q(Z)$ exceeds the transient limit. This will ensure that $F_Q(Z)$ will not exceed the transient limit during a normal operational transient within the reduced AFD limit.

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

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.2.1.2 (continued)

equilibrium conditions to ensure that $F_Q(Z)$ is within its limit at higher power levels.

~~The Surveillance Frequency of 31 EFPD is adequate to monitor the anticipated change of power distribution with core burnup, since the results of this surveillance can result in more frequent surveillance of $F_Q(Z)$ if necessary.~~

REFERENCES

1. 10 CFR 50.46, 1974.
2. FSAR Subsection 15.4.8.
3. 10 CFR 50, Appendix A, GDC 26.
4. WCAP-7308-L-P-A, "Evaluation of Nuclear Hot Channel Factor Uncertainties," June 1988.
5. WCAP-10216-P-A, Revision 1A, "Relaxation of Constant Axial Offset Control FQ Surveillance Technical Specification," February 1994.

Insert 2

BASES

ACTIONS

B.1 (continued)

MODE 2 within 6 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience regarding the time required to reach MODE 2 from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.2.2.1

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

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

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

REFERENCES

1. FSAR Subsection 15.4.8.
2. 10 CFR 50, Appendix A, GDC 26.
3. 10 CFR 50.46.

Insert 2

BASES

ACTIONS

A.1 (continued)

the applicable safety analyses. A Completion Time of 30 minutes is reasonable, based on operating experience, to reach 50% RTP without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.2.3.1

The AFD is monitored on an automatic basis using the unit process computer, which has an AFD monitor alarm. The computer determines the 1-minute average of each of the OPERABLE excore detector outputs and provides an alarm message immediately if the AFD for two or more OPERABLE excore channels is outside its specified limits.

This Surveillance verifies that the AFD, as indicated by the NIS excore channel, is within its specified limits and is consistent with the status of the AFD monitor alarm. With the AFD monitor alarm inoperable, the AFD is monitored every hour to detect operation outside its limit. The Frequency of 1 hour is based on operating experience regarding the amount of time required to vary the AFD, and the fact that the AFD is closely monitored. ~~With the AFD monitor alarm OPERABLE, the Surveillance Frequency of 7 days is adequate considering that the AFD is monitored by a computer and any deviation from requirements is alarmed.~~

REFERENCES

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

2. R. W. Miller et al., "Relaxation of Constant Axial Offset Control: F_Q Surveillance Technical Specification," WCAP-10216(NP), June 1983.

Insert 2

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Insert 2

BASES

SURVEILLANCE REQUIREMENTS

SR 3.2.4.1 (continued)

This Surveillance verifies that the QPTR, as indicated by the Nuclear Instrumentation System (NIS) excore channels, is within its limits. ~~The Frequency of 7 days when the QPTR alarm is OPERABLE is acceptable because of the low probability that this alarm can remain inoperable without detection.~~ Valid inputs to the detector current comparator from the upper and lower sections from 3 or 4 power range channels are required for the QPTR alarm to be OPERABLE.

When the QPTR alarm is inoperable, the Frequency is increased to 12 hours. This Frequency is adequate to detect any relatively slow changes in QPTR, because for those causes of QPTR that occur quickly (e.g., a dropped rod), there typically are other indications of abnormality that prompt a verification of core power tilt.

SR 3.2.4.2

This Surveillance is modified by a Note, which states that the surveillance is only required to be performed if input to QPTR from one or more Power Range Neutron Flux channels is inoperable with THERMAL POWER ≥75% RTP.

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

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

Insert 2

(continued)

BASES

ACTIONS

V.1 (continued)

Therefore, no additional time is justified for continued operation. LCO 3.0.3 must be entered immediately to commence a controlled shutdown.

SURVEILLANCE REQUIREMENTS

The SRs for each RTS Function are identified by the SRs column of Table 3.3.1-1 for that Function.

A Note has been added to the SR Table stating that Table 3.3.1-1 determines which SRs apply to which RTS Functions.

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

SR 3.3.1.1

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

Agreement criteria are determined by the unit staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.1 (continued)

outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

Insert 2

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

SR 3.3.1.2

SR 3.3.1.2 compares the calorimetric heat balance calculation to the power range channel output ~~every 24 hours~~. If the calorimetric heat balance results exceed the power range channel output by more than +2% RTP, the power range channel is not declared inoperable, but must be adjusted consistent with the calorimetric heat balance results. If the power range channel output cannot be properly adjusted, the channel is declared inoperable.

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

This allowance does not preclude making indication power adjustments, if desired, when the calorimetric heat balance calculation is less than the power range channel output. To provide close agreement between indicated and calorimetric power and to preserve operating margin, the power range channels are normally adjusted when operating at or near full power during steady-state conditions. However, discretion must be exercised if the power range channel output is adjusted in the decreasing power direction due to a part-power calorimetric (< 50% RTP). This action may introduce a nonconservative bias at higher power levels which may result in an NIS reactor trip above the safety analysis limit of 118% RTP. The cause of the potential nonconservative bias is the decreased accuracy of the calorimetric at reduced power conditions. The primary error

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.2 (continued)

contributor to the instrument uncertainty for a secondary side power calorimetric measurement is the feedwater flow measurement which is typically a ΔP measurement across a feedwater venturi. While the measurement uncertainty remains constant in ΔP as power decreases, when translated into flow, the uncertainty increases as a square term. Thus a 1% flow error at 100% RTP can approach a 10% error at 30% RTP even though the ΔP error has not changed. An evaluation of extended operation at part-power conditions would conclude that it is prudent to administratively adjust the setpoint of the Power Range Neutron Flux – High bistables to ≤ 90% RTP for a calorimetric power determined below 50% RTP, and to ≤ 75% RTP for a calorimetric power determined below 20% RTP when: 1) the power range channel output is adjusted in the decreasing power direction due to a part-power calorimetric; or 2) for a post-refueling startup. While the part-power calorimetric uncertainty based on a feedwater flow measurement from the leading-edge flow meter (LEFM) is less than that based on the feedwater venturi, it is prudent to continue to apply the same adjustments to the setpoint.

Insert 2

Before the Power Range Neutron Flux – High bistables are reset to the nominal value in Table 3.3.1-1 of Specification 3.3.1, the power range channel adjustment must be confirmed based on a calorimetric performed at a power level ≥ 50% RTP.

The Note clarifies that this Surveillance is required only if reactor power is ≥ 15% RTP and that 12 hours is allowed for performing the first Surveillance after reaching 15% RTP. At lower power levels, calorimetric data are inaccurate.

~~The Frequency of every 24 hours is adequate. It is based on unit operating experience, considering instrument reliability and operating history data for instrument drift. Together these factors demonstrate that a difference between the calorimetric heat balance calculation and the power range channel output of more than +2% RTP is not expected in any 24 hour period.~~

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

SR 3.3.1.3

SR 3.3.1.3 compares the incore system to the NIS channel output

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.3 (continued)

~~every 31 EFPD~~. If the absolute difference is ≥ 3%, the NIS channel is still OPERABLE, but must be readjusted. If the NIS channel cannot be properly readjusted, the channel is declared inoperable. This surveillance is primarily performed to verify the (AFD) input to the overtemperature ΔT function.

SR 3.3.1.3 compares the incore system to the NIS channel output ~~every 31 EFPD~~. If the absolute difference is ≥ 3%, the NIS channel is still OPERABLE, but must be readjusted. If the NIS channel cannot be properly readjusted, the channel is declared inoperable. This surveillance is primarily performed to verify the f(AFD) input to the overtemperature ΔT function.

The Note clarifies that the Surveillance is required only if reactor power is ≥ 15% RTP and that 24 hours is allowed for performing the first Surveillance after reaching 15% RTP.

Axial offset is the difference between the power in the top half of the core and the bottom half of the core expressed as a fraction (percent) of the total power being produced by the core. Mathematically, it is expressed as:

$$AO = 100 \times \frac{(Flux_T - Flux_B)}{(Power)(Flux_T + Flux_B)}$$

where $Flux_T$ = neutron flux at the top of the core, and

$Flux_B$ = neutron flux at the bottom of the core

The relationship between AFD and axial offset is:

$$AFD = AO \times (Power(\%)/100)$$

AFD as displayed on the main control board and as determined by the plant computer use inputs from the power range NIS detectors which are located outside the reactor vessel. Axial offset is measured using incore detectors.

The surveillance assures that the AFD as displayed on the main control board and as determined by the plant computer is within 3% of the AFD as calculated from the axial offset equation. Agreement is required so that the reactor is operated within the bounds of the safety analysis regarding axial power distribution.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.3 (continued)

Insert 2

~~The Frequency of every 31 EFPD is adequate. It is based on unit operating experience, considering instrument reliability and operating history data for instrument drift. Also, the slow changes in neutron flux during the fuel cycle can be detected during this interval.~~

SR 3.3.1.4

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

The RTB test shall include separate verification of the undervoltage and shunt trip mechanisms. Independent verification of RTB undervoltage and shunt trip function is not required for the bypass breakers. No capability is provided for performing such a test at power. The independence test for bypass breakers is included in SR 3.3.1.13. The bypass breaker test shall include a local shunt trip. A Note has been added to indicate that this test must be performed on the bypass breaker prior to placing it in service.

Insert 2

~~The Frequency of every 62 days on a STAGGERED TEST BASIS is justified in Reference 11.~~

SR 3.3.1.5

SR 3.3.1.5 is the performance of an ACTUATION LOGIC TEST. The SSPS is tested ~~every 92 days~~ on a STAGGERED TEST BASIS, using the semiautomatic tester. The train being tested is placed in the bypass condition, thus preventing inadvertent actuation. Through the semiautomatic tester, all possible logic combinations, with and without applicable permissives, are tested for each protection function. ~~The Frequency of every 92 days on a STAGGERED TEST BASIS is justified in Reference 11.~~

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.6

SR 3.3.1.6 is a calibration of the excore channels to the incore channels. If the measurements do not agree, the excore channels are not declared inoperable but must be calibrated to agree with the incore detector measurements. If the excore channels cannot be adjusted, the channels are declared inoperable. This surveillance is primarily performed to verify the f(AFD) input to the overtemperature ΔT function.

Two Notes modify SR 3.3.1.6. Note 1 states that this Surveillance is required only if reactor power is > 75% RTP and that 7 days is allowed for performing the first surveillance after reaching 75% RTP. Note 2 states that neutron detectors are excluded from the calibration.

Insert 2

~~The Frequency of 92 EFPD is adequate. It is based on industry operating experience, considering instrument reliability and operating history data for instrument drift.~~

SR 3.3.1.7

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

A COT is performed on each required channel to ensure the entire channel will perform the intended Function. Setpoints must be within the Allowable Values specified in Table 3.3.1-1.

The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology. The setpoint shall be left set consistent with the assumptions of the current unit specific setpoint methodology.

The "as found" and "as left" values must also be recorded and reviewed for consistency with the assumptions of Reference 6.

This Surveillance Requirement is modified by two Notes that apply only to the Source Range instrument channels. Note 1 requires that the COT include verification that interlocks P-6 and P-10 are in the required state for the existing unit

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.7 (continued)

conditions. Note 2 provides a 4 hour delay in the requirement to perform this surveillance for source range instrumentation when entering Mode 3 from Mode 2. This Note allows a normal shutdown to proceed without delay for the performance of this SR to meet the applicability requirements in Mode 3. This delay allows time to open the RTBs in Mode 3 after which this SR is no longer required to be performed. If the unit is to be in Mode 3 with the RTBs closed for greater than 4 hours, this surveillance must be completed prior to the expiration of the 4 hours.

Insert 2

~~The Frequency of 184 days is justified in Reference 11.~~

SR 3.3.1.8

SR 3.3.1.8 is the performance of a COT as described in SR 3.3.1.7, except the frequency is prior to reactor startup. This SR is not required to be met when reactor power is decreased below P-10 (10% RTP) or when MODE 2 is entered from MODE 1 during controlled shutdowns. The Surveillance is modified by a Note that specifies this surveillance can be satisfied by the performance of a COT within 31 days prior to reactor startup. This test ensures that the NIS source range, intermediate range, and power range low setpoint channels are OPERABLE prior to taking the reactor critical.

SR 3.3.1.9

SR 3.3.1.9 is the performance of a TADOT ~~and is performed every 92 days, as justified in Reference 9.~~ .

The SR is modified by a Note that excludes verification of setpoints from the TADOT. Since this SR applies to RCP undervoltage and underfrequency relays, setpoint verification requires elaborate bench calibration and is accomplished during the CHANNEL CALIBRATION.

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.10

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

CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the unit specific setpoint methodology. The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology.

~~The Frequency of 18 months is based on the assumption of an 18 month calibration interval in the determination of the magnitude of equipment drift in the setpoint methodology for some instrument functions, and the need to perform this Surveillance for some instrument functions under the conditions that apply during a plant outage and the potential for an unplanned plant transient if the Surveillance were performed at power.~~ Operating experience has shown these components usually pass the Surveillance when performed on the 18 month Frequency.

SR 3.3.1.10 is modified by a Note stating that this test shall include verification that the time constants are adjusted to the prescribed values where applicable.

Insert 2

SR 3.3.1.11

SR 3.3.1.11 is the performance of a CHANNEL CALIBRATION, as described in SR 3.3.1.10~~, every 18 months~~. This SR is modified by a Note that states that neutron detectors are excluded from the CHANNEL CALIBRATION. The CHANNEL CALIBRATION for the power range neutron detectors includes a normalization of the detectors based on a power calorimetric and flux map performed above 75% RTP. The CHANNEL CALIBRATION for the source range neutron detectors includes obtaining the detector preamp discriminator curves and evaluating those curves.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.11 (continued)

Insert 2

~~The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed on the 18 month Frequency.~~

SR 3.3.1.12

SR 3.3.1.12 is the performance of a COT of RTS interlocks ~~every 18 months.~~

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

Insert 2

SR 3.3.1.13

SR 3.3.1.13 is the performance of a TADOT of the Manual Reactor Trip and the SI Input from ESFAS. This TADOT is as described in SR 3.3.1.4~~, except that the test is performed every 18 months~~.

The manual reactor trip TADOT shall independently verify the OPERABILITY of the undervoltage and shunt trip circuits for the manual reactor trip function. This test shall also verify the OPERABILITY of the Bypass breaker trip circuit(s), including the automatic undervoltage trip.

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

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.15 (continued)

Response time may be verified by actual response time tests in any series of sequential, overlapping, or total channel measurements; or by the summation of allocation sensor, signal processing, and actuation logic response times with actual response time tests on the remainder of the channel. Allocations for sensor response times may be obtained from: (1) historical records based on acceptable response time tests (hydraulic, noise, or power interrupt tests), (2) in place, onsite, or offsite (e.g., vendor) test measurements, or (3) using vendor engineering specifications. WCAP-13632-P-A Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," (Ref. 13), provides the basis and methodology for using allocated sensor response times in the overall verification of the channel response time for specific sensors identified in the WCAP. Response time verification for other sensor types must be demonstrated by test.

WCAP-14036-P Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," (Ref. 14), provides the basis and methodology for using allocated signal processing and actuation logic response times in the overall verification of the protection system channel response time. The allocations for sensor, signal conditioning and actuation logic response times must be verified prior to placing the component in operational service and re-verified following maintenance that may adversely affect response time. In general, electrical repair work does not impact response time provided the parts used for repair are of the same type and value. Specific components identified in the WCAP may be replaced without verification testing. One example where response time could be affected is replacing the sensing assembly of a transmitter.

Insert 2

~~As appropriate, each channel's response must be verified every 18 months on a STAGGERED TEST BASIS. Testing of the final actuation devices is included in the testing. Response times cannot be determined during unit operation because equipment operation is required to measure response~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.15 (continued)

~~times. Experience has shown that these components usually pass this surveillance when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~

SR 3.3.1.15 is modified by a Note stating that neutron detectors are excluded from RTS RESPONSE TIME testing. This Note is necessary because of the difficulty in generating an appropriate detector input signal. Excluding the detectors is acceptable because the principles of detector operation ensure a virtually instantaneous response.

SR 3.3.1.16

SR 3.3.1.16 is the performance of a COT for the low fluid oil pressure portion of the Turbine Trip Functions as described in SR 3.3.1.7 except that the Frequency is after each entry into MODE 3 for a unit shutdown and prior to exceeding the P-9 interlock trip setpoint. The surveillance is modified by two Notes. Note 1 states that the surveillance may be satisfied if performed within the previous 31 days. Note 2 states that verification of the setpoint is not required. Performance of this test ensures that the reactor trip on turbine trip function is OPERABLE prior to entering the Mode of Applicability (above the P-9 power range neutron flux interlock) for this instrument function. The frequency is based on the known reliability of the instrumentation that generates a reactor trip after the turbine trips, and has been shown to be acceptable through operating experience.

REFERENCES

1. FSAR, Chapter 7.

(continued)

BASES

REFERENCES (continued)

8. WCAP-14333-P-A, Rev. 1, October 1998.

9. WCAP-10271-P-A, Supplement 1, May 1986.

10. WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990.

11. WCAP-15376, Rev. ~~0, October 2000~~.

12. FSAR, Chapter 16.

13. WCAP-13632-P-A Revision 2, "Elimination of Periodic Sensor Response Time Testing Requirements," January 1996.

14. WCAP-14036-P-A Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," October 1998.

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BASES

SURVEILLANCE REQUIREMENTS (continued)

testing channel II, channel III, and channel IV (if applicable). The CHANNEL CALIBRATION and COTs are performed in a manner that is consistent with the assumptions used in analytically calculating the required channel accuracies.

SR 3.3.2.1

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

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.1 (continued)

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

Insert 2

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

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

SR 3.3.2.2

SR 3.3.2.2 is the performance of an ACTUATION LOGIC TEST. The SSPS is tested ~~every 92 days~~ on a STAGGERED TEST BASIS, using the semiautomatic tester. The train being tested is placed in the bypass condition, thus preventing inadvertent actuation. Through the semiautomatic tester, all possible logic combinations, with and without applicable permissives, are tested for each protection function. In addition, the master relay coil is pulse tested for continuity. This verifies that the logic modules are OPERABLE and that there is an intact voltage signal path to the master relay coils. ~~The Frequency of every 92 days on a STAGGERED TEST BASIS is justified in Reference 9.~~

Insert 2

(continued)

on a STAGGERED TEST BASES

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.2.3

SR 3.3.2.3 is the performance of a MASTER RELAY TEST. The MASTER RELAY TEST is the energizing of the master relay, verifying contact operation and a low voltage continuity check of the slave relay coil. Upon master relay contact operation, a low voltage is injected to the slave relay coil. This voltage is insufficient to pick up the slave relay, but large enough to demonstrate signal path continuity. ~~This test is performed every 92 days on a STAGGERED TEST BASIS.~~ The time allowed for the testing (4 hours) is justified in Reference 8. ~~The frequency of 92 days is justified in Reference 9.~~

Insert 2

SR 3.3.2.4

SR 3.3.2.4 is the performance of a COT.

