**UNITED STATES**
**NUCLEAR REGULATORY COMMISSION**
**WASHINGTON, D.C. 20555-0001**

December 26, 2013

Vice President, Operations
Entergy Operations, Inc.
Grand Gulf Nuclear Station
P.O. Box 756
Port Gibson, MS 39150

SUBJECT: GRAND GULF NUCLEAR STATION, UNIT 1 - ISSUANCE OF AMENDMENT NO. 197 RE: REVISE TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENT FREQUENCIES FROM 18- TO 24-MONTH FUEL CYCLE INTERVALS (TAC NO. ME9764)

Dear Sir or Madam:

The U.S. Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment No. 197 to Facility Operating License No. NPF-29 for the Grand Gulf Nuclear Station, Unit 1 (GGNS). This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated October 2, 2012, as supplemented by letters dated April 26, June 4, August 15, September 24, September 26, October 14, November 12, December 5, and December 11, 2013.

The amendment revises the TSs for the GGNS to support operation with 24-month fuel cycles. Specifically, the amendment revises the frequency of certain TS Surveillance Requirements (SRs) from "18 months" to "24 months," in accordance with the guidance of NRC Generic Letter (GL) 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. Consistent with the GL, changes were made to the Administrative Controls TS Section 5.5.7, "Ventilation Filter Testing Program (VFTP)," to address changes to 18-month frequencies that are specified in NRC Regulatory Guide (RG) 1.52, Revision 2, "Design, Testing, and Maintenance Criteria for Post Accident Engineered-Safety-Feature Atmosphere Cleanup System Air Filtration and Adsorption Units of Light-Water-Cooled Nuclear Power Plants," March 1978. In addition, new SR 3.3.6.1.8 and SR 3.3.8.1.3 were added and the following SRs renumbered to reflect the new SRs. By letter dated December 11, 2013, Entergy Operations, Inc. (the licensee) withdrew its April 26, 2013, request to modify SR 3.7.7.2 in TS 3.7.7, "Main Turbine Bypass System." Therefore, the NRC staff neither evaluated a change to, nor changed, the surveillance interval of SR 3.7.7.2.

A copy of the related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely,

Alan Wang

Alan Wang, Project Manager
Plant Licensing IV-2 and Decommissioning
Transition Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-416

Enclosures:
1. Amendment No. 197 to NPF-29
2. Safety Evaluation

cc w/encls: Distribution via Listserv

**UNITED STATES**
**NUCLEAR REGULATORY COMMISSION**
**WASHINGTON, D.C. 20555-0001**

ENTERGY OPERATIONS, INC.

SYSTEM ENERGY RESOURCES, INC.

SOUTH MISSISSIPPI ELECTRIC POWER ASSOCIATION

ENTERGY MISSISSIPPI, INC.

DOCKET NO. 50-416

GRAND GULF NUCLEAR STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 197
License No. NPF-29

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment filed by Entergy Operations, Inc. (the licensee), dated October 2, 2012, as supplemented by letters dated April 26, June 4, August 15, September 24, September 26, October 14, November 12, December 5, and December 11, 2013, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. NPF-29 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 197 are hereby incorporated into this license. Entergy Operations, Inc. shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Karl D. Feintuch for

Douglas A. Broaddus, Chief
Plant Licensing IV-2 and Decommissioning
Transition Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Facility Operating
License No. NPF-29 and the
Technical Specifications

Date of Issuance: December 26, 2013

ATTACHMENT TO LICENSE AMENDMENT NO. 197

FACILITY OPERATING LICENSE NO. NPF-29

DOCKET NO. 50-416

Replace the following pages of the Facility Operating License No. NPF-29 and the Appendix A, Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Facility Operating License

| Remove | Insert |
|---|---|
| -4- | -4- |

Technical Specifications

| Remove | Insert | Remove | Insert |
|---|---|---|---|
| 3.1-23 | 3.1-23 | 3.5-9 | 3.5-9 |
| 3.1-27 | 3.1-27 | 3.5-11 | 3.5-11 |
| 3.3-5 | 3.3-5 | 3.5-12 | 3.5-12 |
| 3.3-5a | 3.3-5a | 3.6-8 | 3.6-8 |
| 3.3-12 | 3.3-12 | 3.6-17 | 3.6-17 |
| 3.3-16 | 3.3-16 | 3.6-21 | 3.6-21 |
| 3.3-21 | 3.3-21 | 3.6-23 | 3.6-23 |
| 3.3-24 | 3.3-24 | 3.6-26 | 3.6-26 |
| 3.3-27 | 3.3-27 | 3.6-34 | 3.6-34 |
| 3.3-28 | 3.3-28 | 3.6-38 | 3.6-38 |
| 3.3-31 | 3.3-31 | 3.6-39 | 3.6-39 |
| 3.3-38 | 3.3-38 | 3.6-41 | 3.6-41 |
| 3.3-46 | 3.3-46 | 3.6-44 | 3.6-44 |
| 3.3-53 | 3.3-53 | 3.6-48 | 3.6-48 |
| 3.3-53a | 3.3-53a | 3.6-51 | 3.6-51 |
| 3.3-54 thru 3.3-58 | 3.3-54 thru 3.3-58 | 3.6-61 | 3.6-61 |
| 3.3-61 | 3.3-61 | 3.6-67 | 3.6-67 |
| 3.3-65 | 3.3-65 | 3.7-4 | 3.7-4 |
| 3.3-69 | 3.3-69 | 3.7-5 | 3.7-5 |
| 3.3-72 | 3.3-72 | 3.7-8 | 3.7-8 |
| 3.3-75 | 3.3-75 | 3.7-11 | 3.7-11 |
| 3.3-78 | 3.3-78 | 3.8-7 thru 3.8-13 | 3.8-7 thru 3.8-13 |
| 3.3-79 | 3.3-79 | 3.8-13a | 3.8-13a |
| 3.3-82 | 3.3-82 | 3.8-14 | 3.8-14 |
| 3.4-6 | 3.4-6 | 3.8-15 | 3.8-15 |
| 3.4-7 | 3.4-7 | 3.8-28 | 3.8-28 |
| 3.4-11 | 3.4-11 | 3.8-29 | 3.8-29 |
| 3.4-18 | 3.4-18 | 5.0-12 | 5.0-12 |
| 3.5-5 | 3.5-5 | | |

(b) SERI is required to notify the NRC in writing prior to any change in (i) the terms or conditions of any new or existing sale or lease agreements executed as part of the above authorized financial transactions, (ii) the GGNS Unit 1 operating agreement, (iii) the existing property insurance coverage for GGNS Unit 1 that would materially alter the representations and conditions set forth in the Staff's Safety Evaluation Report dated December 19, 1988 attached to Amendment No. 54. In addition, SERI is required to notify the NRC of any action by a lessor or other successor in interest to SERI that may have an effect on the operation of the facility.