A COT is performed on each required channel to ensure the entire channel will perform the intended Function. Setpoints must be found within the Allowable Values specified in Table 3.3.1-1.

The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology. The setpoint shall be left set consistent with the assumptions of the current unit specific setpoint methodology.

Insert 2

The "as found" and "as left" values must also be recorded and reviewed for consistency with the assumptions of Reference 6.

~~The Frequency of 184 days is justified in Reference 9.~~

SR 3.3.2.5

SR 3.3.2.5 is the performance of a SLAVE RELAY TEST. The SLAVE RELAY TEST is the energizing of the slave relays. Contact operation is verified in one of two ways. Actuation equipment that may be operated in the design mitigation MODE is either allowed to function, or is placed in a condition

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.5 (continued)

where the relay contact operation can be verified without operation of the equipment. Actuation equipment that may not be operated in the design mitigation MODE is prevented from operation by the SLAVE RELAY TEST circuit. For this latter case, contact operation is verified by a continuity check of the circuit containing the slave relay.

Insert 2

~~For slave relays and associated auxiliary relays in the ESFAS actuation system circuit that are Potter and Brumfield (P&B) type MOTOR-DRIVEN RELAYS (MDRs), the SLAVE RELAY TEST is performed on an 18-month frequency. This test frequency is based on relay reliability assessments presented in WCAP-13878, "Reliability Assessment of Potter and Brumfield MDR Series Relays." The reliability assessments are relay specific and apply only to Potter and Brumfield MDR series relays. Quarterly testing of the slave relays associated with non-P&B MDR auxiliary relays will be administratively controlled until an alternate method of testing the auxiliary relays is developed or until they are replaced by P&B MDR series relays.~~

SR 3.3.2.6

SR 3.3.2.6 is the performance of a TADOT. This test is a check of the Manual Actuation Functions and AFW pump start on trip of all MFW pumps. ~~It is performed every 18 months.~~ Each Manual Actuation Function is tested up to, and including, the master relay coils. In some instances, the test includes actuation of the end device (i.e., pump starts, valve cycles, etc.). ~~The Frequency is based on industry operating experience and is consistent with the typical refueling cycle.~~ The SR is modified by a Note that excludes verification of setpoints for manual initiation Functions. The manual initiation Functions have no assumed setpoints.

Insert 2

SR 3.3.2.7

SR 3.3.2.7 is the performance of a CHANNEL CALIBRATION.

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

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.7 (continued)

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

Insert 2

This SR is modified by a Note stating that this test should include verification that the time constants are adjusted to the prescribed values where applicable. The steam line pressure-low and steam line pressure negative rate-high functions have time constants specified in their setpoints.

SR 3.3.2.8

This SR ensures the individual channel ESF RESPONSE TIMES are less than or equal to the maximum values assumed in the accident analysis. Response Time testing acceptance criteria are included in the FSAR, Chapter 16 (Ref. 10). Individual component response times are not modeled in the analyses. The analyses model the overall or total elapsed time, from the point at which the parameter exceeds the Trip Setpoint value at the sensor, to the point at which the equipment in both trains reaches the required functional state (e.g., pumps at rated discharge pressure, valves in full open or closed position).

For channels that include dynamic transfer functions (e.g., lag, lead/lag, rate/lag, etc.), the response time test may be performed with the transfer functions set to one or with the time constants set to their nominal value. The results must be compared to properly defined acceptance criteria. The response time may be measured by a series of overlapping tests such that the entire response time is measured.

Response time may be verified by actual response time tests in any series of sequential, overlapping, or total channel measurements; or by the summation of allocated sensor, signal processing, and actuation logic response times with actual response time tests on the remainder of the channel. Allocations for sensor response times may be obtained from:

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.3.2.8 (continued)

(1) historical records based on acceptable response time tests (hydraulic, noise, or power interrupt tests), (2) inplace, onsite, or offsite (e.g., vendor) test measurements, or (3) using vendor engineering specifications. WCAP-13632-P-A Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements" (Reference 11), provides the basis and methodology for using allocated sensor response times in the overall verification of the channel response time for specific sensors identified in the WCAP. Response time verification for other sensor types must be demonstrated by test.

WCAP-14036-P Revision 1, "Elimination of Periodic Protection Channel Response Time Tests" (Reference 12), provides the basis and methodology for using allocated signal processing and actuation logic response times in the overall verification of the protection system channel response time. The allocations for sensor, signal conditioning and actuation logic response times must be verified prior to placing the component in operational service and re-verified following maintenance that may adversely affect response time. In general, electrical repair work does not impact response time provided the parts used for repair are of the same type and value. Specific components identified in the WCAP may be replaced without verification testing. One example where response time could be affected is replacing the sensing assembly of a transmitter.

~~ESF RESPONSE TIME tests are conducted on an 18 month STAGGERED TEST BASIS. Testing of the final actuation devices, which make up the bulk of the response time, is included in the testing of each channel. The final actuation device in one train is tested with each channel. Therefore, staggered testing results in response time~~

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.8 (continued)

~~verification of these devices every 18 months. The 18 month Frequency is consistent with the typical refueling cycle and is based on unit operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences.~~

This SR is modified by a Note that clarifies that the turbine driven AFW pump is tested within 24 hours after reaching 900 psig in the SGs.

SR 3.3.2.9

SR 3.3.2.9 is the performance of a TADOT as described in SR 3.3.2.6 for the P-4 Reactor Trip Interlock., and the Frequency is once per 18 months. This Frequency is based on operating experience. The SR is modified by a note that excludes verification of setpoints during the TADOT. The function tested has no associated setpoint.

REFERENCES

1. FSAR, Chapter 6.
2. FSAR, Chapter 7.
3. FSAR, Chapter 15.
4. IEEE-279-1971.
5. 10 CFR 50.49.
6. WCAP-11269, Westinghouse Setpoint Methodology for Protection Systems; as supplemented by:
   - Amendments 38 (Unit 1) and 18 (Unit 2), ESFAS Safety Injection Pressurizer — Low allowable value revision.
   - Amendments 34 (Unit 1) and 14 (Unit 2), RTS Steam Generator Water Level — Low Low, ESFAS Turbine Trip and Feedwater Isolation SG Water Level — High High, and ESFAS AFW SG Water Level — Low Low.

(continued)

BASES

REFERENCES (continued)

- Amendments 43 and 44 (Unit 1) and 23 and 24 (Unit 2), revised ESFAS Interlocks Pressurizer P-11 trip setpoint and allowable value.

7. WCAP-14333-P-A, Rev. 1, October 1998.

8. WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990.

9. WCAP-15376, Rev. ~~0, October 2000~~.

-P-A

10. FSAR, Chapter 16.

11. WCAP-13632-P-A Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," January 1996.

12. WCAP-14036-P-A Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," October 1998.

13. Westinghouse Letter GP-16696, November 5, 1997.

~~14. WCAP-13878-P-A Revision 2, "Reliability Assessment of Potter & Brumfield MDR Series Relays," April 1996.~~

~~15. WCAP-13900 Revision 0, "Extension of Slave Relay Surveillance Test Intervals," April 1994.~~

~~16. WCAP-14129 Revision 1, "Reliability Assessment of Westinghouse Type AR Relays Used as SSPS Slave Relays," January 1999.~~

1, March 2003

BASES

ACTIONS

J.1 (continued)

in which they are not equivalent, and provide a schedule for restoring the normal PAM channels.

SURVEILLANCE REQUIREMENTS

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

SR 3.3.3.1

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

Agreement criteria are determined by the unit 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. If the channels are within the criteria, it is an indication that the channels are OPERABLE.

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

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.3.2

~~A CHANNEL CALIBRATION is performed every 18 months, or approximately at every refueling.~~ CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to measured parameter with the necessary range and accuracy. This SR is modified by a Note that excludes neutron detectors. The calibration method for neutron detectors is specified in the Bases of LCO 3.3.1, "Reactor Trip System (RTS) Instrumentation." ~~The Frequency is based on operating experience and consistency with the typical industry refueling cycle.~~

Insert 2

REFERENCES

1. Safety Evaluation Report related to the operation of the Vogtle Electric Generating Plant, Units 1 and 2, NUREG-1137, Supplement No. 2, Section 7.5, May 1986.

2. Regulatory Guide 1.97, Rev. 2.

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

BASES

ACTIONS (continued)

B.1 and B.2

If the Required Action and associated Completion Time of Condition A are not met, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.3.4.1

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

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

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

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

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.4.2

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

Insert 2

SR 3.3.4.3

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

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

Insert 2

REFERENCES

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

BASES

ACTIONS

E.1 (continued)

required to be entered immediately. The actions of this LCO provide for adequate compensatory actions to support unit safety.

SURVEILLANCE REQUIREMENTS

SR 3.3.5.1

SR 3.3.5.1 is the performance of a COT. ~~This test is performed every 92 days.~~ A COT is performed on each required channel to ensure the entire channel will perform the intended Function. Setpoints must be found within the specified Allowable Values. ~~The Frequency is based on the known reliability of the equipment and controls and the multichannel redundancy available, and has been shown to be acceptable through operating experience.~~

Insert 2

SR 3.3.5.2

SR 3.3.5.2 is the performance of a CHANNEL CALIBRATION. The Nominal Trip Setpoint considers factors that may affect channel performance such as rack drift, etc. Therefore, the Nominal Trip Setpoint (within the calibration tolerance) is the expected value for the CHANNEL CALIBRATION. However, the Allowable Value is the value that was used for the loss of voltage and degraded grid studies. Therefore, a channel with an actual Trip Setpoint value that is conservative with respect to the Allowable Value is considered OPERABLE; but the channel should be reset to the Nominal Trip Setpoint value (within the calibration tolerance) to allow for factors which may affect channel performance (such as rack drift) prior to the next surveillance.

The setpoints, as well as the response to a loss of voltage and a degraded voltage test, shall include a single point verification that the trip occurs within the required time delay.

Insert 2

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

~~The Frequency of 18 months is based on operating experience and consistency with the typical industry refueling cycle and is justified by the assumption of an 18 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.~~

(continued)

BASES

ACTIONS

C.1 and C.2 (continued)

Required Action A.1. If no radiation monitoring channels are operable or the Required Action and associated Completion Time of Condition A are not met, operation may continue as long as the Required Action to place and maintain containment purge supply and exhaust isolation valves in their closed position is met or the applicable Conditions of LCO 3.9.4, "Containment Penetrations," are met for each penetration not in the required status. The Completion Time for these Required Actions is Immediately.

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

SURVEILLANCE REQUIREMENTS

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

SR 3.3.6.1

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

Agreement criteria are determined by the unit staff, based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.6.1 (continued)

outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

Insert 2

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

SR 3.3.6.2

SR 3.3.6.2 is the performance of an ACTUATION LOGIC TEST. The train being tested is placed in the bypass condition, thus preventing inadvertent actuation. Through the semiautomatic tester, all possible logic combinations, with and without applicable permissives, are tested for each protection function. In addition, the master relay coil is pulse tested for continuity. This verifies that the logic modules are OPERABLE and there is an intact voltage signal path to the master relay coils. ~~This test is performed every 92 days on a STAGGERED TEST BASIS. The Surveillance interval is justified in Reference 2.~~

Insert 2

SR 3.3.6.3

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

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.6.4

A COT is performed ~~every 92 days~~ on each required channel to ensure the entire channel will perform the intended Function~~. The Frequency is based on the staff recommendation for increasing the availability of radiation monitors according to NUREG-1366 (Ref. 2).~~ For MODES 1, 2, 3, and 4, this test verifies the capability of the instrumentation to provide the containment purge and exhaust system isolation. During CORE ALTERATIONS and movement of irradiated fuel in containment, this test verifies the capability of the required channels to generate the signals required for input to the control room alarm. The setpoint shall be left consistent with the current unit specific calibration procedure tolerance.

Insert 2

SR 3.3.6.5

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

For slave relays and associated auxiliary relays in the CVI actuation system circuit that are Potter and Brumfield (P&B) type Motor Driven Relays (MDR), the SLAVE RELAY TEST is performed on an 18-month frequency. This test frequency is based on relay reliability assessments presented in WCAP-13878, "Reliability Assessment of Potter and Brumfield MDR Series Relays." The reliability assessments are relay specific and apply only to Potter and Brumfield MDR series relays. Quarterly testing of the slave relays associated with non-P&B MDR auxiliary relays will be administratively controlled until an alternate method of testing the auxiliary relays is developed or until they are replaced by P&B MDR series relays.

SR 3.3.6.6

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

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.6.6 (continued)

Insert 2

The test also includes trip devices that provide actuation signals directly to the SSPS, bypassing the analog process control ~~equipment.~~ The SR is modified by a Note that excludes verification of ~~setpoints during~~ the TADOT. The Functions tested have no setpoints associated with ~~them.~~ ~~The Frequency is based on the known reliability of the Function and the redundancy available, and has been shown to be acceptable through operating experience.~~

SR 3.3.6.7

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

Insert 2

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

SR 3.3.6.8

This SR ensures the individual channel RESPONSE TIMES are less than or equal to the maximum values assumed in the accident analysis. Response time testing acceptance criteria are included in the FSAR. Individual component response times are not modeled in the analyses. The analyses model the overall or elapsed time, from the point at which the parameter exceeds the Trip Setpoint Valve at the sensor, to the point at which the equipment in both trains reaches the required functional state.

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

(continued)

BASES

REFERENCES

1. 10 CFR 100.11.
2. ~~WCAP-15376, Rev. 0, October 2000.~~
3. ~~NUREG-1366.~~
4. ~~WCAP-13878-P-A, Rev. 2, August 2000.~~
5. ~~WCAP-13900, Rev. 0, April 1994.~~
6. ~~WCAP-14129, Rev. 1, January 1999.~~

BASES

ACTIONS

O.1, O.2.1, O.2.2.1, and O.2.2.2 (continued)

The 1 hour Completion Time for actions O.1 and O.2.1 reflects the urgency with which this condition must be addressed and is reasonable based on the low probability of an event occurring during this time interval that would require CREFS operation. The 7 day Completion Time of actions O.2.2.1 and O.2.2.2 is reasonable based on the low probability of an event occurring during this time interval that would require CREFS operation and the capability of the remaining CREFS manual and automatic actuation instrumentation.

P.1

Condition P is applicable when four air intake radiogas monitor channels are inoperable. In this condition, the air flow into the control room is not monitored. Action P.1 requires that a CREFS train in each unit be placed in the emergency mode of operation within 1 hour. Action P.1 accomplishes the radiogas monitor channel function and ensures the control room is protected for all postulated accident and single failure considerations by placing the two CREFS trains in operation. The 1 hour Completion Time for action P.1 reflects the urgency with which this condition must be addressed and is a reasonable time to initiate two CREFS trains considering the low probability of an event occurring during this time interval that would require CREFS operation.

SURVEILLANCE REQUIREMENTS

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

SR 3.3.7.1

Performance of the CHANNEL CHECK ~~once every 12 hours~~ ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.7.1 (continued)

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 unit 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.

Insert 2

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

SR 3.3.7.2

A COT is performed ~~once every 92 days~~ on each required channel to ensure the entire channel will perform the intended function. This test verifies the capability of the instrumentation to provide the CREFS actuation. The setpoints shall be left consistent with the unit specific calibration procedure tolerance.

Insert 2

~~The Frequency is based on the known reliability of the monitoring equipment and has been shown to be acceptable through operating experience.~~

SR 3.3.7.3

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

Insert 2

~~This test is performed every 31 days on a STAGGERED TEST BASIS.~~ The Frequency is justified in WCAP-10271-P-A, Supplement 2, Rev. 1 (Ref. 1).

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.7.4

SR 3.3.7.4 is the performance of a TADOT. This test is a check of the Manual Actuation Functions ~~and is performed every 18 months~~. Each Manual Actuation Function is tested, which in some instances includes actuation of the end device (i.e., pump starts, valve cycles, etc.).

Insert 2

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

SR 3.3.7.5

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

Insert 2

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

SR 3.3.7.6

This SR ensures the individual channel ESF RESPONSE TIME for the CREFS radiogas monitor actuation instrumentation is less than or equal to the maximum values assumed in the accident analyses. Response time testing acceptance criteria are included in the FSAR, Chapter 16 (Ref. 3). Individual component response times are not modeled in the analyses. The analyses model the overall or total elapsed time, from the point at which the parameter exceeds the Trip Setpoint value at the sensor, to the point at which the equipment in both trains reaches the required functional state (e.g., pumps at rated discharge pressure, valves in full open or closed position).

For channels that include dynamic transfer functions (e.g., lag, lead/lag, rate/lag, etc.), the response time test may

(continued)

BASES

ACTIONS

B.1 and B.2 (continued)

SR 3.9.2.1. This places the unit in a condition that precludes an unplanned dilution event. The Completion Times of 1 hour and once per 12 hours thereafter for verifying SDM provide timely assurance that no unintended dilution occurred while the HFASA was inoperable and that SDM is maintained. The Completion Times of 4 hours and once per 14 days thereafter for verifying that the unborated source is isolated provide timely assurance that an unplanned dilution event cannot occur while the HFASA is inoperable and that this protection is maintained until the HFASA is restored.

SURVEILLANCE REQUIREMENTS

The HFASA channels are subject to a COT and a CHANNEL CALIBRATION.

SR 3.3.8.1

SR 3.3.8.1 requires the performance of a COT ~~every 184 days~~ to ensure that each channel of the HFASA and its setpoint are OPERABLE. This test shall include verification that the HFASA setpoint is less than or equal to 2.3 times background. ~~The frequency of 184 days is consistent with the requirements for the source range channels.~~ Insert 2 This Surveillance Requirement is modified by a Note that provides a 4-hour delay in the requirement to perform this surveillance for the HFASA instrumentation upon entering MODE 3 from MODE 2. This Note allows a normal shutdown to proceed without delay for the performance of the surveillance to meet the applicability requirements in MODE 3.