C. The license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

Entergy Operations, Inc. is authorized to operate the facility at reactor core power levels not in excess of 4408 megawatts thermal (100 percent power) in accordance with the conditions specified herein.

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 197 are hereby incorporated into this license. Entergy Operations, Inc. shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

During Cycle 19, GGNS will conduct monitoring of the Oscillation Power Range Monitor (OPRM). During this time, the OPRM Upscale function (Function 2.f of Technical Specification Table 3.3.1.1-1) will be disabled and operated in an "indicate only" mode and technical specification requirements will not apply to this function. During such time, Backup Stability Protection measures will be implemented via GGNS procedures to provide an alternate method to detect and suppress reactor core thermal hydraulic instability oscillations. Once monitoring has been successfully completed, the OPRM Upscale function will be enabled and technical specification requirements will be applied to the function; no further operating with this function in an "indicate only" mode will be conducted.

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.1.7.6 | Verify each SLC subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, is in the correct position, or can be aligned to the correct position. | 31 days |
| SR 3.1.7.7 | Verify each pump develops a flow rate ≥ 41.2 gpm at a discharge pressure ≥ 1340 psig. | In accordance with the Inservice Testing Program |
| SR 3.1.7.8 | Verify flow through one SLC subsystem from pump into reactor pressure vessel. | 24 months on a STAGGERED TEST BASIS |
| SR 3.1.7.9 | Determine Boron-10 enrichment in atom percent (E). | Once within 24 hours after boron is added to the solution. |
| SR 3.1.7.10 | Verify piping between the storage tank and the pump suction is not blocked. | Once within 24 hours after solution temperature is restored to ≥ 45°F |

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.1.1.11 | Perform CHANNEL FUNCTIONAL TEST. | 24 months |
| SR 3.3.1.1.12 | ----------NOTES----------<br>1. Neutron detectors are excluded.<br>2. For IRMs, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2.<br>----------<br>Perform CHANNEL CALIBRATION. | 24 months |
| SR 3.3.1.1.13 | Perform LOGIC SYSTEM FUNCTIONAL TEST. | 24 months |
| SR 3.3.1.1.14 | Verify Turbine Stop Valve Closure, Trip Oil Pressure-Low and Turbine Control Valve Fast Closure Trip Oil Pressure-Low Functions are not bypassed when THERMAL POWER is $\geq$ 35.4% RTP. | 24 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.1.1.15 | ----------NOTES----------<br>1. Neutron detectors are excluded.<br>2. For Functions 3, 4, and 5 in Table 3.3.1.1-1, the channel sensors may be excluded.<br>3. For Function 6, "n" equals 4 channels for the purpose of determining the STAGGERED TEST BASIS Frequency.<br>----------<br>Verify the RPS RESPONSE TIME is within limits. | 24 months on a STAGGERED TEST BASIS |
| SR 3.3.1.1.16 | Deleted | |
| SR 3.3.1.1.17 | Perform APRM recirculation flow transmitter calibration. | 24 months |
| SR 3.3.1.1.18 | Deleted | |
| SR 3.3.1.1.19 | Perform CHANNEL CHECK. | 24 hours |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.1.2.4 | ----------NOTE----------<br>Not required to be met with less than or equal to four fuel assemblies adjacent to the SRM and no other fuel assemblies in the associated core quadrant.<br>----------<br>Verify count rate is:<br>a. ≥ 3.0 cps, or<br>b. ≥ 0.7 cps with a signal to noise ratio ≥ 2:1. | 12 hours during CORE ALTERATIONS<br>AND<br>24 hours |
| SR 3.3.1.2.5 | ----------NOTE----------<br>Not required to be performed until 12 hours after IRMs on Range 2 or below.<br>----------<br>Perform CHANNEL FUNCTIONAL TEST. | 31 days |
| SR 3.3.1.2.6 | ----------NOTES----------<br>1. Neutron detectors are excluded.<br>2. Not required to be performed until 12 hours after IRMs on Range 2 or below.<br>----------<br>Perform CHANNEL CALIBRATION. | 24 months |

SURVEILLANCE REQUIREMENTS (continued)

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.3.2.1.4 | ----------NOTE----------<br>Not required to be performed until 1 hour after THERMAL POWER is ≤ 10% RTP in MODE 1.<br>----------<br>Perform CHANNEL FUNCTIONAL TEST. | 92 days |
| SR 3.3.2.1.5 | Calibrate the low power setpoint trip units. The Allowable Value shall be ≥ 10% RTP and ≤ 35% RTP. | 92 days |
| SR 3.3.2.1.6 | Verify the RWL high power Function is not bypassed when THERMAL POWER is > 70% RTP. | 92 days |
| SR 3.3.2.1.7 | Perform CHANNEL CALIBRATION. | 184 days |
| SR 3.3.2.1.8 | ----------NOTE----------<br>Not required to be performed until 1 hour after reactor mode switch is in the shutdown position.<br>----------<br>Perform CHANNEL FUNCTIONAL TEST. | 24 months |

(continued)

SURVEILLANCE REQUIREMENTS

----------NOTE----------
These SRs apply to each Function in Table 3.3.3.1-1.
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| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.3.3.1.1 | Perform CHANNEL CHECK. | 31 days |
| SR 3.3.3.1.2 | Deleted | |
| SR 3.3.3.1.3 | ----------NOTE----------<br>Neutron detectors are excluded.<br>----------<br>Perform CHANNEL CALIBRATION. | 24 months |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.3.2.2 | Verify each required control circuit and transfer switch is capable of performing the intended functions. | 24 months |
| SR 3.3.3.2.3 | Perform CHANNEL CALIBRATION for each required instrumentation channel. | 24 months |

SURVEILLANCE REQUIREMENTS

----------NOTE----------
When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours, provided the associated Function maintains EOC-RPT trip capability.
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| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.4.1.1 | Perform CHANNEL FUNCTIONAL TEST. | 92 days |
| SR 3.3.4.1.2 | Calibrate the trip units. | 92 days |
| SR 3.3.4.1.3 | Perform CHANNEL CALIBRATION. The Allowable Values shall be:<br>a. TSV Closure, Trip Oil Pressure - Low: ≥ 37 psig.<br>b. TCV Fast Closure, Trip Oil Pressure - Low: ≥ 42 psig. | 24 months |
| SR 3.3.4.1.4 | Perform LOGIC SYSTEM FUNCTIONAL TEST, including breaker actuation. | 24 months |
| SR 3.3.4.1.5 | Verify TSV Closure, Trip Oil Pressure - Low and TCV Fast Closure, Trip Oil Pressure - Low Functions are not bypassed when THERMAL POWER is ≥ 35.4% RTP. | 24 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.4.1.6 | ----------NOTE----------<br>Breaker interruption time may be assumed from the most recent performance of SR 3.3.4.1.7.<br>----------<br>Verify the EOC-RPT SYSTEM RESPONSE TIME is within limits. | 24 months on a STAGGERED TEST BASIS |
| SR 3.3.4.1.7 | Determine RPT breaker interruption time. | 60 months |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.4.2.2 | Perform CHANNEL FUNCTIONAL TEST. | 92 days |
| SR 3.3.4.2.3 | Calibrate the trip units. | 92 days |
| SR 3.3.4.2.4 | Perform CHANNEL CALIBRATION. The Allowable Values shall be:<br>a. Reactor Vessel Water Level - Low Low, Level 2: $\geq$ -43.8 inches; and<br>b. Reactor Vessel Pressure - High: $\leq$ 1139 psig. | 24 months |
| SR 3.3.4.2.5 | Perform LOGIC SYSTEM FUNCTIONAL TEST, including breaker actuation. | 24 months |