SR 3.3.8.2

SR 3.3.8.2 requires the performance of a CHANNEL CALIBRATION ~~every 18 months~~. This test verifies that each channel responds to a measured parameter within the necessary range and accuracy. It encompasses the HFASA portion of the instrument loop. Insert 2 ~~The frequency is based on operating experience and consistency with the typical industry refueling cycle.~~

REFERENCES

1. FSAR, Subsection 15.4.6.

BASES

ACTIONS

A.1 (continued)

The 2 hour Completion Time for restoration of the parameters is based on plant operating experience and provides sufficient time to adjust plant parameters, to determine the cause for the off normal condition, and to restore the readings within limits.

B.1

If degradation in RCS total flow rate is detected via the flow rate indicators, a precision calorimetric heat balance must be performed within 7 days of detection of the degradation. The precision heat balance will positively verify actual RCS total flow rate. The 7-day Completion Time is adequate to allow for the setup necessary for this measurement and is acceptable since the RCS low flow reactor trips will protect the reactor against actual low flow conditions.

C.1

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

SURVEILLANCE REQUIREMENTS

SR 3.4.1.1

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

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.1.2

Insert 2

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

SR 3.4.1.3

~~The 12 hour Surveillance Frequency for monitoring for degradation in RCS total flow rate is performed using the installed flow instrumentation~~. The RCS flow instrumentation indicates from 0% to 120% as opposed to actual flow in gallons per minute. Therefore, the flow instrumentation is used to detect degradation in flow rather than as a comparison against the actual limit in gallons per minute. Degradation is defined as a change in indicated percent flow which is greater than the instrument channel inaccuracies and parallax errors. ~~The 12 hour interval has been shown by operating practice to be sufficient to regularly assess potential degradation and to verify operation within safety analysis assumptions.~~

Insert 2

SR 3.4.1.4

Measurement of RCS total flow rate by performance of a precision calorimetric heat balance ~~once every 18 months~~ allows the installed RCS flow instrumentation to be correlated with the precision flow measurement and verifies the actual RCS flow rate is greater than or equal to the minimum required RCS flow rate. In addition, in order to ensure that the measurement uncertainty assumed in the limit for RCS total flow rate is maintained, the instrumentation used for the precision calorimetric heat balance will be calibrated within 30 days prior to the precision calorimetric.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.1.4 (continued)

Insert 2

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

This SR is modified by a Note that allows entry into MODE 1, without having performed the SR, and placement of the unit in the best condition for performing the SR. The Note states that the SR is not required to be performed until 7 days after ≥ 90% RTP. This exception is appropriate since the heat balance requires the plant to be at a minimum of 90% RTP to obtain the stated RCS flow accuracies. The Surveillance shall be performed within 7 days after reaching 90% RTP.

REFERENCES

1. FSAR, Chapter 15.

BASES

APPLICABILITY (continued)

it is necessary to allow RCS loop average temperatures to fall below the HZP temperature, which may cause RCS loop average temperatures to fall below the temperature limit of this LCO.

ACTIONS

A.1

If the parameters that are outside the limit cannot be restored, 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 30 minutes. Rapid reactor shutdown can be readily and practically achieved within a 30 minute period. The allowed time is reasonable, based on operating experience, to reach MODE 3 in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.4.2.1

RCS loop average temperature is required to be verified at or above 551°F ~~every 30 minutes~~ when the T_{avg} - T_{ref} deviation alarm (TI-0412, TI-0422, TI-0432, TI-0442) is not reset and any RCS loop T_{avg} < 561°F. When these conditions are present, RCS loop average temperatures could fall below the LCO requirement without additional warning. The frequency of 30 minutes is sufficient to prevent the inadvertent violation of the LCO. Insert 2

REFERENCES

1. FSAR, Section 4.3 and Subsections 15.0.3 and 15.4.8.

BASES

ACTIONS

C.1 and C.2 (continued)

Condition C is modified by a Note requiring Required Action C.2 to be completed whenever the Condition is entered. The Note emphasizes the need to perform the evaluation of the effects of the excursion outside the allowable limits. Restoration alone per Required Action C.1 is insufficient because higher than analyzed stresses may have occurred and may have affected the RCPB integrity.

SURVEILLANCE REQUIREMENTS

SR 3.4.3.1

Verification that operation is within the PTLR 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 assessment and correction for minor deviations within a reasonable time.~~

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

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

REFERENCES

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

Insert 2

(continued)

BASES (continued)

APPLICABILITY

In MODES 1 and 2, the reactor is critical and thus has the potential to produce maximum THERMAL POWER. Thus, to ensure that the assumptions of the accident analyses remain valid, all RCS loops are required to be OPERABLE and in operation in these MODES to prevent DNB and core damage.

The decay heat production rate is much lower than the full power heat rate. As such, the forced circulation flow and heat sink requirements are reduced for lower, noncritical MODES as indicated by the LCOs for MODES 3, 4, and 5.

Operation in other MODES is covered by:

LCO 3.4.5,	"RCS Loops — MODE 3";
LCO 3.4.6,	"RCS Loops — MODE 4";
LCO 3.4.7,	"RCS Loops — MODE 5, Loops Filled";
LCO 3.4.8,	"RCS Loops — MODE 5, Loops Not Filled";
LCO 3.9.5,	"Residual Heat Removal (RHR) and Coolant Circulation — High Water Level" (MODE 6); and
LCO 3.9.6,	"Residual Heat Removal (RHR) and Coolant Circulation — Low Water Level" (MODE 6).

ACTIONS

A.1

If the requirements of the LCO are not met, the Required Action is to reduce power and bring the plant to MODE 3. This lowers power level and thus reduces the core heat removal needs and minimizes the possibility of violating DNB limits.

The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging safety systems.

SURVEILLANCE REQUIREMENTS

SR 3.4.4.1

This SR requires verification ~~every 12 hours~~ that each RCS loop is in operation. Verification may include flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing heat removal while maintaining

(continued)

BASES

SURVEILLANCE REQUIREMENTS	SR 3.4.4.1 (continued) the margin to DNB. ~~The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RCS loop performance.~~ Insert 2
REFERENCES	1. FSAR, Chapter 15.

BASES

ACTIONS (continued)

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

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

SURVEILLANCE REQUIREMENTS

SR 3.4.5.1

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

Insert 2

SR 3.4.5.2

SR 3.4.5.2 requires verification of SG OPERABILITY. SG OPERABILITY is verified by ensuring that the secondary side water level (LI-0501, LI-0502, LI-0503, LI-0504) for the required RCS loops is above the highest point of the steam generator U-tubes for each required loop. To assure that the steam generator is capable of functioning as a heat sink for the removal of decay heat, the U-tubes must be completely submerged. Plant procedures provide the minimum indicated levels for the range of the steam generator operating conditions required to satisfy this SR. ~~The 12 hour Frequency is considered adequate in view of other indications available in the control room to alert the operator to a loss of SG level.~~

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)	SR 3.4.5.3 Verification that the required RCPs are OPERABLE ensures that safety analyses limits are met. The requirement also ensures that an additional RCP can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power availability to the required RCPs.
REFERENCES	None.

Insert 2

BASES

ACTIONS (continued)

B.1

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

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

C.1 and C.2

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

SURVEILLANCE REQUIREMENTS

SR 3.4.6.1

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

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.6.2

SR 3.4.6.2 requires verification of SG OPERABILITY. SG OPERABILITY is verified by ensuring that the secondary side water level (LI-0501, LI-0502, LI-0503, LI-0504) for the required RCS loops is above the highest point of the steam generator U-tubes for each required loop. To assure that the steam generator is capable of functioning as a heat sink for the removal of decay heat, the U-tubes must be completely submerged. Plant procedures provide the minimum indicated levels for the range of the steam generator operating conditions required to satisfy this SR. ~~The 12 hour Frequency is considered adequate in view of other indications available in the control room to alert the operator to the loss of SG level.~~

Insert 2

SR 3.4.6.3

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

Insert 2

REFERENCES

None.

BASES

ACTIONS

B.1 and B. 2 (continued)

OPERABLE status and operation must be initiated. To prevent boron dilution, forced circulation is required to provide proper mixing and preserve the margin to criticality in this type of operation. The immediate Completion Times reflect the importance of maintaining operation for heat removal.

SURVEILLANCE REQUIREMENTS

SR 3.4.7.1

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

Insert 2

SR 3.4.7.2

Verifying that at least two SGs are OPERABLE by ensuring their secondary side narrow range water levels are above the highest point of the SG U-tubes ensures an alternate decay heat removal method in the event that the second RHR loop is not OPERABLE. To assure that the SG is capable of functioning as a heat sink for the removal of decay heat, the U-tubes must be completely submerged, which is achieved if the SG level criteria are satisfied. Plant procedures provide the minimum indicated levels for the range of the SG operating conditions required to satisfy this SR. If both RHR loops are OPERABLE, this Surveillance is not needed. ~~The 12 hour Frequency is considered adequate in view of other indications available in the control room to alert the operator to the loss of SG level.~~

SR 3.4.7.3

Verification that a second RHR pump is OPERABLE ensures that an additional pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation.

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS	SR 3.4.7.3 (continued) Verification is performed by verifying proper breaker alignment and power available to the RHR pump. If secondaryside water level is above the highest point of the SG U-tubes in at least two SGs, this Surveillance is not needed. ~~The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.~~ Insert 2
REFERENCES	None.

BASES

ACTIONS (continued)

B.1 and B.2

If no required RHR loops are OPERABLE or in operation, except during conditions permitted by Note 1, all operations involving a reduction of RCS boron concentration must be suspended and action must be initiated immediately to restore an RHR loop to OPERABLE status and operation. The immediate Completion Time reflects the importance of maintaining operation for heat removal. The action to restore must continue until one loop is restored to OPERABLE status and operation.

C.1

If the valve(s) required to be closed are discovered to be open (except as provided by Note 3 to the LCO), action must be initiated immediately to secure the open valve(s) in the closed position in order to preclude an uncontrolled boron dilution transient.

Insert 2

SURVEILLANCE REQUIREMENTS

SR 3.4.8.1

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

SR 3.4.8.2

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

Insert 2

(continued)

BASES

ACTIONS

A.1 and A.2 (continued)

and restores the unit to operation within the bounds of the safety analyses.

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.

B.1

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

C.1 and C.2

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

SURVEILLANCE REQUIREMENTS

SR 3.4.9.1

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

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.9.1 (continued)

~~safety analyses assumptions. Alarms are also available for early detection of abnormal level indications.~~

SR 3.4.9.2

The SR is satisfied when the power supplies are demonstrated to be capable of producing the minimum power and the associated pressurizer heaters are verified to be at their design rating. This may be done by testing the power supply output and by performing an electrical check on heater element continuity and resistance. At VEGP, the pressurizer heaters are in use during normal power operation. ~~Therefore, the operators should be aware of problems that may arise with the pressurizer heaters and the Frequency of 18 months is considered adequate to detect heater degradation.~~

REFERENCES

1. FSAR, Chapter 15.
2. NUREG-0737, November 1980.

Insert 2

BASES

ACTIONS

G.1 and G.2 (continued)

conditions from full power conditions in an orderly manner and without challenging plant systems. In MODES 4, 5, and 6, maintaining PORV OPERABILITY may be required. See LCO 3.4.12.

SURVEILLANCE REQUIREMENTS

SR 3.4.11.1

Block valve cycling verifies that the valve(s) can be closed if needed. ~~The basis for the Frequency of 92 days is the ASME Code, Section XI (Ref. 2).~~ The Note modifies this SR by stating that it is not required to be performed with the block valve closed, in accordance with the Required Actions of Conditions A, B, or E.

Insert 2

SR 3.4.11.2

SR 3.4.11.2 requires a complete cycle of each PORV. Operating a PORV through one complete cycle ensures that the PORV can be manually actuated for mitigation of an SGTR. ~~The Frequency of 18 months is based on a typical refueling cycle and industry accepted practice.~~

REFERENCES

1. Regulatory Guide 1.32, February 1977.

~~2. ASME, Boiler and Pressure Vessel Code, Section XI.~~

Insert 2

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.4.12.1 and SR 3.4.12.2

To minimize the potential for a low temperature overpressure event by limiting the mass input capability, both safety injection pumps are verified incapable of injecting into the RCS, and the accumulator discharge isolation valves are verified closed and locked out.

Insert 2

The safety injection pumps are rendered incapable of injecting into the RCS through at least two independent means such that a single failure or single action will not result in an injection into the RCS.

~~The Frequency of 12 hours (for the safety injection pumps and accumulators) is sufficient, considering other indications and alarms available to the operator in the control room, to verify the required status of the equipment.~~

SR 3.4.12.3

Each required RHR suction relief valve shall be demonstrated OPERABLE by verifying its RHR suction isolation valves are open and by testing it in accordance with the Inservice Testing Program. This Surveillance is only required to be performed if the RHR suction relief valve is being used to meet this LCO. For Train A, the RHR suction relief valve is PSV-8708A and the suction isolation valves are HV-8701A and B. For Train B, the RHR suction relief valve is PSV-8708B and the suction isolation valves are HV-8702A and B.

Insert 2

The RHR suction valves are verified to be opened ~~every 12 hours. The Frequency is considered adequate in view of other administrative controls such as valve status indications available to the operator in the control room that verify the RHR suction isolation valves remain open~~.

The ASME Code, Section XI (Ref. 8), test per Inservice Testing Program verifies OPERABILITY by proving proper relief valve mechanical motion and by measuring and, if required, adjusting the lift setpoint.

SR 3.4.12.4

The RCS vent of ≥ 1.5 square inches (based on an equivalent length of 10 feet of pipe) is proven OPERABLE by verifying its open condition ~~either:~~

(continued)

Insert 2

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.12.4 (continued)

~~a. Once every 12 hours for a valve that cannot be locked.~~

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

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

SR 3.4.12.5

The PORV block valve must be verified open ~~every 72 hours~~ to provide the flow path for each required PORV to perform its function when actuated. The valve must be remotely verified open in the main control room. This Surveillance is performed if the PORV satisfies the LCO.

The block valve is a remotely controlled, motor operated valve. The power to the valve operator is not required to be removed, and the manual operator is not required to be locked in the inactive position. Thus, the block valve can be closed in the event the PORV develops excessive leakage or does not close (sticks open) after relieving an overpressure situation.

Insert 2

~~The 72 hour Frequency is considered adequate in view of other administrative controls available to the operator in the control room, such as valve position indication, that verify that the PORV block valve remains open.~~

SR 3.4.12.6

Performance of a COT is required within 12 hours after decreasing RCS temperature to ≤ the COPS arming temperature specified in the PTLR ~~and every 31 days~~ on each required PORV to verify and, as necessary, adjust its lift setpoint. The COT will verify the setpoint is within the allowed maximum limits in the PTLR. PORV actuation could depressurize the RCS and is not required.

Insert 2

A Note has been added indicating that this SR is required to be performed 12 hours after decreasing RCS cold leg temperature to ≤ the COPS arming temperature specified in the PTLR. The 12 hours considers the unlikelihood of a low temperature overpressure event during this time.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.12.7

Performance of a CHANNEL CALIBRATION on each required PORV actuation channel is required ~~every 18 months~~ to adjust the whole channel so that it responds and the valve opens within the required range and accuracy to known input.

REFERENCES

1. 10 CFR 50, Appendix G.
2. Generic Letter 88-11.
3. ASME, Boiler and Pressure Vessel Code, Section III.
4. FSAR, Chapter 15
5. 10 CFR 50, Section 50.46.
6. 10 CFR 50, Appendix K.
7. Generic Letter 90-06.
8. ASME, Boiler and Pressure Vessel Code, Section XI.
9. Westinghouse Letter GP-13419, RHR Open Permissive Setpoint.

Insert 2

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.13.1 (continued)

The RCS water inventory balance must be performed with the reactor at steady state operating conditions. The Surveillance is modified by three Notes. Note 1 states that this SR is not required to be performed in MODES 3 and 4 until 12 hours of steady state operation have been established. In all cases, this SR is required to be performed prior to entering MODE 2 to ensure the assessment of RCS leakage prior to critical operation.

Steady state operation is required to perform a proper inventory balance; calculations during maneuvering are not useful and Note 2 requires the Surveillance to be performed when steady state is established. For RCS operational LEAKAGE determination by water inventory balance, steady state is defined as stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows.

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

Note 3 states that this SR is not applicable to primary to secondary LEAKAGE because LEAKAGE of 150 gallons per day cannot be measured accurately by an RCS water inventory balance.

~~The 72 hour Frequency is a reasonable interval to trend LEAKAGE and recognizes the importance of early leakage detection in the prevention of accidents.~~ The 12 hour Frequency after steady state operation has been achieved provides for those situations where a transient occurs, and the duration of the transient is such that the 72 hour Frequency plus the 25% extension allowed by SR 3.0.2 would be exceeded. In this event, the SR would be due within 12 hours after steady state operation has been ~~reestablished.~~

Insert 2

SR 3.4.13.2

This SR verifies that primary to secondary LEAKAGE is less than or equal to 150 gallons per day through any one SG. Satisfying the primary to secondary LEAKAGE limit ensures that the operational LEAKAGE performance criterion in the Steam Generator Program is met. If this SR is not met, compliance with LCO 3.4.17, "Steam Generator Tube Integrity," should be evaluated. The 150 gallons per day limit is measured at room temperature as described in

(continued)

BASES

SR 3.4.13.2 (continued)

Reference 5. The operational LEAKAGE rate limit applies to LEAKAGE through any one SG. If it is not practical to assign the LEAKAGE to an individual SG, all the primary to secondary LEAKAGE should be conservatively assumed to be from one SG.

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

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

REFERENCES

1. 10 CFR 50, Appendix A, GDC 30.
2. Regulatory Guide 1.45, May 1973.
3. FSAR, Section 15.
4. NEI 97-06, "Steam Generator Program Guidelines."
5. EPRI, "Pressurized Water Reactor Primary-to-Secondary Leak Guidelines."

Insert 2

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.14.2 (continued)

valves from being opened is set so the actual RCS pressure must be < 450 psig to open the valves. This setpoint ensures the RHR design pressure will not be exceeded. To ensure that the RHR relief valves will not lift, the actual interlock setpoint used in performing the surveillance is < 365 psig, and takes into consideration various allowances for relief valve setting variation, transmitter elevation, and the total instrument channel uncertainty. The total instrument channel uncertainty is calculated in accordance with reference 9, and the allowance for process instrumentation (rack drift) is 1%. Once the interlock setpoint is initially reached, administrative controls ensure that the RHR suction isolation valves are closed prior to reaching an RCS pressure that could cause the RHR suction relief valves to open. Due to the bistable reset design, the valves could be opened at a pressure above the interlock setpoint, but below the reset pressure. The administrative controls ensure that the valves will not be opened if RCS pressure exceeds 365 psig after RCS pressure has decreased below the interlock setpoint. ~~The 18 month Frequency is based on the need to perform the Surveillance under conditions that apply during a plant outage. The 18 month Frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.~~

REFERENCES

1. 10 CFR 50.2.
2. 10 CFR 50.55a(c).
3. 10 CFR 50, Appendix A, Section V, GDC 55.
4. WASH-1400 (NUREG-75/014), Appendix V, October 1975.
5. NUREG-0677, May 1980.
6. FSAR Section 16.3.
7. 1983 ASME, Boiler and Pressure Vessel Code, Section XI.

(continued)

BASES

ACTIONS

G.1 (continued)

detection systems consist of the three systems described below in items a, b, and c, respectively:

a. The containment normal sumps level and reactor cavity sump monitors;

b. One containment atmosphere radioactivity monitor (gaseous or particulate); and

c. Either the containment air cooler condensate flow rate or a containment atmosphere gaseous or particulate radioactivity monitoring system not taken credit for in item b.

Insert 2

SURVEILLANCE REQUIREMENTS

SR 3.4.15.1 and SR 3.4.15.2

These SRs require the performance of a CHANNEL CHECK of the required containment atmosphere radioactivity monitor and containment sump monitors. The check gives reasonable confidence that the channels are operating properly. ~~The Frequency of 12 hours is based on instrument reliability and is reasonable for detecting off normal conditions.~~

SR 3.4.15.3

SR 3.4.15.3 requires the performance of a COT on the required containment atmosphere radioactivity monitor. The test ensures that the monitor can perform its function in the desired manner. The test verifies the alarm setpoint and relative accuracy of the instrument string. ~~The Frequency of 92 days considers instrument reliability, and operating experience has shown that it is proper for detecting degradation.~~

Insert 2

SR 3.4.15.4, SR 3.4.15.5, and SR 3.4.15.6

These SRs require the performance of a CHANNEL CALIBRATION for each of the RCS leakage detection instrumentation channels. The calibration verifies the accuracy of the

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.15.4, SR 3.4.15.5, and SR 3.4.15.6 (continued)

instrument string, including the instruments located inside containment. ~~The Frequency of 18 months is a typical refueling cycle and considers channel reliability. Again, operating experience has proven that this Frequency is acceptable.~~

Insert 2

REFERENCES

1. 10 CFR 50, Appendix A, Section IV, GDC 30.
2. Regulatory Guide 1.45.
3. FSAR, Subsection 5.2.5.

BASES

ACTIONS (continued)

C.1

If a Required Action and the associated Completion Time of Condition A is not met or if the DOSE EQUIVALENT I-131 is in the unacceptable region of Figure 3.4.16-1, the reactor must be brought to MODE 3 with RCS average temperature < 500°F within 6 hours. The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 below 500°F from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.4.16.1

SR 3.4.16.1 requires performing gross specific activity of the reactor coolant ~~at least once every 7 days~~. Gross specific activity is basically a quantitative measure of radionuclides with half lives longer than 14 minutes, excluding all radioiodines. It is the sum of concentrations of individually identified nuclides, liquid and gaseous, counted within 2 hours after the sample is taken and extrapolated back to when the sample was taken. Determination of the contributors to the gross specific activity shall be based upon those gamma energy peaks identifiable with a 95% confidence level. The latest available data may be used for pure beta-emitting radionuclides. This Surveillance provides an indication of any increase in gross specific activity.

Insert 2

Trending the results of this Surveillance allows proper remedial action ~~to be taken~~ before reaching the LCO limit under normal operating conditions. The ~~Surveillance~~ is applicable in MODES 1 and 2, and in MODE 3 with T_{avg} at least 500°F. ~~The 7 day Frequency considers the unlikelihood of a gross fuel failure during the time.~~

SR 3.4.16.2

Insert 2

This Surveillance is performed in MODE 1 only to ensure iodine remains within limit during normal operation and following fast power changes when fuel failure is more apt to occur. ~~The 14 day Frequency is adequate to trend changes in the iodine activity level, considering gross activity is~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.16.2 (continued)

~~monitored every 7 days.~~ The Frequency, between 2 and 6 hours after a power change ≥ 15% RTP within a 1 hour period, is established because the iodine levels peak during this time following fuel failure; samples at other times would provide inaccurate results.

SR 3.4.16.3

A radiochemical analysis for Ē determination is required ~~every 184 days (6 months)~~ with the plant operating in MODE 1 equilibrium conditions. The Ē determination directly relates to the LCO and is required to verify plant operation within the specified gross activity LCO limit. The analysis for Ē is a measurement of the specific activity for each radionuclide identified in the reactor coolant with half lives longer than 14 minutes, excluding all radioiodines. The specific activities for these individual radionuclides shall be used in the determination of Ē for the reactor coolant sample. Determination of ~~the contributors to Ē~~ shall be based upon those energy peaks identifiable with a 95% confidence level. ~~The Frequency of 184 days recognizes Ē does not change rapidly.~~

Insert 2

This SR has been modified by a Note that indicates sampling is required to be performed within 31 days after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for at least 48 hours, if the surveillance requirement had not been performed within the last 184 days, such as during a refueling outage. This ensures that the radioactive materials are at equilibrium so the analysis for Ē is representative and not skewed by a crud burst or other similar abnormal event.

REFERENCES

1. 10 CFR 100.11, 1973.

2. FSAR, Subsection 15.6.3.

BASES

ACTIONS

C.1 and C.2 (continued)

≤ 1000 psig within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

D.1

If more than one accumulator is inoperable, the plant is in a condition outside the accident analyses; therefore, LCO 3.0.3 must be entered immediately.

SURVEILLANCE REQUIREMENTS

SR 3.5.1.1

Each accumulator valve (HV-8808A, B, C, D) should be verified to be fully open ~~every 12 hours~~. This verification ensures that the accumulators are available for injection and ensures timely discovery if a valve should be less than fully open. If an isolation valve is not fully open, the rate of injection to the RCS would be reduced. Although a motor operated valve position should not change with power removed, a closed valve could result in not meeting accident analyses assumptions. ~~This Frequency is considered reasonable in view of other administrative controls that ensure a mispositioned isolation valve is unlikely.~~

Insert 2

SR 3.5.1.2 and SR 3.5.1.3

The

~~Every 12 hours,~~ borated water volume (LI-0950, 0951, 0952, 0953, 0954, 0955, 0956, 0957) and nitrogen cover pressure (PI-0960A&B, 0961A&B, 0962A&B, 0963A&B, 0964A&B, 0965A&B, 0966A&B, 0967A&B) are verified for each accumulator. ~~This Frequency is sufficient to ensure adequate injection during a LOCA. Because of the static design of the accumulator, a 12 hour Frequency usually allows the operator to identify changes before limits are reached. Operating experience has shown this Frequency to be appropriate for early detection and correction of off normal trends.~~

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.1.4

The boron concentration should be verified to be within required limits for each accumulator ~~every 31 days~~ since the static design of the accumulators limits the ways in which the concentration can be changed. ~~The 31 day Frequency is adequate to identify changes that could occur from mechanisms such as stratification or inleakage.~~ Insert 2 Sampling the affected accumulator within 6 hours after a 1% volume increase (7% of indicated level) will identify whether inleakage has caused a reduction in boron concentration to below the required limit. It is not necessary to verify boron concentration if the added water inventory is from the refueling water storage tank (RWST), because the water contained in the RWST is within the accumulator boron concentration requirements. This is consistent with the recommendation of NUREG-1366 (Ref. 6).

SR 3.5.1.5

Verification ~~every 31 days~~ that power is removed from each accumulator isolation valve operator when the pressurizer pressure is > 1000 psig ensures that an active failure could not result in the undetected closure of an accumulator motor operated isolation valve. If this were to occur, only two accumulators would be available for injection given a single failure coincident with a LOCA. Insert 2 ~~Since power is removed under administrative control, the 31 day Frequency will provide adequate assurance that power is removed.~~

This SR allows power to be supplied to the motor operated isolation valves when pressurizer pressure is ≤ 1000 psig, thus allowing operational flexibility by avoiding unnecessary delays to manipulate the breakers during plant startups or shutdowns.

(continued)

BASES

ACTIONS (continued)

B.1 and B.2

If the inoperable trains cannot be returned to OPERABLE status within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 6 hours and MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.5.2.1

Verification of proper valve position ensures that the flow path from the ECCS pumps to the RCS is maintained. Misalignment of these valves could render both ECCS trains inoperable. Securing these valves in the correct position by placing the power lockout switches in the correct position ensures that they cannot change position as a result of an active failure or be inadvertently misaligned. These valves are of the type, described in Reference 6, that can disable the function of both ECCS trains and invalidate the accident analyses. ~~A 12 hour Frequency is considered reasonable in view of other administrative controls that will ensure a mispositioned valve is unlikely.~~

Insert 2

SR 3.5.2.2

Verifying the correct alignment for manual, power operated, and automatic valves in the ECCS flow paths provides assurance that the proper flow paths will exist for ECCS operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an actuation signal is allowed to be in a nonaccident position provided the valve will automatically reposition within the proper stroke time. This Surveillance does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.2.2 (continued)

mispositioned are in the correct position~~. The 31 day Frequency is appropriate because the valves are operated under administrative control, and an improper valve position would only affect a single train. This Frequency has been shown to be acceptable through operating experience.~~

Insert 2

SR 3.5.2.3

With the exception of the operating centrifugal charging pump, the ECCS pumps are normally in a standby, nonoperating mode. As such, flow path piping has the potential to develop voids and pockets of entrained gases. Maintaining the piping from the ECCS pumps to the RCS full of water ensures that the system will perform properly, injecting its full capacity into the RCS upon demand. This will also prevent water hammer, pump cavitation, and pumping of noncondensible gas (e.g., air, nitrogen, or hydrogen) into the reactor vessel following an SI signal or during shutdown cooling~~. The 31 day Frequency takes into consideration the gradual nature of gas accumulation in the ECCS piping and the procedural controls governing system operation.~~

Insert 2

SR 3.5.2.4

Periodic surveillance testing of ECCS pumps to detect gross degradation caused by impeller structural damage or other hydraulic component problems is required by Section XI of the ASME Code. This type of testing may be accomplished by measuring the pump developed head at only one point of the pump characteristic curve. This verifies that the measured performance is within an acceptable tolerance of the original pump baseline performance. SRs are specified in the Inservice Testing Program, which encompasses Section XI of the ASME Code. Section XI of the ASME Code provides the activities and Frequencies necessary to satisfy the requirements.

In addition to the acceptance criteria of the Inservice Testing Program, performance of this SR also verifies that pump performance is greater than or equal to the performance assumed in the safety analysis.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.2.5 and SR 3.5.2.6

These Surveillances demonstrate that each automatic ECCS valve actuates to the required position on an actual or simulated SI and RWST level low-low (for RHR semiautomatic switchover to the containment sump) signal and that each ECCS pump starts on receipt of an actual or simulated SI signal. This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~The 18 month Frequency is based on the need to perform these Surveillances under the conditions that apply during a plant outage and the potential for unplanned plant transients if the Surveillances were performed with the reactor at power. The 18 month Frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment. The actuation logic is tested as part of ESF Actuation System testing, and equipment performance is monitored as part of the Inservice Testing Program.~~

Insert 2

SR 3.5.2.7

Periodic inspections of the containment sump suction inlet ensure that it is unrestricted and stays in proper operating condition. There are no high-energy line breaks postulated to occur near the screens, and there are no missiles generated in the vicinity of the suction screens; therefore, there are no jet loads, no pipe whip restraint loads, nor missiles applicable to the screens. The screens are designed to withstand the loading for the largest postulated debris quantity, pieces, and types. The design of the stacked disk screen prevents large debris from reaching the perforated inner area of the screens due to small slots between the screen disks. Structurally, the stacked disk screen is designed as an integral screen and trash rack. Thus, inspection of the stacked disk screens includes the structural aspects of the trash rack. ~~The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage, on the need to have access to the location, and because of the potential for an unplanned transient if the Surveillance were performed with the reactor at power. This Frequency has been found to be sufficient to detect abnormal degradation and is confirmed by operating experience.~~

Insert 2

REFERENCES

1. 10 CFR 50, Appendix A, GDC 35.
2. 10 CFR 50.46.
3. FSAR, Section 6.3, ECCS.

(continued)

BASES

ACTIONS

E.1 and E.2 (continued)

Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.5.4.1

(TI-10982)

Insert 2

The RWST borated water temperature should be verified ~~every 24 hours~~ to be within the limits assumed in the accident analyses band. ~~This Frequency is sufficient to identify a temperature change that would approach either limit and has been shown to be acceptable through operating experience.~~

The SR is modified by a Note that eliminates the requirement to perform this Surveillance when ambient air temperature is ≥ 40°F. With ambient air temperatures ≥ 40°F, the RWST temperature should not exceed the limits. Since ambient air temperatures do not exceed the RWST upper temperature limit, the requirement to verify RWST temperature only when the ambient temperature is below 40°F is acceptable.

SR 3.5.4.2

Insert 2

(LI-0990A&B, LI-0991A&B, LI-0992A, LI-0993A)

The RWST water volume (686,000 gallons) should be verified ~~every 7 days~~ to be above the required minimum level in order to ensure that a sufficient initial supply is available for injection and to support continued ECCS and Containment Spray System pump operation on recirculation. ~~Since the RWST volume is normally stable and is protected by an alarm, a 7 day Frequency is appropriate and has been shown to be acceptable through operating experience.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.4.3

The boron concentration of the RWST should be verified ~~every 7 days~~ to be within the required limits. This SR ensures that the reactor will remain subcritical following a LOCA, and that boron precipitation in the core will not occur. Further, it assures that the resulting sump pH will be maintained in an acceptable range so that the effect of chloride and stress corrosion on mechanical systems and components will be minimized. ~~Since the RWST volume is normally stable, a 7 day sampling Frequency to verify boron concentration is appropriate and has been shown to be acceptable through operating experience.~~

Insert 2

SR 3.5.4.4

Insert 2

(LI-0990, LI-0991)

This Surveillance demonstrates that each automatic sludge mixing pump isolation valve actuates to the closed position on an actual or simulated RWST low-level signal. Automatic isolation of this system is required to ensure adequate RWST level during a Design Bases Event. ~~The 18 month Frequency is acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.~~

REFERENCES

1. FSAR, Chapter 6 and Chapter 15.

BASES (continued)

ACTIONS

A.1

With the seal injection flow exceeding its limit, the amount of charging flow available to the RCS may be reduced. Under this Condition, action must be taken to restore the flow to below its limit. The operator has 8 hours from the time the flow is known to be above the limit to perform SR 3.5.5.1 and correctly position the manual valves and thus be in compliance with the accident analysis. The Completion Time minimizes the potential exposure of the plant to a LOCA with insufficient injection flow and provides a reasonable time to restore seal injection flow to within the limit. This time is conservative with respect to the Completion Times of other ECCS LCOs; it is based on operating experience and is sufficient for taking corrective actions by operations personnel.

B.1 and B.2

When the Required Actions cannot be completed within the required Completion Time, a controlled shutdown must be initiated. The Completion Time of 6 hours for reaching MODE 3 from MODE 1 is a reasonable time for a controlled shutdown, based on operating experience and normal cooldown rates, and does not challenge plant safety systems or operators. Continuing the plant shutdown begun in Required Action B.1, an additional 6 hours is a reasonable time, based on operating experience and normal cooldown rates, to reach MODE 4, where this LCO is no longer applicable.

SURVEILLANCE REQUIREMENTS

SR 3.5.5.1

Insert 2

Verification ~~every 31 days~~ that the manual seal injection throttle valves are adjusted to give a flow within the limit ensures that proper manual seal injection throttle valve position, and hence, proper seal injection flow, is maintained. A differential pressure that is above the reference minimum value is established between the charging header (PT-120, charging header pressure) and the RCS, and the total seal injection flow is verified to be within the limits determined in accordance with the ECCS safety analysis (Ref. 3). The seal water injection flow limits are as shown in figure B 3.5.5-1. ~~The Frequency of 31 days is~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.5.1 (continued)

~~based on engineering judgment and is consistent with other ECCS valve Surveillance Frequencies. The Frequency has proven to be acceptable through operating experience.~~

The requirements for charging flow vary widely according to plant status and configuration. When charging flow is adjusted, the positions of the air-operated valves which control charging flow are adjusted to balance the flows through the charging header and through the seal injection header to ensure that the seal injection flow to the reactor coolant pumps is maintained between 8 and 13 gpm per pump. The reference minimum differential pressure across the seal injection needle valves ensures that regardless of the varied settings of the charging flow control valves that are required to support optimum charging flow, a reference test condition can be established to ensure that flows across the needle valves are within the safety analysis. The values in the safety analysis for this reference set of conditions are calculated based on conditions during power operation and they are correlated to the minimum ECCS flow to be maintained under the most limiting accident conditions.

As noted, the Surveillance is not required to be performed until 8 hours after the RCS pressure has stabilized within a ± 20 psig range of normal operating pressure. The RCS pressure requirement is specified since this configuration will produce the required pressure conditions necessary to assure that the manual valves are set correctly. The exception is limited to 8 hours to ensure that the Surveillance is timely.

REFERENCES

1. FSAR, Chapter 6 and Chapter 15.
2. 10 CFR 50.46.
3. Westinghouse Calculation FRSS/SS-GAE-952.

BASES

SURVEILLANCE REQUIREMENTS	SR 3.5.6.1 (continued) maximum fill level that corresponds to a total TSP volume of between 220 ft^3 and 260 ft^3. The verification that the storage baskets contain the required amount of trisodium phosphate is accomplished by verifying that the TSP level is between the indicated fill marks on the baskets. ~~The 18 month frequency is based on the passive nature of the system and the low probability of an undetected change in the TSP volume occurring during the surveillance interval.~~
REFERENCES	1. FSAR, Section 6.2 2. FSAR, Chapter 15

Insert 2

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.2.1 (continued)

lock leakage (Type B leakage tests). The acceptance criteria were established during initial air lock and containment OPERABILITY testing. The periodic testing requirements verify that the air lock leakage does not exceed the allowed fraction of the overall containment leakage rate. The Frequency is required by the Containment Leakage Rate Testing Program.