SURVEILLANCE REQUIREMENTS

NOTES

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

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

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.5.1.1 | Perform CHANNEL CHECK. | 12 hours |
| SR 3.3.5.1.2 | Perform CHANNEL FUNCTIONAL TEST. | 92 days |
| SR 3.3.5.1.3 | Calibrate the trip unit. | 92 days |
| SR 3.3.5.1.4 | Perform CHANNEL CALIBRATION. | 92 days |
| SR 3.3.5.1.5 | Perform CHANNEL CALIBRATION. | 24 months |
| SR 3.3.5.1.6 | Perform LOGIC SYSTEM FUNCTIONAL TEST. | 24 months |

SURVEILLANCE REQUIREMENTS

----------NOTES----------

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

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed as follows: (a) for up to 6 hours for Functions 2 and 5; and (b) for up to 6 hours for Functions 1, 3, and 4 provided the associated Function maintains RCIC initiation capability.

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| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.5.2.1 | Perform CHANNEL CHECK. | 12 hours |
| SR 3.3.5.2.2 | Perform CHANNEL FUNCTIONAL TEST. | 92 days |
| SR 3.3.5.2.3 | Calibrate the trip units. | 92 days |
| SR 3.3.5.2.4 | Perform CHANNEL CALIBRATION. | 24 months |
| SR 3.3.5.2.5 | Perform LOGIC SYSTEM FUNCTIONAL TEST. | 24 months |

SURVEILLANCE REQUIREMENTS

----------NOTES----------

1. Refer to Table 3.3.6.1-1 to determine which SRs apply for each Function.

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

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| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.6.1.1 | Perform CHANNEL CHECK. | 12 hours |
| SR 3.3.6.1.2 | Perform CHANNEL FUNCTIONAL TEST. | 92 days |
| SR 3.3.6.1.3 | Calibrate the trip unit. | 92 days |
| SR 3.3.6.1.4 | Perform CHANNEL CALIBRATION. | 92 days |
| SR 3.3.6.1.5 | Perform CHANNEL CALIBRATION. | 12 months |
| SR 3.3.6.1.6 | Perform LOGIC SYSTEM FUNCTIONAL TEST. | 18 months |
| SR 3.3.6.1.7 | Perform CHANNEL CALIBRATION. | 24 months |
| SR 3.3.6.1.8 | Perform LOGIC SYSTEM FUNCTIONAL TEST. | 24 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.3.6.1.9 | ----------NOTE----------<br>Channel sensors may be excluded.<br>----------<br>Verify the ISOLATION SYSTEM RESPONSE TIME for the Main Steam Isolation Valves is within limits. | 24 months on a STAGGERED TEST BASIS |
| SR 3.3.6.1.10 | ----------NOTE----------<br>Only required to be performed when Function 5.b is not OPERABLE as allowed by NOTE (h) of Table 3.3.6.1-1.<br>----------<br>Verify the water level in the Upper Containment Pool is ≥ 22 feet, 8 inches above the reactor pressure vessel flange. | 4 hours |

Table 3.3.6.1-1 (page 1 of 5)
Primary Containment and Drywell Isolation Instrumentation

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS PER TRIP SYSTEM | CONDITIONS REFERENCED FROM REQUIRED ACTION C.1 | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE |
|---|---|---|---|---|---|
| 1. Main Steam Line Isolation | | | | | |
| a. Reactor Vessel Water Level - Low Low Low, Level 1 | 1, 2, 3 | 2 | D | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.7<br>SR 3.3.6.1.8<br>SR 3.3.6.1.9 | ≥ −152.5 inches |
| b. Main Steam Line Pressure - Low | 1 | 2 | E | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.7<br>SR 3.3.6.1.8<br>SR 3.3.6.1.9 | ≥ 837 psig |
| c. Main Steam Line Flow - High | 1, 2, 3 | 2 per MSL | D | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.7<br>SR 3.3.6.1.8<br>SR 3.3.6.1.9 | ≤ 255.9 psid |
| d. Condenser Vacuum - Low | 1, 2(a), 3(a) | 2 | D | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.7<br>SR 3.3.6.1.8 | ≥ 8.7 inches Hg vacuum |
| e. Main Steam Tunnel Ambient Temperature - High | 1, 2, 3 | 2 | D | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.5<br>SR 3.3.6.1.8 | ≤ 191°F |
| f. Manual Initiation | 1, 2, 3 | 2 | G | SR 3.3.6.1.8 | NA |
| 2. Primary Containment and Drywell Isolation | | | | | |
| a. Reactor Vessel Water Level - Low Low, Level 2 | 1, 2, 3 | 2(b) | H | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.7<br>SR 3.3.6.1.8 | ≥ −43.8 inches |

(continued)

(a) With any turbine stop valve not closed.

(b) Also required to initiate the associated drywell isolation function.

Table 3.3.6.1-1 (page 2 of 5)
Primary Containment and Drywell Isolation Instrumentation

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS PER TRIP SYSTEM | CONDITIONS REFERENCED FROM REQUIRED ACTION C.1 | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE |
|---|---|---|---|---|---|
| 2. Primary Containment and Drywell Isolation (continued) | | | | | |
| b. Drywell Pressure - High | 1,2,3 | 2(b) | H | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.7<br>SR 3.3.6.1.8 | ≤ 1.43 psig |
| c. Reactor Vessel Water Level - Low Low Low, Level 1 (ECCS Divisions 1 and 2) | 1,2,3 | 2(b) | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.7<br>SR 3.3.6.1.8 | ≥ -152.5 inches |
| d. Drywell Pressure - High (ECCS Divisions 1 and 2) | 1,2,3 | 2 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.7<br>SR 3.3.6.1.8 | ≤ 1.44 psig |
| e. Reactor Vessel Water Level - Low Low, Level 2 (HPCS) | 1,2,3 | 4 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.7<br>SR 3.3.6.1.8 | ≥ -43.8 inches |
| f. Drywell Pressure - High (HPCS) | 1,2,3 | 4 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.7<br>SR 3.3.6.1.8 | ≤ 1.44 psig |
| g. Containment and Drywell Ventilation Exhaust Radiation - High | 1,2,3 | 2(b) | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.5<br>SR 3.3.6.1.6 | ≤ 4.0 mR/hr |
| | (c) | 2 | K | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.5<br>SR 3.3.6.1.6 | ≤ 4.0 mR/hr |
| h. Manual Initiation | 1,2,3 | 2(b) | G | SR 3.3.6.1.8 | NA |
| | (c) | 2 | G | SR 3.3.6.1.8 | NA |

(continued)

(b) Also required to initiate the associated drywell isolation function.