The SR has been modified by two Notes. Note 1 states that an inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. This is considered reasonable since either air lock door is capable of providing a fission product barrier in the event of a DBA. Note 2 has been added to this SR requiring the results to be evaluated against the acceptance criteria applicable to SR 3.6.1.1. This ensures that air lock leakage is properly accounted for in determining the overall containment leakage rate.

SR 3.6.2.2

The air lock interlock is designed to prevent simultaneous opening of both doors in a single air lock. Since both the inner and outer doors of an air lock are designed to withstand the maximum expected post accident containment pressure, closure of either door will support containment OPERABILITY. Thus, the door interlock feature supports containment OPERABILITY while the air lock is being used for personnel transit in and out of the containment. Periodic testing of this interlock demonstrates that the interlock will function as designed and that simultaneous opening of the inner and outer doors will not inadvertently occur. ~~Due to the purely mechanical nature of this interlock, this test is only required to be performed every 18 months. The 18 month Frequency is based on engineering judgment and is considered adequate given that the interlock is not challenged in any way during use of the air lock.~~

Insert 2

(continued)

BASES

ACTIONS

C.1, C.2, and C.3 (continued)

automatic valve, closed manual valve, or blind flange. The specified Completion Time is reasonable, considering that one containment purge valve remains closed so that a gross breach of containment does not exist.

In accordance with Required Action C.2, this penetration flow path must be verified to be isolated on a periodic basis. The periodic verification is necessary to ensure that containment penetrations required to be isolated following an accident, which are no longer capable of being automatically isolated, will be in the isolation position should an event occur. This Required Action does not require any testing or valve manipulation. Rather, it involves verification, through a system walkdown, that those isolation devices outside containment capable of being mispositioned are in the correct position. For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.

D.1 and D.2

If the Required Actions and associated Completion Times are not met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.3.1
(HV-2626A, HV-2627A, HV-2628A, HV-2629A)

Each 24 inch containment purge valve is required to be verified sealed closed ~~at 31 day intervals~~. This

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.3.1 (continued)

Surveillance is designed to ensure that a gross breach of containment is not caused by an inadvertent or spurious opening of a containment purge valve. Detailed analysis of the purge valves failed to conclusively demonstrate their ability to close during a LOCA in time to limit offsite doses. Therefore, these valves are required to be in the sealed closed position during MODES 1, 2, 3, and 4. A containment purge valve that is sealed closed must have motive power to the valve operator removed. This can be accomplished by de-energizing the source of electric power. In this application, the term "sealed" has no connotation of leak tightness. Insert 2 ~~The Frequency is a result of an NRC initiative related to containment purge valve use during plant operations. In the event purge valve leakage requires entry into Condition C, the Surveillance permits opening one purge valve in a penetration flow path to perform repairs.~~

SR 3.6.3.2
(HV-2626B, HV-2627B, HV-2628B, HV-2629B)

This SR ensures that the minipurge valves are closed as required or, if open, open for an allowable reason. If a purge valve is open in violation of this SR, the valve is considered inoperable. If the inoperable valve is not otherwise known to have excessive leakage when closed, it is not considered to have leakage outside of limits. The SR is not required to be met when the minipurge valves are open under administrative control. The 14 inch containment purge supply and exhaust isolation valves may be opened under conditions delineated in administrative procedures. These procedures specify those circumstances under which it is acceptable to open the valves; for example, pressure control, establishment of respirable air quality prior to containment entry, maintenance, or surveillance testing. The procedures specify that: (1) the valves must be capable of closing under accident conditions, (2) that the instrumentation for causing isolation of the valves is functioning, and (3) the effluent release will be monitored and that it will be within regulatory limits. The minipurge valves are capable of closing in the environment following a LOCA. Therefore, these valves are allowed to be open for limited periods of time. Insert 2 ~~The 31 day Frequency is consistent with other containment isolation valve requirements discussed in SR 3.6.3.3.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.3.3

This SR requires verification that each containment isolation manual valve and blind flange located outside containment and required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the containment boundary is within design limits. This SR does not require any testing or valve manipulation. Rather, it involves verification, through a system walkdown, that those Containment Isolation valves ~~outside~~ containment and capable of being mispositioned are in the correct position. ~~Since verification of valve position for Containment Isolation valves outside containment is relatively easy, the 31 day Frequency is based on engineering judgment and was chosen to provide added assurance of the correct positions.~~ Insert 2 The SR specifies that Containment Isolation valves that are open under administrative controls are not required to meet the SR during the time the valves are open.

The Note applies to valves and blind flanges located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted during MODES 1, 2, 3 and 4 for ALARA reasons. Therefore, the probability of misalignment of these Containment Isolation valves, once they have been verified to be in the proper position, is small.

SR 3.6.3.4

This SR requires verification that each containment isolation manual valve and blind flange located inside containment and required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the containment boundary is within design limits. For Containment Isolation valves inside containment, the Frequency of "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is appropriate since these Containment Isolation valves are operated under administrative controls and the probability of their

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.3.6

Leak rate testing of the purge supply and exhaust valves with resilient seals is required to be performed ~~every 18 months. This frequency is adequate to verify the leakage rate of these valves and has been shown to be acceptable based on plant-specific historical test data.~~

Insert 2

SR 3.6.3.7

Automatic containment isolation valves close on a containment Phase A or containment ventilation isolation signal to prevent leakage of radioactive material from containment following a DBA. This SR ensures that each automatic containment isolation valve will actuate to its isolation position on a containment Phase A or containment ventilation isolation signal. This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a 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 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~

REFERENCES

1. FSAR, Chapter 15.
2. FSAR, Section 6.2.

Insert 2

BASES

APPLICABILITY (continued)

limitations of these MODES. Therefore, maintaining containment pressure within the limits of the LCO is not required in MODE 5 or 6.

ACTIONS

A.1

When containment pressure is not within the limits of the LCO, it must be restored to within these limits within 1 hour. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, "Containment," which requires that containment be restored to OPERABLE status within 1 hour.

B.1 and B.2

If containment pressure cannot be restored to within limits within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.4.1
(PI-0934, PI-0935, PI-0936, PI-0937, P-9871, PI-10945)

Verifying that containment pressure is within limits ensures that unit operation remains within the limits assumed in the containment analysis. ~~The 12 hour Frequency of this SR was developed based on operating experience related to trending of containment pressure variations during the applicable MODES. Furthermore, the 12 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal containment pressure condition.~~

Insert 2

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.5.1

Location	Tag Number
a. Level 2	TE-2563
b. Level B	TE-2613
c. Level C	TE-2612

NOTE: A local sample may be taken at a corresponding location in lieu of using one of the instruments designated above.

Verifying that containment average air temperature is within the LCO limit ensures that containment operation remains within the limit assumed for the containment analyses. In order to determine the containment average air temperature, an arithmetic average is calculated using measurements taken at locations within the containment selected to provide a representative sample of the overall containment atmosphere. ~~The 24 hour Frequency of this SR is considered acceptable based on observed slow rates of temperature increase within containment as a result of environmental heat sources (due to the large volume of containment). Furthermore, the 24 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal containment temperature condition.~~

Insert 2

REFERENCES

1. FSAR, Section 6.2.
2. 10 CFR 50.49.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.6.2

Operating each pair of containment cooling fan units for ≥ 15 minutes ensures that all fan units are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage or fan or motor failure can be detected ~~for corrective action.~~ ~~The 31 day Frequency was developed considering the known reliability of the fan units and controls, the two train redundancy available, and the low probability of significant degradation of the containment cooling train occurring between surveillances. It has also been shown to be acceptable through operating experience.~~

Insert 2

SR 3.6.6.3

Verifying that the NSCW flow rate to each pair of units (FI-1818A & B and FI-1819A & B) is ≥ 1359 gpm provides assurance that the design flow rate assumed in the safety analyses will be achieved (Ref. 4). ~~The Frequency was developed considering the known reliability of the Cooling Water System, the two train redundancy available, and the low probability of a significant degradation of flow occurring between surveillances.~~

Insert 2

SR 3.6.6.4

Verifying each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head ensures that spray pump performance has not degraded during the cycle. Flow and differential pressure are normal tests of centrifugal pump performance required by Section XI of the ASME Code (Ref. 6). Since the containment spray pumps cannot be tested with flow through the spray headers, they are tested on recirculation flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice testing confirms component OPERABILITY, trend performance, and detect incipient failures by abnormal performance. The Frequency of the SR is in accordance with the Inservice Testing Program.

In addition to the acceptance criteria of the Inservice Testing Program, performance of this SR also verifies that

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.6.4 (continued)

pump performance is greater than or equal to the performance assumed in the safety analysis.

SR 3.6.6.5 and SR 3.6.6.6

Insert 2

These SRs require verification that each automatic containment spray valve actuates to its correct position and that each containment spray pump starts upon receipt of an actual or simulated actuation of a containment High-3 pressure signal. This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~The 18 month Frequency is based on the need to perform these Surveillances under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillances were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillances when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~

The surveillance of containment sump isolation valves is also required by SR 3.5.2.5. A single surveillance may be used to satisfy both requirements.

SR 3.6.6.7

Insert 2

This SR requires verification that each containment cooling train actuates upon receipt of an actual or simulated safety injection signal and operates at low speed. ~~The 18 month Frequency is based on engineering judgment and has been shown to be acceptable through operating experience. See SR 3.6.6.5 and SR 3.6.6.6, above, for further discussion of the basis for the 18 month Frequency.~~

SR 3.6.6.8

With the containment spray inlet valves closed and the spray header drained of any solution, low pressure air or smoke can be blown through test connections. This SR ensures that

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.6.8 (continued)

each spray nozzle is unobstructed and provides assurance that spray coverage of the containment during an accident is not degraded. ~~Due to the passive design of the nozzle, a test at 10 year intervals is considered adequate to detect obstruction of the nozzles.~~

Insert 2

REFERENCES

1. 10 CFR 50, Appendix A, GDC 38, GDC 39, GDC 40, GDC 41, GDC 42, and GDC 43.
2. 10 CFR 50, Appendix K.
3. FSAR, Chapter 16.
4. FSAR, Section 6.2.
5. Not used.
6. ASME, Boiler and Pressure Vessel Code, Section XI.

BASES

ACTIONS

C.1 and C.2 (continued)

achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 18 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.4.1

To perform a controlled cooldown of the RCS, the ARVs must be able to be opened either remotely or locally and throttled through their full range. This SR ensures that the ARVs are tested through a full control cycle at least once per fuel cycle. Performance of inservice testing or use of an ARV during a unit cooldown may satisfy this requirement. ~~Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. The Frequency is acceptable from a reliability standpoint.~~

REFERENCES

1. FSAR, Section 10.3.
2. FSAR, Subsection 15.6.3.
3. WCAP-11731, LOFTTR2 Analysis for a Steam Generator Tube Rupture Event for the Vogtle Electric Generating Plant Units 1 and 2, January 1988, and Westinghouse letter GP-16886, J. L. Tain to J.B. Beasley, Jr., SGTR Analysis With Revised Operator Action Times and SECL 98-124, Revision 0, dated December 4, 1998.

Insert 2

BASES

ACTIONS

D.1 (continued)

Required Action D.1 is modified by a Note indicating that all required MODE changes or power reductions are suspended until one AFW train is restored to OPERABLE status. In this case, LCO 3.0.3 is not applicable because it could force the unit into a less safe condition.

SURVEILLANCE REQUIREMENTS

SR 3.7.5.1

Verifying the correct alignment for manual, power operated, and automatic valves in the AFW System water and steam supply flow paths provides assurance that the proper flow paths will exist for AFW operation. The correct position is the position of the valves necessary to support the operational needs of the plant at that time, including during low power operation and surveillance testing, provided that the requirements of the Technical Specification safety analysis are met. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since they are verified to be in the correct position prior to locking, sealing, or securing. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. This Surveillance does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position.

Insert 2

~~The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.~~

SR 3.7.5.2

Verifying that each AFW pump's developed head at the flow test point is greater than or equal to the required developed head ensures that AFW pump performance has not degraded during the cycle. Flow and differential head are normal tests of centrifugal pump performance required by Section XI of the ASME Code (Ref. 2). Because it is undesirable to introduce cold AFW into the steam generators while they are operating, this testing is performed on recirculation flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. Performance of inservice testing discussed in the ASME Code, Section XI (Ref. 2) (only required at 3 month intervals) satisfies this requirement. The 31 day frequency on a STAGGERED TEST BASIS results in

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.5.2 (continued)

testing each pump once every 3 months, as required by Ref. 2.

In addition to the acceptance criteria of the Inservice Testing Program, performance of this SR also verifies that pump performance is greater than or equal to the performance assumed in the safety analysis.

This SR is modified by a Note allowing the SR to be deferred until suitable test conditions are established. This deferral may be required because there may be insufficient steam pressure to perform the test.

SR 3.7.5.3

Insert 2

This SR verifies that AFW can be delivered to the appropriate steam generator in the event of any accident or transient that generates an ESFAS, by demonstrating that each automatic valve in the flow path actuates to its correct position on an actual or simulated actuation signal. This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power.~~ However, for the turbine driven AFW train this SR may be performed in conjunction with ASME Section XI full flow check valve testing which must be performed when steam is available to run the turbine driven AFW pump. ~~The 18 month Frequency is acceptable based on operating experience and the design reliability of the equipment.~~

SR 3.7.5.4

Insert 2

his SR verifies that the AFW pumps will start in the event of any accident or transient that generates an ESFAS by demonstrating that each AFW pump starts automatically on an actual or simulated actuation signal. ~~The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power.~~ However, for the turbine driven AFW train this SR must be performed when steam is available to run the pump.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.5.4 (continued)

This SR is modified by a Note allowing the SR to be deferred until suitable test conditions are established. This deferral may be required because there may be insufficient steam pressure to perform the test.

SR 3.7.5.5 and SR 3.7.5.6

These surveillances demonstrate that each AFW pumphouse ESF supply fan 1/2-1593-B7-001 and 1/2-1593-B7-002 and associated shutoff dampers actuate to their correct position on a simulated or actual high room temperature signal, and that the ESF outside air intake and exhaust dampers for the turbine-driven AFW pump actuate to the correct position on a simulated or actual turbine-driven AFW pump automatic start signal. These HVAC systems provide ventilation to limit the air temperature in the AFW pump rooms and are required to support the OPERABILITY of the associated AFW pump. ~~The frequency of 18 months has been shown to be adequate to verify the required equipment actuations based on operating experience and is consistent with similar component actuation testing requirements for other ESF systems.~~

REFERENCES

1. FSAR, Subsection 10.4.9.
2. ASME, Boiler and Pressure Vessel Code, Section XI.

Insert 2

THIS PAGE APPLICABLE TO UNIT 1 ONLY

BASES (continued)

ACTIONS

A.1 and A.2

If the required CST volume is not within limit, the Completion Time of 2 hours provides sufficient time for the three AFW pumps to be aligned to the OPERABLE CST. This Completion Time is acceptable based on: 1) Operating experience to perform the required valve operations; 2) The ACTIONS being entered as soon as the CST level decreased below the limit, which would most probably leave sufficient capacity in the inoperable CST to support AFW pump operation for at least the 2 hour Completion Time; and 3) The low probability of an event occurring during this interval that would require the CST to be fully OPERABLE.

B.1 and B.2

If the AFW pumps cannot be aligned to an OPERABLE CST within the required Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.6.1

CST V4001 (LI-5101 and LI-5111A)
CST V4002 (LI-5104 and LI-5116A)

Insert 2

This SR verifies that the CST contains the required volume of cooling water. ~~The 12 hour Frequency is based on operating experience and the need for operator awareness of unit evolutions that may affect the CST inventory between checks. Also, the 12 hour Frequency is considered adequate in view of other indications in the control room, including alarms, to alert the operator to abnormal deviations in the CST level.~~

THIS PAGE APPLICABLE TO UNIT 2 ONLY

BASES (continued)

ACTIONS

A.1 and A.2

If one or both of the CST volumes are not within limits, the volume(s) must be restored to within limits within 2 hours. This Completion Time is acceptable based on : 1) The ACTIONS being entered as soon as the CST level(s) decreased below limit(s), which would provide reasonable assurance of at least sufficient capacity to support AFW operation for at least the 2 hour Completion Time; and 2) The low probability of an event occurring during this interval that would require the CSTs to be fully OPERABLE.

B.1 and B.2

If the AFW pumps cannot be aligned to an OPERABLE CST within the required Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.6.1

CST V4001 (LI-5101 and LI-5111A)
CST V4002 (LI-5104 and LI-5116A)

This SR verifies that the CSTs contain the required volumes of cooling water. ~~The 12 hour Frequency is based on operating experience and the need for operator awareness of unit evolutions that may affect the CST inventory between checks. Also, the 12 hour Frequency is considered adequate in view of other indications in the control room, including alarms, to alert the operator to abnormal deviations in the CST level.~~

Insert 2

(continued)

BASES

ACTIONS (continued)

B.1 and B.2

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

SURVEILLANCE REQUIREMENTS

SR 3.7.7.1

This SR is modified by a Note indicating that the isolation of the CCW flow to individual components may render those components inoperable but does not affect the OPERABILITY of the CCW System.

Verifying the correct alignment for manual, power operated, and automatic valves in the CCW flow path provides assurance that the proper flow paths exist for CCW 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. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. This Surveillance does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position.

Insert 2

~~The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.~~

SR 3.7.7.2

This SR verifies proper automatic operation of the CCW pumps on an actual or simulated actuation signal. The CCW System is a normally operating system that cannot be fully actuated as part of routine testing during normal operation. ~~The~~

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.7.2 (continued)

~~18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~

REFERENCES

1. FSAR, Subsection 9.2.2.
2. Regulatory Guide 1.139, Guidance for Residual Heat Removal, May 1978.
3. Branch Technical Position RSB 5-1, Design Requirements of the Residual Heat Removal System, Rev. 2, July 1981.
4. FSAR, Subsection 5.4.7.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.8.1 (continued)

Consideration should be given to the impact that isolating a load will have on the rest of the NSCW System before determining OPERABILITY.

Verifying the correct alignment for manual, power operated, and automatic valves in the NSCW System flow path provides assurance that the proper flow paths exist for NSCW System operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since they are verified to be in the correct position prior to being locked, sealed, or secured. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves.