(c) During movement of recently irradiated fuel assemblies in primary or secondary containment and operations with a potential for draining the reactor vessel.

Table 3.3.6.1-1 (page 3 of 5)
Primary Containment and Drywell Isolation Instrumentation

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS PER TRIP SYSTEM | CONDITIONS REFERENCED FROM REQUIRED ACTION C.1 | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE |
|---|---|---|---|---|---|
| 3. Reactor Core Isolation Cooling (RCIC) System Isolation | | | | | |
| a. RCIC Steam Line Flow - High | 1,2,3 | 1 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.7<br>SR 3.3.6.1.8 | ≤ 64 inches water |
| b. RCIC Steam Line Flow Time Delay | 1,2,3 | 1 | F | SR 3.3.6.1.2<br>SR 3.3.6.1.4<br>SR 3.3.6.1.8 | ≥ 3 seconds and ≤ 7 seconds |
| c. RCIC Steam Supply Line Pressure - Low | 1,2[(d)],3[(d)] | 1 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.7<br>SR 3.3.6.1.8 | ≥ 53 psig |
| d. RCIC Turbine Exhaust Diaphragm Pressure - High | 1,2,3 | 2 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.7<br>SR 3.3.6.1.8 | ≤ 20 psig |
| e. RCIC Equipment Room Ambient Temperature - High | 1,2,3 | 1 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.5<br>SR 3.3.6.1.8 | ≤ 191°F |
| f. Main Steam Line Tunnel Ambient Temperature - High | 1,2,3 | 1 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.5<br>SR 3.3.6.1.8 | ≤ 191°F |
| g. Main Steam Line Tunnel Temperature Timer | 1,2,3 | 1 | F | SR 3.3.6.1.2<br>SR 3.3.6.1.4<br>SR 3.3.6.1.8 | ≤ 30 minutes |
| h. RHR Equipment Room Ambient Temperature - High | 1,2,3 | 1 per room | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.5<br>SR 3.3.6.1.8 | ≤ 171°F |
| i. RCIC/RHR Steam Line Flow - High | 1,2,3 | 1 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.7<br>SR 3.3.6.1.8 | ≤ 43 inches water |

(continued)

(d) Not required to be OPERABLE in MODE 2 or 3 with reactor steam dome pressure less than 150 psig during reactor startup.

Table 3.3.6.1-1 (page 4 of 5)
Primary Containment and Drywell Isolation Instrumentation

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS PER TRIP SYSTEM | CONDITIONS REFERENCED FROM REQUIRED ACTION C.1 | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE |
|---|---|---|---|---|---|
| 3. RCIC System Isolation (continued) | | | | | |
| j. Drywell Pressure - High | 1,2,3 | 1 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.7<br>SR 3.3.6.1.8 | ≤ 1.44 psig |
| k. Manual Initiation | 1,2,3 | 1 | G | SR 3.3.6.1.8 | NA |
| 4. Reactor Water Cleanup (RWCU) System Isolation | | | | | |
| a. Differential Flow - High | 1,2,3 | 1 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.7<br>SR 3.3.6.1.8 | ≤ 89 gpm |
| b. Differential Flow - Timer | 1,2,3 | 1 | F | SR 3.3.6.1.2<br>SR 3.3.6.1.4<br>SR 3.3.6.1.8 | ≤ 57 seconds |
| c. RWCU Heat Exchanger Equipment Room Temperature – High | 1,2,3 | 1 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.5<br>SR 3.3.6.1.8 | ≤ 126°F |
| d. RWCU Pump Room Temperature – High | 1,2,3 | 1 per room | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.5<br>SR 3.3.6.1.8 | ≤ 176°F |
| e. RWCU Heat Exchanger Room Valve Nest Area Temperature - High | 1,2,3 | 1 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.5<br>SR 3.3.6.1.8 | ≤ 141°F |
| f. Main Steam Line Tunnel Ambient Temperature – High | 1,2,3 | 1 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.5<br>SR 3.3.6.1.8 | ≤ 191°F |
| g. Reactor Vessel Water Level - Low Low, Level 2 | 1,2,3 | 2 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.7<br>SR 3.3.6.1.8 | ≥ -43.8 inches |
| h. Standby Liquid Control System Initiation | 1,2 | 1 | I | SR 3.3.6.1.8 | NA |
| i. Manual Initiation | 1,2,3 | 2 | G | SR 3.3.6.1.8 | NA |

(continued)

Table 3.3.6.1-1 (page 5 of 5)
Primary Containment and Drywell Isolation Instrumentation

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS PER TRIP SYSTEM | CONDITIONS REFERENCED FROM REQUIRED ACTION C.1 | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE |
|---|---|---|---|---|---|
| 5. RHR System Isolation | | | | | |
| a. RHR Equipment Room Ambient Temperature - High | 1,2,3 | 1 per room | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.5<br>SR 3.3.6.1.8 | ≤ 171°F |
| b. Reactor Vessel Water Level - Low, Level 3 | 1,2,3(f) | 2 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.7<br>SR 3.3.6.1.8 | ≥ 10.8 inches |
| | | 2(e) | J | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.7<br>SR 3.3.6.1.8<br>SR 3.3.6.1.10 | ≥ 10.8 inches |
| | 3(g),4,5(h) | | | | |
| c. Reactor Steam Dome Pressure - High | 1,2,3 | 2 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.7<br>SR 3.3.6.1.8 | ≤ 150 psig |
| d. Drywell Pressure - High | 1,2,3 | 2 | F | SR 3.3.6.1.1<br>SR 3.3.6.1.2<br>SR 3.3.6.1.3<br>SR 3.3.6.1.7<br>SR 3.3.6.1.8 | ≤ 1.43 psig |
| e. Manual Initiation | 1,2,3 | 2 | G | SR 3.3.6.1.8 | NA |

(e) Only one trip system required in MODES 4 and 5 with RHR Shutdown Cooling System integrity maintained.

(f) With reactor steam dome pressure greater than or equal to the RHR cut-in permissive pressure.

(g) With reactor steam dome pressure less than the RHR cut-in permissive pressure.

(h) Not applicable when the upper containment reactor cavity and transfer canal gates are removed and SR 3.3.6.1.10 is met.

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.6.2.2 | Perform CHANNEL FUNCTIONAL TEST. | 92 days |
| SR 3.3.6.2.3 | Calibrate the trip unit. | 92 days |
| SR 3.3.6.2.4 | Perform CHANNEL CALIBRATION. | 12 months |
| SR 3.3.6.2.5 | Perform CHANNEL CALIBRATION. | 24 months |
| SR 3.3.6.2.6 | Perform LOGIC SYSTEM FUNCTIONAL TEST. | 24 months |
| SR 3.3.6.2.7 | ----------NOTE----------<br>Radiation detectors may be excluded.<br>----------<br>Verify the ISOLATION SYSTEM RESPONSE TIME for air operated Secondary Containment isolation dampers is within limits. | 24 months on a STAGGERED TEST BASIS |

SURVEILLANCE REQUIREMENTS

----------NOTES----------

1. Refer to Table 3.3.6.3-1 to determine which SRs apply for each RHR Containment Spray System Function.

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

---

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.6.3.1 | Perform CHANNEL CHECK. | 12 hours |
| SR 3.3.6.3.2 | Perform CHANNEL FUNCTIONAL TEST. | 92 days |
| SR 3.3.6.3.3 | Calibrate the trip unit. | 92 days |
| SR 3.3.6.3.4 | Perform CHANNEL CALIBRATION. | 92 days |
| SR 3.3.6.3.5 | Perform CHANNEL CALIBRATION. | 24 months |
| SR 3.3.6.3.6 | Perform LOGIC SYSTEM FUNCTIONAL TEST. | 24 months |

SURVEILLANCE REQUIREMENTS

----------NOTES----------

1. Refer to Table 3.3.6.4-1 to determine which SRs apply for each SPMU Function.

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

---

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.6.4.1 | Perform CHANNEL CHECK. | 12 hours |
| SR 3.3.6.4.2 | Perform CHANNEL FUNCTIONAL TEST. | 92 days |
| SR 3.3.6.4.3 | Calibrate the trip unit. | 92 days |
| SR 3.3.6.4.4 | Perform CHANNEL CALIBRATION. | 92 days |
| SR 3.3.6.4.5 | Perform CHANNEL CALIBRATION. | 24 months |
| SR 3.3.6.4.6 | Perform LOGIC SYSTEM FUNCTIONAL TEST. | 24 months |

SURVEILLANCE REQUIREMENTS

NOTE

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

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.6.5.1 | Perform CHANNEL FUNCTIONAL TEST. | 92 days |
| SR 3.3.6.5.2 | Calibrate the trip unit. | 92 days |
| SR 3.3.6.5.3 | Perform CHANNEL CALIBRATION. The Allowable Values shall be:<br>a. Relief Function<br>Low: 1103 ∀ 15 psig<br>Medium: 1113 ∀ 15 psig<br>High: 1123 ∀ 15 psig<br>b. LLS Function<br>Low open: 1033 ∀ 15 psig<br>close: 926 ∀ 15 psig<br>Medium open: 1073 ∀ 15 psig<br>close: 936 ∀ 15 psig<br>High open: 1113 ∀ 15 psig<br>close: 946 ∀ 15 psig | 24 months |
| SR 3.3.6.5.4 | Perform LOGIC SYSTEM FUNCTIONAL TEST. | 24 months |

SURVEILLANCE REQUIREMENTS

----------NOTE----------
When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided CR isolation capability is maintained.
---

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.7.1.1 | Perform LOGIC SYSTEM FUNCTIONAL TEST. | 24 months |

SURVEILLANCE REQUIREMENTS

----------NOTES----------

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

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

---

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.8.1.1 | Perform CHANNEL FUNCTIONAL TEST. | 31 days |
| SR 3.3.8.1.2 | Perform CHANNEL CALIBRATION. | 18 months |
| SR 3.3.8.1.3 | Perform CHANNEL CALIBRATION. | 24 months |
| SR 3.3.8.1.4 | Perform LOGIC SYSTEM FUNCTIONAL TEST. | 24 months |

Table 3.3.8.1-1 (page 1 of 1)
Loss of Power Instrumentation

| FUNCTION | REQUIRED CHANNELS PER DIVISION | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE |
|---|---|---|---|
| 1. Divisions 1 and 2 - 4.16 kV Emergency Bus Undervoltage | | | |
| a. Loss of Voltage - 4.16 kV basis | 4 | SR 3.3.8.1.1<br>SR 3.3.8.1.2<br>SR 3.3.8.1.4 | ≥ 2621 V and ≤ 2912 V |
| b. Loss of Voltage - Time Delay | 2 | SR 3.3.8.1.3<br>SR 3.3.8.1.4 | ≥ 0.4 seconds and ≤ 1.0 seconds |
| c. Degraded Voltage - 4.16 kV basis | 4 | SR 3.3.8.1.1<br>SR 3.3.8.1.2<br>SR 3.3.8.1.4 | ≥ 3744 V and ≤ 3837.6 V |
| d. Degraded Voltage - Time Delay | 2 | SR 3.3.8.1.3<br>SR 3.3.8.1.4 | ≥ 8.5 seconds and ≤ 9.5 seconds |
| 2. Division 3 - 4.16 kV Emergency Bus Undervoltage | | | |
| a. Loss of Voltage - 4.16 kV basis | 4 | SR 3.3.8.1.3<br>SR 3.3.8.1.4 | ≥ 2984 V and ≤ 3106 V |
| b. Loss of Voltage - Time Delay | 2 | SR 3.3.8.1.3<br>SR 3.3.8.1.4 | ≥ 2.0 seconds and ≤ 2.5 seconds |
| c. Degraded Voltage - 4.16 kV basis | 4 | SR 3.3.8.1.3<br>SR 3.3.8.1.4 | ≥ 3558.5 V and ≤ 3763.5 V |
| d. Degraded Voltage - Time Delay, No LOCA | 2 | SR 3.3.8.1.3<br>SR 3.3.8.1.4 | ≥ 4.5 minutes and ≤ 5.5 minutes |
| e. Degraded Voltage - Time Delay, LOCA | 4 | SR 3.3.8.1.3<br>SR 3.3.8.1.4 | ≥ 3.6 seconds and ≤ 4.4 seconds |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.8.2.2 | Perform CHANNEL CALIBRATION. The Allowable Values shall be:<br><br>a. Overvoltage<br><br>Bus A ≤ 132.9 V<br>Bus B ≤ 133.0 V<br><br>b. Undervoltage<br><br>Bus A ≥ 115.0 V<br>Bus B ≥ 115.9 V<br><br>c. Underfrequency (with time delay set to ≤ 4 seconds)<br><br>Bus A ≥ 57 Hz<br>Bus B ≥ 57 Hz | 24 months |
| SR 3.3.8.2.3 | Perform a system functional test. | 24 months |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.2 Flow Control Valves (FCVs)

LCO 3.4.2 A recirculation loop FCV shall be OPERABLE in each operating recirculation loop.