Insert 2

~~The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.~~

~~SR 3.7.8.2~~

This SR verifies proper automatic operation of the NSCW System valves on an actual or simulated SI actuation signal. The NSCW System is a normally operating system that cannot be fully actuated as part of normal testing. This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls.

Insert 2

~~The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.8.3

This SR verifies proper automatic operation of the NSCW System pumps on an actual or simulated SI actuation signal. The NSCW System is a normally operating system that cannot be fully actuated as part of normal testing during normal operation. ~~The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~

REFERENCES

1. FSAR, Subsection 9.2.1.
2. FSAR, Section 6.2.
3. FSAR, Subsection 5.4.7.

Insert 2

BASES

ACTIONS (continued)

D.1 and D.2

If the Required Actions of Conditions A, B, or C are not completed within their associated Completion Times or if the UHS is inoperable for reasons other than described in Conditions A, B, or C, 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 in 6 hours and in MODE 5 within 36 hours.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.9.1

Insert 2

This SR verifies that adequate long term (30 day) cooling can be maintained. The specified level also ensures that sufficient NPSH ~~is available to operate the NSCW System pumps. The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES. This SR verifies that the UHS water level is ≥ 80.25 feet (plant elevation of 217 feet 3 inches or 73% of instrument span on LI-1606 and LI-1607).~~

SR 3.7.9.2

Insert 2

This SR verifies that the NSCW System is available to cool the ~~CCW System~~ to at least its maximum design temperature with the maximum accident ~~or normal~~ design heat loads for 30 days following a Design Basis Accident. ~~The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES. This SR verifies that the water temperature of the UHS is ≤ 90°F (TJI-1690 and TJI-1691).~~

SR 3.7.9.3

Operating each required NSCW cooling tower fan for ≥ 15 minutes ensures that all required fans are OPERABLE and that all associated controls are functioning properly.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.9.3 (continued)

It also ensures that fan or motor failure, or excessive vibration, can be detected for corrective action~~. The 31 day Frequency is based on operating experience, the known reliability of the fan units, the redundancy available, and the low probability of significant degradation of the UHS cooling tower fans occurring between surveillances.~~

Insert 2

SR 3.7.9.4

The verification of NSCW basin transfer pump operation includes testing to verify the pump's developed head at the flow test point is greater than or equal to the required developed head. Flow and differential head are normal tests of centrigual pump performance required by Section XI of the ASME Code (Ref. 3). This test confirms one point on the pumps 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 performance of this surveillance in accordance with the Inservice Testing Program satisfies the requirements of Ref. 3.

SR 3.7.9.5

With one tower fan out-of-service this SR verifies that ambient wet-bulb temperature remains ≤ 63°F so that the NSCW system remains capable of performing its design basis function. Requiring this SR when forecasted temperature is > 48°F provides assurance that the ambient wet-bulb temperature of 63°F will not be exceeded while the fan is out-of-service. The 24-hour frequency is sufficient since the daily peak temperature is expected to occur once in a 24-hour interval. Measurement of the ambient wet-bulb temperature should be made near the time when the daily peak temperature is expected to occur with a psychrometer in an open area, away from sources of moisture, heat or wind, and within the owner-controlled area at Plant Vogtle.

REFERENCES

1. FSAR, Subsection 9.2.5.
2. Regulatory Guide 1.27.
3. ASME, Boiler and Pressure Vessel Code, Section XI.

BASES

ACTIONS

F.1, F.2, and F.3 (continued)

the following 36 hours, which removes the requirement for CRE occupant protection in the event of an SI in the affected unit(s). These actions ensure that if the CRE occupants cannot be protected from all postulated accident and single failure conditions, the unit or units are placed in a MODE where the protection is no longer required. The allowed Completion Times are reasonable, based on operating experience, to perform the Required Actions and to reach the required unit conditions from full power conditions in an orderly manner without challenging unit systems.

Required Action F.1 is modified by a Note that excepts Conditions B, D, and E. Conditions B, D, and E affect both units, and Required Action F.1 is based on a single affected unit. Therefore, upon entry into Condition F from Condition B, D, or E, only Required Actions F.2 and F.3 apply.

SURVEILLANCE REQUIREMENTS

SR 3.7.10.1

The CREFS is required to maintain the CRE temperature ≤ 85°F in the event of a CRI. The maintenance of the CRE below this temperature ensures the operational requirements of equipment located in the CRE will not be exceeded. To accomplish this function, the CREFS air flow is directed through cooling coils which are supplied by the Essential Chilled Water System. The design cooling capacity of the CREFS and the limitation of the normal CRE ambient temperature (before CRI) ensure the capability of the CREFS to maintain the CRE temperature within limit after a CRI. Insert 2 ~~The CRE temperature is verified every 12 hours, and operating experience has proven this Frequency to be adequate.~~

SR 3.7.10.2

Standby systems should be checked periodically to ensure that they function properly. As the environment and normal operating conditions on this system are not too severe, testing each train once every month provides an adequate check of this system. Monthly operations with the heater control circuit energized allows the heaters to operate as necessary to reduce the humidity in the

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.10.2 (continued)

ambient air and ensure excessive moisture (> 70% relative humidity) is removed from the adsorber and HEPA filters. Systems with heaters must be operated for ≥ 10 continuous hours with the heater control circuit energized and flow (FI-12191, FI-12192) through the HEPA filters and charcoal adsorbers~~. The 31 day Frequency is based on the reliability of the equipment and the two train per unit redundancy.~~

Insert 2

SR 3.7.10.3

This SR verifies that the required CREFS testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The CREFS filter tests are in accordance with Regulatory Guide 1.52 (Ref. 4). The VFTP includes testing the performance of the HEPA filter, charcoal adsorber efficiency, minimum flow rate, and the physical properties of the activated charcoal. Specific test Frequencies and additional information are discussed in detail in the VFTP.

SR 3.7.10.4

This SR verifies that each CREFS train starts and operates on an actual or simulated actuation signal~~. The Frequency of 18 months is based on industry operating experience and is consistent with the typical refueling cycle.~~

Insert 2

SR 3.7.10.5

This SR verifies the OPERABILITY of the CRE boundary by testing for unfiltered air inleakage past the CRE boundary and into the CRE. The details of the testing are specified in the Control Room Envelope Habitability Program. The CRE is considered habitable when the radiological dose to CRE occupants calculated in the licensing basis analyses of DBA consequences is no more than 5 rem whole body or its equivalent to any part of the body and the CRE occupants are protected from hazardous chemicals and smoke. This SR verifies that the unfiltered air inleakage into the CRE is no greater than the flow rate assumed in the licensing basis analyses of DBA consequences. When unfiltered air inleakage is greater than the assumed flow rate, Condition D must

(continued)

BASES

ACTIONS

B.1 (continued)

probability of a DBA occurring during this time period and the use of compensatory measures. The 24-hour Completion Time is a typically reasonable time to test, diagnose, and plan and possibly execute a repair of most problems with the PPAFES boundary.

C.1 and C.2

If the inoperable train cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 within 36 hours. The Completion Times are reasonable, based 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 3.7.13.1

Standby systems should be checked periodically to ensure that they function properly. As the environmental and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on this system. Flow (FI-12629 and FI-12542) through the HEPA and charcoal filters is verified. Systems that do not take credit for humidity control (heaters) need only be operated for ≥ 15 minutes to demonstrate the function of the system. Insert 2 ~~The 31 day Frequency is based on the known reliability of equipment and the two train redundancy available.~~

SR 3.7.13.2

This SR verifies that the required PPAFES testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The PPAFES filter tests are in accordance with Regulatory Guide 1.52 (Ref. 5). 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.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.13.3

This SR verifies that each PPAFES starts and operates on an actual or simulated containment ventilation isolation ~~signal. The 18 month Frequency is consistent with that specified in Reference 5.~~

Insert 2

SR 3.7.13.4

This SR verifies the integrity of the penetration room enclosure. The ability of the penetration room to maintain a negative pressure, with respect to potentially uncontaminated adjacent areas, is periodically tested to verify proper function of PPAFES. During the post accident mode of operation, the PPAFES is designed to maintain a negative pressure ≥ 0.250 inches water gauge relative to atmospheric pressure (PDI-2550 and PDI-2551 in rooms ~~R1-63 and R1-64)~~ at a flow rate of 15,500 ± 10% cfm in the penetration room to prevent unfiltered ~~LEAKAGE. The Frequency of 18 months is consistent with the guidance provided in NUREG-0800 (Ref. 6).~~

Insert 2

The minimum system flow rate maintains a slight negative pressure in the penetration room area, and provides sufficient air velocity to transport particulate contaminants, assuming only one filter train is operating. The number of filter elements is selected to limit the flow rate through any individual element to about 15,500 ± 10% cfm. The maximum limit ensures that the flow through, and pressure drop across, each filter element are not excessive.

The number and depth of the adsorber elements ensure that, at the maximum flow rate, the residence time of the air stream in the charcoal bed achieves the desired adsorption rate. At least a 0.250 second residence time per 2 inch of bed depth is necessary for an assumed 90% efficiency.

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

Insert 2

This test is conducted along with the tests for filter penetration; ~~thus, the 18 month Frequency is consistent with that specified in Reference 5.~~

(continued)

BASES (continued)

REFERENCES

1. FSAR, Subsection 6.5.1.
2. FSAR, Subsection 9.4.3.
3. FSAR, Subsection 15.6.5.
4. 10 CFR 100.
5. ~~Regulatory Guide 1.52, Rev. 2.~~
6. ~~NUREG-0800, Section 6.5.1, Rev. 2, July 1981.~~

BASES

ACTIONS (continued)

B.1 and B.2

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

SURVEILLANCE REQUIREMENTS

SR 3.7.14.1

Verifying the correct alignment for manual, power operated, and automatic valves servicing safety-related equipment provides assurance that the proper flow paths exist for ESF room cooler and safety-related chiller system operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since they are verified to be in the correct position prior to being locked, sealed, or secured. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves.

Insert 2

~~The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.~~

SR 3.7.14.2

This SR verifies proper automatic operation of the ESF room cooler and safety-related chiller system valves servicing safety-related equipment on an actual or simulated actuation signal. The safety-related chiller trains are also required to operate on a CRI signal. This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative

(continued)

BASES

Insert 2

SURVEILLANCE REQUIREMENTS

SR 3.7.14.2 (continued)

controls. ~~Operating experience has shown that these components usually pass the surveillance when performed at the 18 month frequency. Therefore, the 18 month frequency is acceptable from a reliability standpoint.~~

SR 3.7.14.3

This SR verifies proper operation of the ESF room cooler and safety-related chiller system fans and pumps on an actual or simulated actuation signal. The safety-related chiller system is also required to automatically start on a CRI signal. ~~Operating experience has shown that these components usually pass the surveillance when performed at the 18 month Frequency. Therefore, the 18 month frequency is acceptable from a reliability standpoint.~~

Insert 2

REFERENCES

1. FSAR, Section 7.3.
2. FSAR, Section 9.4.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.15.1 (continued)

water level in the fuel storage pool must be checked periodically. ~~The 7 day Frequency is appropriate because the volume in the pool is normally stable. Water level changes are controlled by plant procedures and are acceptable based on operating experience.~~

Insert 2

During refueling operations, the level in the fuel storage pool is in equilibrium with the refueling canal, and the level in the refueling canal is checked daily in accordance with SR 3.9.7.1.

REFERENCES

1. FSAR, Subsection 9.1.2.
2. FSAR, Subsection 9.1.3.
3. FSAR, Subsection 15.7.4.
4. Regulatory Guide 1.25, Rev. 0.
5. 10 CFR 100.11.

BASES

LCO (continued)

to place the unit in an operational MODE that would minimize the radiological consequences of a DBA.

APPLICABILITY

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

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

ACTIONS

A.1 and A.2

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

SURVEILLANCE REQUIREMENTS

SR 3.7.16.1

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

Insert 2

(continued)

BASES (continued)

ACTIONS

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

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

When the concentration of boron in the fuel storage pool is less than required, immediate action must be taken to preclude the occurrence of an accident or to mitigate the consequences of an accident in progress. This is most efficiently achieved by immediately suspending the movement of fuel assemblies. Immediate action to restore the concentration of boron is also required simultaneously with suspending movement of fuel assemblies. This does not preclude movement of a fuel assembly to a safe position If the LCO is not met while moving irradiated fuel assemblies in MODE 5 or 6, LCO 3.0.3 would not be applicable. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operation. Therefore, inability to suspend movement of fuel assemblies is not sufficient reason to require a reactor shutdown.

Insert 2

SURVEILLANCE REQUIREMENTS

SR 3.7.17.1

This SR verifies that the concentration of boron in the fuel storage pool is within the required limit. As ~~long~~ as this SR is met, the analyzed accidents are fully addressed. ~~The 7 day Frequency is appropriate because no major replenishment of pool water is expected to take place over such a short period of time.~~ The gate between the Unit 1 and Unit 2 fuel storage pool is normally open. When the gate is open the pools are considered to be connected for the purpose of conducting the surveillance.

REFERENCES

1. USNRC Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants, LWR Edition. NUREG-0800, June 1987.

2. USNRC Spent Fuel Storage Facility Design Bases (for Comment) Proposed Revision 2, 1981. Regulatory Guide 1.13.

3. ANS, "Design Requirements for Light Water Reactor Spent Fuel Storage Facilities at Nuclear Power Stations," ANSI/ANS-57.2-1983.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

Where the SRs discussed herein specify voltage and frequency tolerances, the following is applicable. The minimum steady state output voltage of 3750 V is 90% of the nominal 4160 V output voltage. This value, which is specified in ANSI C84.1 (Ref. 11), allows for voltage drop to the terminals of 4000 V motors whose minimum operating voltage is specified as 90% or 3600 V. It also allows for voltage drops to motors and other equipment down through the 120 V level where minimum operating voltage is also usually specified as 90% of name plate rating. The specified maximum steady state output voltage of 4330 V will limit the 480 V bus voltage to within the maximum operating voltage specified for 460 V motors. It ensures that for a lightly loaded distribution system, the voltage at the terminals of 460 V motors is no more than the maximum rated operating voltages. The specified minimum and maximum frequencies of the DG are 58.8 Hz and 61.2 Hz, respectively. These values are equal to ± 2% of the 60 Hz nominal frequency and are derived from the recommendations given in Regulatory Guide 1.9 (Ref. 3).

Insert 2

~~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.~~

SR 3.8.1.2 and SR 3.8.1.7

These SRs help to ensure the availability of the standby electrical power supply to mitigate DBAs and transients and to maintain the unit in a safe shutdown condition.

To minimize the wear on moving parts that do not get lubricated when the engine is not running, these SRs are modified by a Note (Note 2 for SR 3.8.1.2) to indicate that all DG starts for these Surveillances may be preceded by an

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.2 and SR 3.8.1.7 (continued)

engine prelube period and followed by a warmup period prior to loading.

For the purposes of SR 3.8.1.2 and SR 3.8.1.7 testing, the DGs are started from standby conditions. Standby conditions for a DG mean that the diesel engine coolant and oil are being continuously circulated and temperature is being maintained consistent with manufacturer recommendations.

In order to reduce stress and wear on diesel engines, the manufacturer recommends a modified start in which the starting speed of DGs is limited, warmup is limited to this lower speed, and the DGs are gradually accelerated to synchronous speed prior to loading. These start procedures are the intent of Note 3.

SR 3.8.1.7 requires that~~, at a 184 day Frequency,~~ the DG starts from standby conditions and achieves required voltage and frequency within 11.4 seconds. The 11.4 second start requirement supports the assumptions of the design basis LOCA analysis in the FSAR, Chapter 15 (Ref. 5).

The 11.4 second start requirement is not applicable to SR 3.8.1.2 (see Note 3) when a modified start procedure as described above is used. If a modified start is not used, the 11.4 second start requirement of SR 3.8.1.7 applies.

Insert 2

Since SR 3.8.1.7 requires a 11.4 second start, it is more restrictive than SR 3.8.1.2, and it may be performed in lieu of SR 3.8.1.2. This is the intent of Note 1 of SR 3.8.1.2.

~~The normal 31 day Frequency for SR 3.8.1.2 is consistent with Regulatory Guide 1.9 (Ref. 3). The 184 day Frequency for SR 3.8.1.7 is a reduction in cold testing consistent with Generic Letter 84-15 (Ref. 7). These Frequencies provide adequate assurance of DG OPERABILITY, while minimizing degradation resulting from testing.~~

SR 3.8.1.3

This Surveillance verifies that the DGs are capable of synchronizing with the offsite electrical system and accepting loads greater than or equal to the equivalent of

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.3 (continued)

the maximum expected accident loads. A minimum run time of 60 minutes is required to stabilize engine temperatures, while minimizing the time that the DG is connected to the offsite source.

Although no power factor requirements are established by this SR, the DG is normally operated at a power factor between 0.8 lagging and 1.0. The 0.8 value is the design rating of the machine, while the 1.0 is an operational limitation to ensure circulating currents are minimized. The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY.

Insert 2

~~The 31 day Frequency for this Surveillance is consistent with Regulatory Guide 1.9 (Ref. 3).~~

This SR is modified by four Notes. Note 1 indicates that diesel engine runs for this Surveillance may include gradual loading, as recommended by the manufacturer, so that mechanical stress and wear on the diesel engine are minimized. Note 2 states that momentary transients, because of changing bus loads, do not invalidate this test. Similarly, momentary power factor transients above the limit do not invalidate the test. Note 3 indicates that this Surveillance should be conducted on only one DG at a time in order to avoid common cause failures that might result from offsite circuit or grid perturbations. Note 4 stipulates a prerequisite requirement for performance of this SR.

A successful DG start must precede this test to credit satisfactory performance.

SR 3.8.1.4

This SR provides verification that the level of fuel oil in the day tank is at or above the required level (650 gallons). The level is expressed as an equivalent volume in gallons, and is selected to ensure adequate fuel oil for a minimum of 1 hour of DG operation at full load plus 10% (52% of instrument span LI-9018, LI-9019).

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.4 (continued)

~~The 31 day Frequency is adequate to assure that a sufficient supply of fuel oil is available, since low level alarms are provided and facility operators would be aware of any large uses of fuel oil during this period.~~

Insert 2

SR 3.8.1.5

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the fuel oil day 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 DG operation. Water may come from any of several sources, including condensation, ground water, rain water, contaminated fuel oil, and breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the ~~fuel oil system. The Surveillance Frequencies are established by Regulatory Guide 1.137 (Ref. 10). This SR is for preventative maintenance.~~ The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during the performance of this Surveillance.

Insert 2

SR 3.8.1.6

This Surveillance demonstrates that each required fuel oil transfer pump operates and transfers fuel oil from its associated storage tank to its associated day tank. This is required to support continuous operation of standby power sources. This Surveillance provides assurance that the fuel oil transfer pump is OPERABLE, the fuel oil piping system is intact, the fuel delivery piping is not obstructed, and the controls and control systems for automatic fuel transfer systems are OPERABLE. ~~The frequency of 31 days is adequate~~

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.6 (continued)

~~to verify proper automatic operation of the fuel transfer pumps to maintain the required volume of fuel oil in the day tanks. This frequency has been proven acceptable through operating experience.~~

SR 3.8.1.7

See SR 3.8.1.2.

SR 3.8.1.8

Each DG is provided with an engine overspeed trip to prevent damage to the engine. Recovery from the transient caused by the loss of a large load could cause diesel engine overspeed, which, if excessive, might result in a trip of the engine. This Surveillance demonstrates the DG load response characteristics and capability to reject the largest single load without exceeding predetermined voltage and frequency and while maintaining a specified margin to the overspeed trip. The single largest load is an Auxiliary Feedwater pump motor rated at 900 horsepower and 671 kW. This surveillance may be accomplished by: 1) Tripping the DG output breaker with the DG carrying greater than or equal to its associated single largest load while paralleled to offsite power, or while solely supplying the bus, or 2) Tripping the associated single largest load with the DG solely supplying the bus. As required by IEEE-308 (Ref. 12), the load rejection test is acceptable if the increase in diesel speed does not exceed 75% of the difference between synchronous speed and the overspeed trip setpoint, or 15% above synchronous speed, whichever is lower.

The time, voltage, and frequency tolerances specified in this SR are derived from Regulatory Guide 1.9 (Ref. 3) recommendations for response during load sequence intervals. The upper voltage limit (SR 3.8.1.8.b) associated with the DG operating in parallel with the grid is based on the operation of the droop circuit and its potential to increase the stabilizing voltage by as much as 5% over the maximum

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.8 (continued)

Insert 2

starting voltage of 4330 V. The 3 seconds specified is equal to 60% of a typical 5 second load sequence interval associated with sequencing of the largest load. The voltage and frequency specified are consistent with the design range of the equipment powered by the DG. SR 3.8.1.8.a corresponds to the maximum frequency excursion, while SR 3.8.1.8.b and SR 3.8.1.8.c are steady state voltage and frequency values to which the system must recover following load rejection. ~~The 18 month Frequency is consistent with the recommendation of Regulatory Guide 1.108 (Ref. 9).~~

In order to ensure that the DG is tested under load conditions that are as close to design basis conditions as possible when synchronized to offsite power, testing must be performed using a power factor as close as practicable to ≤ 0.9 while maintaining voltage ≤ 4330 V. This power factor is chosen to be representative of the actual design basis inductive loading that the DG would experience. The voltage limit of 4330 V is required to prevent operation of any loads at or above the maximum design voltage.

This SR is modified by a Note. The Note acknowledges that credit may be taken for unplanned events that satisfy this SR. Examples of unplanned events may include:

1. Unexpected operational events which cause the equipment to perform the function specified by this Surveillance, for which adequate documentation of the required performance is available; and

2. Post Corrective maintenance testing that requires performance of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to maintain OPERABILITY or reliability.

SR 3.8.1.9

This Surveillance demonstrates the DG capability to reject a full load without overspeed tripping or exceeding the predetermined voltage limits. The DG full load rejection may occur because of a system fault or inadvertent breaker

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.9 (continued)

tripping. This Surveillance ensures proper engine generator load response under the simulated test conditions. This test simulates the loss of the total connected load that the DG experiences following a full load rejection and verifies that the DG does not trip upon loss of the load. These acceptance criteria provide for DG damage protection. While the DG is not expected to experience this transient during an event and continues to be available, this response ensures that the DG is not degraded for future application, including reconnection to the bus if the trip initiator can be corrected or isolated.

In order to ensure that the DG is tested under load conditions that are as close to design basis conditions as possible, testing must be performed using a kVAR load as close as practicable to 3390 kVAR while maintaining voltage ≤ 4330 V. This kVAR load is chosen to be representative of the actual design basis inductive loading that the DG would experience. The voltage limit of 4330 V is required to prevent operation of any loads at or above the maximum design voltage.

Insert 2

~~The 18 month Frequency is consistent with the recommendation of Regulatory Guide 1.108 (Ref. 9) and is intended to be consistent with expected fuel cycle lengths.~~

This SR is been modified by a Note. Credit may be taken for unplanned events that satisfy this SR. Examples of unplanned events may include:

1. Unexpected operational events which cause the equipment to perform the function specified by this Surveillance, for which adequate documentation of the required performance is available; and

2. Post Corrective maintenance testing that requires performance of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to maintain OPERABILITY or reliability.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.10

As required by Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(1), this Surveillance demonstrates the as designed operation of the standby power sources during loss of the offsite source. This test verifies all actions encountered from the loss of offsite power, including shedding of the nonessential loads and energization of the emergency buses and respective loads from the DG. It further demonstrates the capability of the DG to automatically achieve the required voltage and frequency within the specified time.

The DG autostart time of 11.4 seconds is derived from requirements of the accident analysis to respond to a design basis large break LOCA. An additional tenth of a second is allowed for energizing permanently connected loads, thus the 11.5 second requirement in this surveillance. The Surveillance should be continued for a minimum of 5 minutes in order to demonstrate that all starting transients have decayed and stability is achieved.

The requirement to verify the connection and power supply of permanent and autoconnected loads is intended to satisfactorily show the relationship of these loads to the DG loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. For instance, Emergency Core Cooling Systems (ECCS) injection valves are not desired to be stroked open, or high pressure injection systems are not capable of being operated at full flow, or residual heat removal (RHR) systems performing a decay heat removal function are not desired to be realigned to the ECCS mode of operation. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the DG systems to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

Insert 2

~~The Frequency of 18 months is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(1), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.11 (continued)

for undesired operation. For instance, ECCS injection valves are not desired to be stroked open, or high pressure injection systems are not capable of being operated at full flow, or RHR systems performing a decay heat removal function are not desired to be realigned to the ECCS mode of operation. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

Insert 2

~~The Frequency of 18 months takes into consideration unit conditions required to perform the Surveillance and is intended to be consistent with the expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~

This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations. The reason for Note 2 is that during operation with the reactor critical, performance of this Surveillance could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. Credit may be taken for unplanned events that satisfy this SR. Examples of unplanned events may include:

1. Unexpected operational events which cause the equipment to perform the function specified by this Surveillance, for which adequate documentation of the required performance is available; and

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.11 (continued)

2. Post Corrective maintenance testing that requires performance of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to maintain OPERABILITY or reliability.

SR 3.8.1.12

This Surveillance demonstrates that DG noncritical protective functions (e.g., high jacket water temperature) are bypassed on a loss of voltage signal concurrent with an ESF actuation test signal. The noncritical trips are bypassed during DBAs and provide an alarm on an abnormal engine condition. This alarm provides the operator with sufficient time to react appropriately. The DG availability to mitigate the DBA is more critical than protecting the engine against minor problems that are not immediately detrimental to emergency operation of the DG.

Insert 2

~~The 18 month Frequency is based on engineering judgment, taking into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~

The SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required DG from service. Credit may be taken for unplanned events that satisfy this SR. Examples of unplanned events may include:

1. Unexpected operational events which cause the equipment to perform the function specified by this Surveillance, for which adequate documentation of the required performance is available; and

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.12 (continued)

2. Post Corrective maintenance testing that requires performance of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to maintain OPERABILITY or reliability.

SR 3.8.1.13

This Surveillance Requirement demonstrates that the DGs can start and run continuously at loads in excess of the maximum expected loading for an interval of not less than 24 hours, ≥ 2 hours of which is at a load equivalent to ≥ 105% of the maximum expected loading and the remainder of the time at a load equivalent to the maximum expected loading of the DG. The DG starts for this Surveillance can be performed either from standby or hot conditions. The provisions for prelubricating and warmup, discussed in SR 3.8.1.2, and for gradual loading, discussed in SR 3.8.1.3, are applicable to this SR.

In order to ensure that the DG is tested under load conditions that are as close to design basis conditions as possible, testing must be performed using a kVAR load as close as practicable to 3390 kVAR while loaded ≥ 6500 kW and maintaining voltage ≤ 4330 V. This kVAR load is chosen to be representative of the actual design basis inductive loading that the DG would experience. The voltage limit of 4330 V is required to prevent operation of any loads at or above the maximum design voltage. The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY.

~~The 24 month Frequency allows SR 3.8.1.13 to be scheduled following a teardown inspection. The teardown inspections are performed at 24 month intervals in accordance with manufacturer recommendations. The 24 month Frequency is consistent with the regulatory guidance of Generic Letter 91-04 (Ref. 12).~~

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.13 (continued)

This Surveillance is modified by two Notes. Note 1 states that momentary transients due to changing bus loads do not invalidate this test. Similarly, momentary kVAR load transients above the limit will not invalidate the test. Note 2 acknowledges that credit may be taken for unplanned events that satisfy this SR. Examples of unplanned events may include unexpected operational events which cause the equipment to perform the function specified by this Surveillance, for which adequate documentation of the required performance is available.

Insert 2

SR 3.8.1.14

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 11.4 seconds. The 11.4 second time is derived from the requirements of the accident analysis to respond to a design basis large break LOCA. ~~The 18 month Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(5).~~

This SR is modified by two Notes. Note 1 ensures that the test is performed with the diesel sufficiently hot. The load band is provided to avoid routine overloading of the DG. Routine overloads may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY. The requirement that the diesel has operated for at least 2 hours at full load conditions prior to performance of this Surveillance is based on manufacturer recommendations for achieving hot

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.14 (continued)

conditions. Momentary transients due to changing bus loads do not invalidate this test. Note 2 allows all DG starts to be preceded by an engine prelube period to minimize wear and tear on the diesel during testing.

SR 3.8.1.15

As required by Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(6), this Surveillance ensures that the manual synchronization and automatic load transfer from the DG to the offsite source can be made and the DG can be returned to ready to load status when offsite power is restored. It also ensures that the autostart logic is reset to allow the DG to reload if a subsequent loss of offsite power occurs. The DG is considered to be in ready to load status when the DG is at rated speed and voltage, the output breaker is open and can receive an autoclose signal on bus undervoltage, and the load sequence timers are reset.

Insert 2

~~The Frequency of 18 months is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(6), and takes into consideration unit conditions required to perform the Surveillance.~~

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. Credit may be taken for unplanned events that satisfy this SR. Examples of unplanned events may include:

1. Unexpected operational events which cause the equipment to perform the function specified by this Surveillance, for which adequate documentation of the required performance is available; and

2. Post Corrective maintenance testing that requires performance of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to maintain OPERABILITY or reliability.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.16

Demonstration of the test mode override ensures that the DG availability under accident conditions will not be compromised as the result of testing and the DG will automatically reset to ready to load operation if a LOCA actuation signal is received during operation in the test mode. Ready to load operation is defined as the DG running at rated speed and voltage with the DG output breaker open. These provisions for automatic switchover are required by IEEE-308 (Ref. 11), paragraph 6.2.6(2).

The requirement to automatically energize the emergency loads with offsite power is essentially identical to that of SR 3.8.1.11. The intent in the requirement associated with SR 3.8.1.16.b is to show that the emergency loading was not affected by the DG operation in test mode. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the emergency loads to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

Insert 2

~~The 18 month Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(8), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.~~

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. Credit may be taken for unplanned events that satisfy this SR. Examples of unplanned events may include:

1. Unexpected operational events which cause the equipment to perform the function specified by this Surveillance, for which adequate documentation of the required performance is available; and

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.16 (continued)

2. Post Corrective maintenance testing that requires performance of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to maintain OPERABILITY or reliability.

SR 3.8.1.17

Under accident and loss of offsite power conditions, loads are sequentially connected to the bus by the automatic load sequencer. The sequencing logic controls the permissive and starting signals to motor breakers to prevent overloading of the DGs due to high motor starting currents. The 10% load sequence time interval tolerance ensures that sufficient time exists for the DG to restore frequency and voltage prior to applying the next load and that safety analysis assumptions regarding ESF equipment time delays are not violated. Reference 2 provides a summary of the automatic loading of ESF buses.

Insert 2

~~The Frequency of 18 months is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(2), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.~~

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. Credit may be taken for unplanned events that satisfy this SR. Examples of unplanned events may include:

1. Unexpected operational events which cause the equipment to perform the function specified by this Surveillance, for which adequate documentation of the required performance is available; and

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.17 (continued)

2. Post Corrective maintenance testing that requires performance of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to maintain OPERABILITY or reliability.

SR 3.8.1.18

In the event of a DBA coincident with a loss of offsite power, the DGs are required to supply the necessary power to ESF systems so that the fuel, RCS, and containment design limits are not exceeded.

This Surveillance demonstrates the DG operation, as discussed in the Bases for SR 3.8.1.10, during a loss of offsite power actuation test signal in conjunction with an ESF actuation signal. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

Insert 2

~~The Frequency of 18 months takes into consideration unit conditions required to perform the Surveillance and is intended to be consistent with an expected fuel cycle length of 18 months.~~

This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations for DGs. The reason for Note 2 is that the performance of the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. Credit may be taken for unplanned events that satisfy this SR. Examples of unplanned events may include:

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.18 (continued)

1. Unexpected operational events which cause the equipment to perform the function specified by this Surveillance, for which adequate documentation of the required performance is available; and

2. Post Corrective maintenance testing that requires performance of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to maintain OPERABILITY or reliability.

Insert 2

SR 3.8.1.19

This surveillance demonstrates that each required fuel oil transfer pump operates and transfers fuel oil from its associated storage tank to the other train's associated day tank via installed crossconnect lines. This capability is required to support continuous operation of standby power sources. This surveillance provides assurance that the fuel oil transfer pump is OPERABLE and the fuel oil transfer crossconnect piping is intact and not obstructed. ~~The Frequency of every 18 months is adequate to verify the crossconnect piping is intact and the system is capable of supplying fuel oil to the other train's day tank. This~~ Frequency takes into consideration the additional monthly testing required of each fuel oil transfer system train to automatically supply its own day tank and the passive nature of the crossconnect piping.

The

SR 3.8.1.20

This Surveillance demonstrates that the DG starting independence has not been compromised. Also, this Surveillance demonstrates that each engine can achieve proper speed within the specified time when the DGs are started simultaneously.

Insert 2

~~The 10 year Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9).~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.3.1 (continued)

~~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

SR 3.8.3.2

This Surveillance ensures that sufficient lube oil inventory is available on the plant site to support at least 7 days of full load operation for each DG. The 336 gal requirement is based on the worst case DG consumption rate for full load operation (Reference 10). The 336 gallons is the volume required in excess of the recommended minimum volume required by the manufacturer. The 336 gallons may be contained in the lube oil sump tanks and the engine sump, in onsite storage, or a combination of the two. Implicit in this SR is the requirement to have the ability to transfer the lube oil from its storage location to the DG, when the DG lube oil sump does not hold adequate inventory for 7 days of full load operation without the level reaching the manufacturer recommended minimum level.

~~A 31 day Frequency is adequate to ensure that a sufficient lube oil supply is onsite, since DG starts and run time are closely monitored by the unit staff.~~

Insert 2

SR 3.8.3.3

The tests listed below are a means of determining whether new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate, detrimental impact on diesel engine combustion. If results from these tests are within acceptable limits, the fuel oil may be added to the storage tanks without concern for contaminating the entire volume of fuel oil in the storage tanks. The following tests are to be performed prior to adding new fuel oil to storage tanks:

a. Sample the new fuel oil in accordance with ASTM D4057-81 (Ref. 6);

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.3.3 (continued)

The particulate concentration limit is 10 mg/l. Each tank must be considered and tested separately.

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

SR 3.8.3.4

This Surveillance ensures that, without the aid of the refill compressor, sufficient air start capacity for each DG is available. The system design requirements provide for a minimum of five engine start cycles without recharging. The duration of each start cycle is about 3 seconds or two to three engine revolutions. The pressure specified in this SR is intended to reflect the lowest value at which the five starts can be accomplished. (PI-9060, PI-9061, PI-9064, PI-9065)

Insert 2

~~The 31 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and other indications available in the control room, including alarms, to alert the operator to below normal air start pressure.~~

SR 3.8.3.5

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the fuel storage tanks ~~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 DG operation. Water may come from any of several sources, including condensation, ground water, rain water, and contaminated fuel oil, and from breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.3.5 (continued)

Insert 2

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.~~

SR 3.8.3.6

Insert 2

This surveillance demonstrates that each DG ventilation supply fan starts automatically and the necessary dampers actuate to the correct position on a simulated or actual actuation signal. The two fans in each DG building and associated dampers start and actuate on different signals. Fans 1/2-1566-B7-001 (train A) and 1/2-1566-B7-002 (train B) start automatically and the necessary intake and discharge dampers actuate to the correct position on a train associated DG running signal and fans 1/2-1566-B7-003 and 1/2-1566-B7-004 start automatically and the necessary intake and discharge dampers actuate to the correct position on high DG building temperature signal coincident with a DG running signal. ~~The frequency of 18 months has been shown to be adequate to verify the required equipment actuations based on operating experience and is consistent with similar component actuation testing requirements for other ESF systems.~~

Insert 2

~~SR 3.8.3.7~~

Draining of the fuel oil stored ~~in the~~ supply tanks, removal of accumulated sediment, and tank cleaning ~~are~~ required ~~at 10 year intervals~~ by Regulatory Guide 1.137 (Ref. 2), paragraph ~~2.f.~~ To preclude the introduction of surfactants in the fuel oil system, the cleaning should be accomplished using sodium hypochlorite solutions, or their equivalent, rather than soap or detergents. This SR is for preventive maintenance. The presence of sediment does not necessarily represent a failure of this SR, provided that accumulated sediment is removed during performance of the Surveillance.