APPLICABILITY: MODES 1 and 2.

ACTIONS

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

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or two required FCVs inoperable. | A.1 Lock up the FCV. | 4 hours |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3. | 12 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.2.1 | Verify each FCV fails "as is" on loss of hydraulic pressure at the hydraulic unit. | 24 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.2.2 | Verify average rate of each FCV movement is:<br><br>a. ≤ 11% of stroke per second for opening; and<br><br>b. ≤ 11% of stroke per second for closing. | 24 months |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.4.2 | ----------NOTE----------<br>Valve actuation may be excluded.<br>----------<br>Verify each required relief function S/RV actuates on an actual or simulated automatic initiation signal. | 24 months |
| SR 3.4.4.3 | ----------NOTE----------<br>Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test.<br>----------<br>Verify each required S/RV relief-mode actuator strokes when manually actuated. | In accordance with the Inservice Testing Program on a STAGGERED TEST BASIS for each valve solenoid |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| E. Required drywell atmospheric monitoring system inoperable.<br><br>AND<br><br>Drywell air cooler condensate flow rate monitoring system inoperable. | E.1 Restore required drywell atmospheric monitoring system to OPERABLE status.<br><br>OR<br><br>E.2 Restore drywell air cooler condensate flow rate monitoring system to OPERABLE status. | 30 days<br><br>30 days |
| F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met. | F.1 Be in Mode 3.<br><br>AND<br><br>F.2 Be in Mode 4. | 12 hours<br><br>36 hours |
| G. All required leakage detection systems inoperable. | G.1 Enter LCO 3.0.3 | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.7.1 | Perform CHANNEL CHECK of required drywell atmospheric monitoring system. | 12 hours |
| SR 3.4.7.2 | Perform CHANNEL FUNCTIONAL TEST of required leakage detection instrumentation. | 31 days |
| SR 3.4.7.3 | Perform CHANNEL CALIBRATION of required leakage detection instrumentation. | 24 months |

SURVEILLANCE REQUIREMENTS (continued)

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.5.1.5 | ----------NOTE----------<br>Vessel injection/spray may be excluded.<br>----------<br>Verify each ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal. | 24 months |
| SR 3.5.1.6 | ----------NOTE----------<br>Valve actuation may be excluded.<br>----------<br>Verify the ADS actuates on an actual or simulated automatic initiation signal. | 24 months |
| SR 3.5.1.7 | ----------NOTE----------<br>Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test.<br>----------<br>Verify each ADS valve relief-mode actuator strokes when manually actuated. | In accordance with the Inservice Testing Program on a STAGGERED TEST BASIS for each valve solenoid |
| SR 3.5.1.8 | ----------Note----------<br>ECCS Actuation instrumentation is excluded.<br>----------<br>Verify the ECCS RESPONSE TIME for the HPCS System is within limits. | 24 months |

SURVEILLANCE REQUIREMENTS (continued)

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.5.2.5 | Verify each required ECCS pump develops the specified flow rate with the specified total developed head.<br><br>SYSTEM / FLOW RATE / TOTAL DEVELOPED HEAD<br>LPCS: ≥ 7115 gpm: ≥ 290 psid<br>LPCI: ≥ 7450 gpm: ≥ 125 psid<br>HPCS: ≥ 7115 gpm: ≥ 445 psid | In accordance with the Inservice Testing Program |
| SR 3.5.2.6 | ----------NOTE----------<br>Vessel injection/spray may be excluded.<br>----------<br><br>Verify each required ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal. | 24 months |

SURVEILLANCE REQUIREMENTS

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.5.3.1 | Verify the RCIC System piping is filled with water from the pump discharge valve to the injection valve. | 31 days |
| SR 3.5.3.2 | Verify each RCIC System manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position. | 31 days |
| SR 3.5.3.3 | ----------NOTE----------<br>Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test.<br>----------<br>Verify, with RCIC steam supply pressure ≤ 1045 psig and ≥ 945 psig, the RCIC pump can develop a flow rate ≥ 800 gpm against a system head corresponding to reactor pressure. | 92 days |
| SR 3.5.3.4 | ----------NOTE----------<br>Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test.<br>----------<br>Verify, with RCIC steam supply pressure ≤ 165 psig and ≥ 150 psig, the RCIC pump can develop a flow rate ≥ 800 gpm against a system head corresponding to reactor pressure. | 24 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.5.3.5 | ----------NOTE----------<br>Vessel injection may be excluded.<br>----------<br>Verify the RCIC System actuates on an actual or simulated automatic initiation signal. | 24 months |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.1.2.3 | Verify only one door in the primary containment air lock can be opened at a time. | 24 months |
| SR 3.6.1.2.4 | Verify, from an initial pressure of 90 psig, the primary containment air lock seal pneumatic system pressure does not decay at a rate equivalent to > 2 psig for a period of 48 hours. | 24 months |

SURVEILLANCE REQUIREMENTS (continued)

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.6.1.3.6 | Verify the isolation time of each MSIV is ≥ 3 seconds and ≤ 5 seconds. | In accordance with the Inservice Testing Program |
| SR 3.6.1.3.7 | Verify each automatic PCIV actuates to the isolation position on an actual or simulated isolation signal. | 24 months |
| SR 3.6.1.3.8 | ----------NOTE----------<br>Only required to be met in MODES 1, 2, and 3.<br>----------<br>Verify leakage rate through each main steam line is ≤ 100 scfh when tested at ≥ $P_a$, and the total leakage rate through all four main steam lines is ≤ 250 scfh when tested at ≥ $P_a$. | In accordance with 10 CFR 50, Appendix J, Testing Program |
| SR 3.6.1.3.9 | ----------NOTE----------<br>Only required to be met in MODES 1, 2, and 3.<br>----------<br>Verify combined leakage rate of 1 gpm times the total number of PCIVs through hydrostatically tested lines that penetrate the primary containment is not exceeded when these isolation valves are tested at ≥ 1.1 $P_a$. | In accordance with 10 CFR 50, Appendix J, Testing Program |

SURVEILLANCE REQUIREMENTS

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.6.1.6.1 | ----------NOTE----------<br>Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test.<br>----------<br>Verify each LLS valve relief-mode actuator strokes when manually actuated. | In accordance with the Inservice Testing Program on a STAGGERED TEST BASIS for each valve solenoid |
| SR 3.6.1.6.2 | ----------NOTE----------<br>Valve actuation may be excluded.<br>----------<br>Verify the LLS System actuates on an actual or simulated automatic initiation signal. | 24 months |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.1.7.1 | ----------NOTE----------<br>RHR containment spray subsystems may be considered OPERABLE during alignment and operation for decay heat removal when below the RHR cut in permissive pressure in MODE 3 if capable of being manually realigned and not otherwise inoperable.<br>----------<br><br>Verify each RHR containment spray subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position. | 31 days |
| SR 3.6.1.7.2 | Verify each RHR pump develops a flow rate of ≥ 7450 gpm on recirculation flow through the associated heat exchanger to the suppression pool. | In accordance with the Inservice Testing Program |
| SR 3.6.1.7.3 | Verify each RHR containment spray subsystem automatic valve in the flow path actuates to its correct position on an actual or simulated automatic initiation signal. | 24 months |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.1.9.2 | Deleted | not applicable |
| SR 3.6.1.9.3 | Perform a system functional test of each MSIV LCS subsystem. | 24 months |