While this SR is being performed, the requirement for sufficient fuel oil to support ≥ 7 days of operation may be met by alternate means as discussed in FSAR section 9.5.4.2.2.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.1 (continued)

Insert 2

DC subsystem. On float charge, battery cells will receive adequate current to optimally charge the battery. The voltage requirements are based on the nominal design voltage of the battery and are consistent with the minimum float voltage established by the battery manufacturer (2.20 Vpc times the number of connected cells for the battery terminal voltage). 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 consistent with manufacturer recommendations and IEEE-450 (Ref. 9).~~

SR 3.8.4.2

This SR verifies the design capacity of the battery chargers (Ref. 4). According to Regulatory Guide 1.32 (Ref. 5), the battery charger supply is recommended to be based on the largest combined demands of the various steady state loads and the charging capacity to restore the battery from the design minimum charge state to the fully charged state, irrespective of the status of the unit during these demand occurrences. The minimum required amperes and duration ensures that these requirements can be satisfied.

This SR provides two options. One option requires that each battery charger be capable of supplying the necessary current for each system at the minimum established float voltage for 8 hours for systems A and B and 3 hours for systems C and D. The ampere requirements are based on the output rating of the chargers. The voltage requirements are based on the charger voltage level after a response to a loss of AC power. The time period is sufficient for the charger temperature to have stabilized and to have been maintained for at least 2 hours.

The other option requires that each battery charger be capable of recharging the battery after a service test coincident with supplying the largest combined demands of the various continuous steady state loads (irrespective of the status of the plant during which these demands occur). This level of loading may not normally be available following the battery service test and will need to be supplemented with additional loads. The duration for this test may be longer than the charger sizing criteria since the battery recharge is affected by

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.2 (continued)

float voltage, temperature, and the exponential decay in charging current. The systems A and B batteries are recharged when the measured charging current is ≤ 2 amps. The system C and D batteries are recharged when the measured charging current is ≤ 1 amp.

Insert 2

~~The Surveillance Frequency is acceptable, given the unit conditions required to perform the test and the other administrative controls existing to ensure adequate charger performance during these 18 month intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.~~

For a battery charger with charger output aligned to the associated 1E 125 VDC bus, this Surveillance is required to be performed during MODES 5 and 6 since it would require the DC electrical power subsystem to be inoperable during performance of the test.

SR 3.8.4.3

A battery service test is a special test of battery capability, as found, to satisfy the design requirements (battery duty cycle) of the DC electrical power system. The discharge rate and test length should correspond to the design duty cycle requirements as specified in Reference 4.

Insert 2

~~The Surveillance Frequency of 18 months is consistent with the recommendations of Regulatory Guide 1.32 (Ref. 5) and Regulatory Guide 1.129 (Ref. 10), which state that the battery service test should be performed during refueling operations or at some other outage, with intervals between tests, not to exceed 18 months.~~

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 perturb the electrical distribution system and challenge safety systems. Credit may be taken for unplanned events that satisfy this SR. Examples of unplanned events may include:

1. Unexpected operational events which cause the equipment to perform the function specified by this Surveillance, for which adequate documentation of the required performance is available; and

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.3 (continued)

2. Post Corrective maintenance testing that requires performance of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to maintain OPERABILITY or reliability.

REFERENCES

1. IEEE-308-1978.
2. 10 CFR 50, Appendix A, GDC 17.
3. IEEE-485-1983, June 1983.
4. FSAR, Chapter 8.
5. Regulatory Guide 1.32, February 1977.
6. FSAR, Chapter 6.
7. FSAR, Chapter 15.
8. Regulatory Guide 1.93, December 1974.
9. ~~IEEE-450-1975 and 1987.~~
10. ~~Regulatory Guide 1.129, December 1974~~

BASES

ACTIONS (continued)

E.1

With two or more batteries with battery parameters not within limits there is not sufficient assurance that battery capacity has not been affected to the degree that the batteries can still perform their required function, given that more than one battery is involved. With more than one battery involved, this potential could result in a total loss of function on multiple systems that rely upon the batteries. The longer completion times specified for battery parameters on a single battery not within limits are therefore not appropriate, and the parameters must be restored to within limits on at least three batteries within 2 hours.

F.1

With one or more batteries with any battery parameter outside the allowances of the Required Actions for Condition A, B, C, D, or E, sufficient capacity to supply the maximum expected load requirement is not assured and the corresponding DC battery must be declared inoperable. Additionally, discovering a battery with one or more battery cells float voltage less than 2.07 V and float current greater than 2 amps for batteries A and B, or 1 amp for batteries C and D indicates that the battery capacity may not be sufficient to perform the intended functions. The battery must therefore be declared inoperable immediately. This condition is intended to apply when the battery is in the float mode. For example, if an individual cell is discovered below the 2.07 V limit, a possible corrective action would be to place the battery in the equalize mode. In this condition, the charger amperage is elevated and a measurement of 'float' current may be above the stated limits with an individual cell below the 2.07 V criteria. This is an expected condition; therefore, in this case, it is not appropriate to enter Condition F.

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). Insert 2 ~~The 7 day Frequency is consistent with IEEE 450 (Ref. 1).~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.6.1 (continued)

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.1 are being taken, which provide the necessary and appropriate verifications of the battery condition. Furthermore, the float current limits of 2 amps for batteries A and B, and 1 amp for batteries C and D are established based on the nominal float voltage value and are 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 129.8 V 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 voltage in this range or less, but greater than 2.07 Vpc, is addressed in Specification 5.5.19. 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. Insert 2 ~~The frequency for cell voltage verification every 31 days for pilot cell and 92 days for each connected cell is consistent with IEEE-450 (Ref. 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. Insert 2 ~~The Frequency is consistent with IEEE-450 (Ref. 1).~~

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., 70 °F). Pilot cell electrolyte temperature is maintained above this temperature to assure the battery can provide 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. Insert 2 ~~The Frequency is consistent with IEEE-450 (Ref. 1).~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

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. 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 service test.

The modified discharge test may consist of just two rates; for instance, the one minute rate published for the battery or the largest current load of the duty cycle, followed by the test rate employed for the performance test, both of which envelop the duty cycle of the service test. Since the ampere-hours removed by a one minute discharge represents a very small portion of the battery capacity, the test rate can be changed to that for the performance test without compromising the results of the performance discharge test. The battery terminal voltage for the modified performance discharge test 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.

Insert 2

The acceptance criteria for this Surveillance are consistent with IEEE-450 (Ref. 1) and IEEE-485 (Ref. 5). These references recommend that the battery be replaced if its capacity is below 80% of the manufacturer rating. A capacity of 80% shows that the battery rate of deterioration is increasing, even if there is ample capacity to meet the load requirements. Furthermore, the battery is sized to meet the assumed cycle loads when the battery design capacity reaches this 80% limit.

~~The Surveillance Frequency for this test is normally 60 months.~~ If the battery shows degradation, or if the battery has reached 85% of its expected life and capacity is < 100% of the manufacturer's ratings, the Surveillance Frequency is reduced to 12 months. However, if the battery shows no degradation but has reached 85% of its expected

(continued)

BASES

ACTIONS (continued)

B.1 and B.2

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

SURVEILLANCE REQUIREMENTS

SR 3.8.7.1

This Surveillance verifies that the inverters are functioning properly with all required circuit breakers closed and AC vital buses energized from the inverter. The verification of proper voltage output ensures that the required power is readily available for the instrumentation of the RPS and ESFAS connected to the AC vital buses. ~~The 7 day Frequency takes into account the redundant capability of the inverters and other indications available in the control room that alert the operator to inverter malfunctions.~~

REFERENCES

1. FSAR, Chapter 8.
2. FSAR, Chapter 6.
3. FSAR, Chapter 15.

Insert 2

BASES

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, and A.2.4 (continued)

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 irradiated fuel assemblies, and operations involving positive reactivity additions). The Required Action to suspend positive reactivity additions does not preclude actions to maintain or increase reactor vessel inventory, provided the required SDM is maintained.

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 inverters and to continue this action until restoration is accomplished in order to provide the necessary inverter power to the unit safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required inverters should be completed as quickly as possible in order to minimize the time the unit safety systems may be without power or powered from a regulating transformer.

Insert 2

SURVEILLANCE REQUIREMENTS

SR 3.8.8.1

This Surveillance verifies that the inverters are functioning properly with all required circuit breakers closed and AC vital buses energized from the inverter. The verification of proper voltage output ensures that the required power is readily available for the instrumentation connected to the AC vital buses. ~~The 7 day Frequency takes into account the redundant capability of the inverters and other indications available in the control room that alert the operator to inverter malfunctions.~~

REFERENCES

1. FSAR, Chapter 6.
2. FSAR, Chapter 15.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.9.1 (continued)

functioning properly, with correct circuit breaker alignment. The correct breaker alignment ensures the appropriate separation and independence of the electrical divisions is maintained, and the appropriate voltage is available to each required bus. The verification of proper voltage availability on the buses ensures that the required voltage is readily available for motive as well as control functions for critical system loads connected to these buses. ~~The 7 day Frequency takes into account the redundant capability of the AC, DC, and AC vital bus electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.~~

REFERENCES

1. FSAR, Chapter 6.
2. FSAR, Chapter 15.
3. Regulatory Guide 1.93, December 1974.

Insert 2

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.10.1 (continued)

proper voltage availability on the buses ensures that the required power is readily available for motive as well as control functions for critical system loads connected to these buses. ~~The 7 day Frequency takes into account the capability of the electrical power distribution subsystems and other indications available in the control room that alert the operator to subsystem malfunctions.~~

REFERENCES

1. FSAR, Chapter 6.
2. FSAR, Chapter 15.

Insert 2

BASES

ACTIONS (continued)

A.3

In addition to immediately suspending CORE ALTERATIONS or positive reactivity additions, boration to restore the concentration must be initiated immediately.

There are no safety analysis assumptions of boration flow rate and concentration that must be satisfied. The only requirement is to restore the boron concentration to its required value as soon as possible. In order to raise the boron concentration as soon as possible, the operator should begin boration with the best source available for unit conditions.

Once actions have been initiated, they must be continued until the boron concentration is restored. The restoration time depends on the amount of boron that must be injected to reach the required concentration.

SURVEILLANCE REQUIREMENTS

SR 3.9.1.1

This SR ensures that the coolant boron concentration in all filled portions of the RCS, the refueling canal, and the refueling cavity is within the COLR limits. The boron concentration of the coolant in each volume is determined periodically by chemical analysis.

~~A Frequency of once every 72 hours is a reasonable amount of time to verify the boron concentration of representative samples. The Frequency is based on operating experience, which has shown 72 hours to be adequate.~~

REFERENCES

1. 10 CFR 50, Appendix A, GDC 26.
2. FSAR, Subsection 15.4.6.

Insert 2

BASES

ACTIONS (continued)

A.2

Preventing inadvertent dilution of the reactor coolant boron concentration is dependent on maintaining the unborated water isolation valve(s) secured closed. Securing the valve(s) in the closed position ensures that the valve(s) cannot be inadvertently opened. The Completion Time of "immediately" requires an operator to initiate actions to close an open valve and secure the isolation valve in the closed position immediately. Once actions are initiated, they must be continued until the valves are secured in the closed position.

A.3

Due to the potential of having diluted the boron concentration of the reactor coolant, SR 3.9.1.1 (verification of boron concentration) must be performed whenever Condition A is entered to demonstrate that the required boron concentration exists. The Completion Time of 12 hours is sufficient to obtain and analyze a reactor coolant sample for boron concentration.

Insert 2

SURVEILLANCE REQUIREMENTS

SR 3.9.2.1

These valve(s) are to be secured closed to isolate possible dilution paths. The likelihood of a significant reduction in the boron concentration during MODE 6 operations is remote due to the large mass of borated water in the refueling cavity and the fact that all unborated water sources are isolated, precluding a dilution. The boron concentration is checked every 72 hours during MODE 6 under SR 3.9.1.1. This Surveillance demonstrates that the valves are closed through a system walkdown. ~~The 31 day Frequency is based on engineering judgment and is considered reasonable in view of other administrative controls that will ensure that a valve opening, except as provided for in the LCO Note, is an unlikely possibility.~~

REFERENCES

1. FSAR, Subsection 15.4.6.
2. NUREG-0800, Section 15.4.6.

BASES

ACTIONS

B.2 (continued)

made, the core reactivity condition is stabilized until the source range neutron flux monitors are OPERABLE. This stabilized condition is determined by performing SR 3.9.1.1 to ensure that the required boron concentration exists.

The Completion Time of once per 12 hours is sufficient to obtain and analyze a reactor coolant sample for boron concentration and to ensure that unplanned changes in boron concentration would be identified. The 12 hour Completion Time is reasonable, considering the low probability of a change in core reactivity during this time period.

SURVEILLANCE REQUIREMENTS

SR 3.9.3.1

SR 3.9.3.1 is the performance of a CHANNEL CHECK, which is a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that the two indication channels should be consistent with core conditions. Changes in fuel loading and core geometry can result in significant differences between source range channels, but each channel should be consistent with its local conditions.

Insert 2

~~The Frequency of 12 hours is consistent with the CHANNEL CHECK Frequency specified similarly for the same instruments in LCO 3.3.1, "Reactor Trip System (RTS) Instrumentation."~~

SR 3.9.3.2

SR 3.9.3.2 is the performance of a CHANNEL CALIBRATION ~~every 18 months~~. This SR is modified by a Note stating that neutron detectors are excluded from the CHANNEL CALIBRATION. The CHANNEL CALIBRATION for the source range neutron flux monitors includes obtaining the detector preamp discriminator curves and evaluating those curves. ~~The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage. Operating experience has shown these components usually pass the Surveillance when performed at the 18 month Frequency.~~

Insert 2

(continued)

BASES (continued)

APPLICABILITY

The containment penetration requirements are applicable during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment because this is when there is a potential for a fuel handling accident. In MODES 1, 2, 3, and 4, containment penetration requirements are addressed by LCO 3.6.1, "Containment." In MODES 5 and 6, when CORE ALTERATIONS or movement of irradiated fuel assemblies within containment are not being conducted, the potential for a fuel handling accident does not exist. Therefore, under these conditions no requirements are placed on containment penetration status.

ACTIONS

A.1 and A.2

If the containment equipment hatch, air locks, or any containment penetration that provides direct access from the containment atmosphere to the outside atmosphere is not in the required status, the unit must be placed in a condition where the isolation function is not needed. This is accomplished by immediately suspending CORE ALTERATIONS and movement of irradiated fuel assemblies within containment. Performance of these actions shall not preclude completion of movement of a component to a safe position.

SURVEILLANCE REQUIREMENTS

SR 3.9.4.1

This Surveillance demonstrates that each of the containment penetrations required to be in its closed position is in that position. The Surveillance on the required open containment ventilation isolation valves will demonstrate that the valves are not blocked from closing. Also the Surveillance will demonstrate that each required valve operator has motive power, which will ensure that each valve is capable of being closed.

Insert 2

~~The Surveillance is performed every 7 days during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment. The Surveillance interval is selected to be commensurate with the normal duration of time to complete fuel handling operations. Including a surveillance before the start of refueling operations will provide two or three surveillance verifications during the applicable period for this LCO. As such, this Surveillance ensures that a postulated fuel handling accident that releases fission~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.4.1 (continued)

~~product radioactivity within the containment will not result in a release of fission product radioactivity to the environment.~~

Insert 2

~~SR 3.9.4.2~~

This Surveillance ~~demonstrates that each containment ventilation isolation valve in each open containment ventilation penetration actuates to its isolation position.~~ ~~The 18 month Frequency maintains consistency with other similar testing requirements. Also, SR 3.6.3.5 demonstrates that the isolation time of each valve is in accordance with the Inservice Testing Program requirements. These Surveillances Performed during MODE 6 will ensure that the valves are capable of closing after a postulated fuel handling accident to limit a release of fission product radioactivity from the containment.~~

SR 3.9.4.3

The equipment hatch is provided with a set of hardware, tools, and equipment for moving the hatch from its storage location and installing it in the opening. The required set of hardware, tools, and equipment shall be inspected to ensure that they can perform the required functions.

The 7 day frequency is adequate considering that the hardware, tools, and equipment are dedicated to the equipment hatch and not used for any other functions.

The SR is modified by a Note which only requires that the surveillance be met for an open equipment hatch. If the equipment hatch is installed in its opening, the availability of the means to install the hatch is not required.

REFERENCES

1. GPU Nuclear Safety Evaluation SE-0002000-001, Rev. 0, May 20, 1988.
2. FSAR, Subsection 15.7.4.
3. NUREG-0800, Section 15.7.4, Rev. 1, July 1981.

BASES

ACTIONS

A.3 (continued)

water level ≥ 23 ft above the top of the reactor vessel flange, corrective actions shall be initiated immediately.

A.4

If RHR loop requirements are not met, all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere must be closed within 4 hours. With the RHR loop requirements not met, the potential exists for the coolant to boil and release radioactive gas to the containment atmosphere. Closing containment penetrations that are open to the outside atmosphere ensures dose limits are not exceeded.

The Completion Time of 4 hours is reasonable, based on the low probability of the coolant boiling in that time.

SURVEILLANCE REQUIREMENTS

SR 3.9.5.1

This Surveillance demonstrates that the RHR loop is in operation and circulating reactor coolant. The flow rate (FIC-0618A and FIC-0619A) is determined by the flow rate necessary to provide sufficient decay heat removal capability and to provide mixing of the borated coolant to prevent thermal and boron stratification in the core. ~~The Frequency of 12 hours is sufficient, considering the flow, temperature, pump control, and alarm indications available to the operator in the control room for monitoring the RHR System.~~

REFERENCES

NONE

Insert 2

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.6.1 (continued)

nozzles, the RHR pump suction requirements must be met. ~~The Frequency of 12 hours is sufficient, considering the flow, temperature, pump control, and alarm indications available to the operator for monitoring the RHR System in the control room.~~

Insert 2

REFERENCES

NONE

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.9.7.1

Verification of a minimum water level of 23 ft above the top of the reactor vessel flange ensures that the design basis for the analysis of the postulated fuel handling accident during refueling operations is met. Water at the required level above the top of the reactor vessel flange limits the consequences of damaged fuel rods that are postulated to result from a fuel handling accident inside containment (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 of valve positions, which make significant unplanned level changes unlikely.~~

REFERENCES

1. Regulatory Guide 1.25, March 23, 1972.
2. FSAR, Subsection 15.7.4.
3. NUREG-0800, Section 15.7.4.
4. 10 CFR 100.10
5. Malinowski, D. D., Bell, M. J., Duhn, E., and Locante, J., WCAP-7828, Radiological Consequences of a Fuel Handling Accident, December 1971.

Insert 2