SURVEILLANCE REQUIREMENTS

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.6.2.4.1 | Verify upper containment pool water level is ≥ 23 ft 3 inches above the pool bottom. | 24 hours |
| SR 3.6.2.4.2 | Verify upper containment pool water temperature is ≤ 125°F. | 24 hours |
| SR 3.6.2.4.3 | Verify each SPMU subsystem manual, power operated, and automatic valve that is not locked, sealed, or otherwise secured in position is in the correct position. | 31 days |
| | ----------NOTE----------<br>The requirements of this SR are not required to be met when all upper containment pool levels are maintained per SR 3.6.2.4.1 and suppression pool water level is maintained ≥ 18 ft 5 1/12 inches (one inch above LCO 3.6.2.2 Low Water Level).<br>---------- | |
| SR 3.6.2.4.4 | Verify all upper containment pool gates are in the stored position or are otherwise removed from the upper containment pool. | 31 days |
| SR 3.6.2.4.5 | ----------NOTE----------<br>Actual makeup to the suppression pool may be excluded.<br>---------- | |
| | Verify each SPMU subsystem automatic valve actuates to the correct position on an actual or simulated automatic initiation signal. | 24 months |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| C. Required Action and associated Completion Time not met. | C.1 Be in MODE 3. | 12 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.3.2.1 | Energize each primary containment and drywell hydrogen igniter division and perform current versus voltage measurements to verify required igniters in service. | 184 days |
| SR 3.6.3.2.2 | ----------NOTE----------<br>Not required to be performed until 92 days after discovery of four or more igniters in the division inoperable.<br>----------<br>Energize each primary containment and drywell hydrogen igniter division and perform current versus voltage measurements to verify required igniters in service. | 92 days |
| SR 3.6.3.2.3 | Verify each required igniter in inaccessible areas develops sufficient current draw for a ≥ 1700°F surface temperature. | 24 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.3.2.4 | Verify each required igniter in accessible areas develops a surface temperature of ≥ 1700°F. | 24 months |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.3.3.1 | Perform a CHANNEL FUNCTIONAL TEST of the isolation valve pressure actuation instrumentation. | 31 days |
| SR 3.6.3.3.2 | Operate each drywell purge subsystem for ≥ 15 minutes. | 92 days |
| SR 3.6.3.3.3 | Verify each drywell purge subsystem flow rate is ≥ 1000 cfm. | 24 months |
| SR 3.6.3.3.4 | Verify the opening pressure differential of each vacuum breaker and isolation valve is ≤ 1.0 psid. | 24 months |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.4.1.3 | Verify the secondary containment can be drawn down to ≥ 0.25 inch of vacuum water gauge in ≤ 180 seconds using one standby gas treatment (SGT) subsystem. | 24 months on a STAGGERED TEST BASIS for each SGT subsystem |
| SR 3.6.4.1.4 | Verify the secondary containment can be maintained ≥ 0.266 inch of vacuum water gauge for 1 hour using one SGT subsystem at a flow rate ≤ 4000 cfm. | 24 months on a STAGGERED TEST BASIS for each SGT subsystem |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.4.2.1 | ----------NOTES----------<br>1. Valves, dampers, rupture disks, and blind flanges in high radiation areas may be verified by use of administrative means.<br><br>2. Not required to be met for SCIVs that are open under administrative controls.<br>----------<br><br>Verify each secondary containment isolation manual valve, damper, rupture disk, and blind flange that is required to be closed during accident conditions is closed. | 31 days |
| SR 3.6.4.2.2 | Verify the isolation time of each power operated, automatic SCIV is within limits. | In accordance with the Inservice Testing Program |
| SR 3.6.4.2.3 | Verify each automatic SCIV actuates to the isolation position on an actual or simulated automatic isolation signal. | 24 months |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.4.3.1 | Operate each SGT subsystem for ≥ 10 continuous hours with heaters operating. | 31 days |
| SR 3.6.4.3.2 | Perform required SGT filter testing in accordance with the Ventilation Filter Testing Program (VFTP). | In accordance with the VFTP |
| SR 3.6.4.3.3 | Verify each SGT subsystem actuates on an actual or simulated initiation signal. | 24 months |

SURVEILLANCE REQUIREMENTS (continued)

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.6.5.3.3 | Verify the isolation time of each power operated, automatic drywell isolation valve is within limits. | In accordance with the Inservice Testing Program |
| SR 3.6.5.3.4 | Verify each automatic drywell isolation valve actuates to the isolation position on an actual or simulated isolation signal. | 24 months |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.5.6.1 | ----------NOTES----------<br>1. Not required to be met for vacuum breakers or isolation valves open during surveillances.<br>2. Not required to be met for vacuum breakers or isolation valves open when performing their intended function.<br>----------<br>Verify each vacuum breaker and its associated isolation valve is closed. | 7 days |
| SR 3.6.5.6.2 | Perform a functional test of each vacuum breaker and its associated isolation valve. | 31 days |
| SR 3.6.5.6.3 | Verify the opening pressure differential of each vacuum breaker and isolation valve is ≤ 1.0 psid. | 24 months |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.1.3 | Verify each required SSW subsystem manual, power operated, and automatic valve in the flow path servicing safety related systems or components, that is not locked, sealed, or otherwise secured in position, is in the correct position. | 31 days |
| SR 3.7.1.4 | Verify each SSW subsystem actuates on an actual or simulated initiation signal. | 24 months |

3.7 PLANT SYSTEMS

3.7.2 High Pressure Core Spray (HPCS) Service Water System (SWS)

LCO 3.7.2 The HPCS SWS shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. HPCS SWS inoperable. | A.1 Declare HPCS System inoperable. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.2.1 | Verify each required HPCS SWS manual, power operated, and automatic valve in the flow path servicing safety related systems or components, that is not locked, sealed, or otherwise secured in position, is in the correct position. | 31 days |
| SR 3.7.2.2 | Verify the HPCS SWS actuates on an actual or simulated initiation signal. | 24 months |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| E. Two CRFA subsystems inoperable in MODE 1, 2, or 3 for reasons other than Condition B. | E.1 Enter LCO 3.0.3. | Immediately |
| F. Two CRFA subsystems inoperable during OPDRVs.<br><br>OR<br><br>One or more CRFA subsystems inoperable due to inoperable CRE boundary during OPDRVs. | F.1 Initiate action to suspend OPDRVs. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.3.1 | Operate each CRFA subsystem for ≥ 10 continuous hours with the heaters operating. | 31 days |
| SR 3.7.3.2 | Perform required CRFA filter testing in accordance with the Ventilation Filter Testing Program (VFTP). | In accordance with the VFTP |
| SR 3.7.3.3 | Verify each CRFA subsystem actuates on an actual or simulated initiation signal. | 24 months |
| SR 3.7.3.4 | 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 |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| E. Required Action and associated Completion Time of Condition B not met during OPDRVs. | E.1 Initiate action to suspend OPDRVs. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.4.1 | Verify each control room AC subsystem has the capability to remove the assumed heat load. | 24 months |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.8 | ----------NOTE----------<br>This Surveillance shall not be performed in MODE 1 and 2. However, credit may be taken for unplanned events that satisfy this SR.<br>----------<br><br>Verify manual transfer of unit power supply from the normal offsite circuit to required alternate offsite circuit. | 24 months |
| SR 3.8.1.9 | ----------NOTES----------<br>1. Credit may be taken for unplanned events that satisfy this SR.<br><br>2. If performed with the DG synchronized with offsite power, it shall be performed at a power factor $\leq$ 0.9 for DG 11 and DG 13 and $\leq$ 0.89 for DG 12. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable.<br>----------<br><br>Verify each DG rejects a load greater than or equal to its associated single largest post accident load and engine speed is maintained less than nominal plus 75% of the difference between nominal speed and the overspeed setpoint or 15% above nominal, whichever is lower. | 24 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.10 | ----------NOTE----------<br>1. Credit may be taken for unplanned events that satisfy this SR.<br><br>2. If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9 for DG 11 and DG 13 ≤ 0.89 for DG 12. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable.<br>----------<br><br>Verify each DG does not trip and voltage is maintained ≤ 5000 V during and following a load rejection of a load ≥ 5450 kW and ≤ 5740 kW for DG 11 and DG 12 and ≥ 3300 kW for DG 13.. | 24 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.8.1.11 ----------NOTES----------<br>1. All DG starts may be preceded by an engine prelube period.<br>2. This Surveillance shall not be performed in MODE 1, 2, or 3 (Not Applicable to DG 13). However, credit may be taken for unplanned events that satisfy this SR.<br>----------<br>Verify on an actual or simulated loss of offsite power signal:<br>a. De-energization of emergency buses;<br>b. Load shedding from emergency buses for Divisions 1 and 2; and<br>c. DG auto-starts from standby condition and:<br>1. energizes permanently connected loads in ≤ 10 seconds,<br>2. energizes auto-connected shutdown loads,<br>3. maintains steady state voltage ≥ 3744 V and ≤ 4576 V,<br>4. maintains steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and<br>5. supplies permanently connected and auto-connected shutdown loads for ≥ 5 minutes. | 24 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.8.1.12 ----------NOTES----------<br>1. All DG starts may be preceded by an engine prelube period.<br><br>2. This Surveillance shall not be performed in MODE 1,or 2 (Not Applicable to DG 13). However, credit may be taken for unplanned events that satisfy this SR.<br>----------<br><br>Verify on an actual or simulated Emergency Core Cooling System (ECCS) initiation signal each DG auto-starts from standby condition and:<br><br>a. In ≤ 10 seconds after auto-start and during tests, achieve voltage ≥ 3744 V and frequency ≥ 58.8 Hz;<br><br>b. Achieves steady state voltage ≥ 3744 V and ≤ 4576 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz;<br><br>c. Operates for ≥ 5 minutes; and<br><br>d. Emergency loads are auto-connected to the offsite power system. | 24 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.13 | ----------NOTE----------<br>Credit may be taken for unplanned events that satisfy this SR.<br>----------<br><br>Verify each DG's non-critical automatic trips are bypassed on an actual or simulated ECCS initiation signal. | 24 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.8.1.14 ----------NOTES----------<br>1. Momentary transients outside the load and power factor ranges do not invalidate this test.<br>2. Credit may be taken for unplanned events that satisfy this SR.<br>3. If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9 for DG 11 and DG 13 and ≤ 0.89 for DG 12. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable.<br>----------<br>Verify each DG operates for ≥ 24 hours:<br>a. For DG 11 and DG 12 loaded ≥ 5450 kW and ≤ 5740 kW; and<br>b. For DG 13:<br>1. For ≥ 2 hours loaded ≥ 3630 kW, and<br>2. For the remaining hours of the test loaded ≥ 3300 kW. | 24 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.8.1.15 ----------NOTES----------<br>1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 1 hour or until operating temperatures stabilized loaded ≥ 5450 kW and ≤ 5740 kW for DG 11 and DG 12, and ≥ 3300 kW for DG 13.<br><br>Momentary transients outside of the load range do not invalidate this test.<br><br>2. All DG starts may be preceded by an engine prelube period.<br>----------<br><br>Verify each DG starts and achieves:<br><br>a. in ≤ 10 seconds, voltage ≥ 3744 V and frequency ≥ 58.8 Hz; and<br><br>b. steady state voltage ≥ 3744 V and ≤ 4576 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz. | 24 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.16 | ----------NOTE----------<br>This Surveillance shall not be performed in MODE 1, 2, or 3 (Not Applicable to DG 13). However, credit may be taken for unplanned events that satisfy this SR.<br>----------<br>Verify each DG:<br>a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power;<br>b. Transfers loads to offsite power source; and<br>c. Returns to ready-to-load operation. | 24 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.17 | ----------NOTE----------<br>Credit may be taken for unplanned events that satisfy this SR.<br>----------<br>Verify, with a DG operating in test mode and connected to its bus, an actual or simulated ECCS initiation signal overrides the test mode by:<br>a. Returning DG to ready-to-load operation; and<br>b. Automatically energizing the emergency loads from offsite power. | 24 months |
| SR 3.8.1.18 | ----------NOTE----------<br>This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR.<br>----------<br>Verify interval between each sequenced load block is within ± 10% of design interval for each automatic load sequencer. | 24 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.8.1.19 ----------NOTES----------<br>1. All DG starts may be preceded by an engine prelube period.<br>2. This Surveillance shall not be performed in MODE 1, 2, or 3 (Not Applicable to DG 13). However, credit may be taken for unplanned events that satisfy this SR.<br>----------<br>Verify, on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ECCS initiation signal:<br>a. De-energization of emergency buses;<br>b. Load shedding from emergency buses for Divisions 1 and 2; and<br>c. DG auto-starts from standby condition and:<br>1. energizes permanently connected loads in ≤ 10 seconds,<br>2. energizes auto-connected emergency loads,<br>3. achieves steady state voltage ≥ 3744 V and ≤ 4576 V,<br>4. achieves steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and<br>5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes. | 24 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.4.3 | Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration that could degrade battery performance. | 24 months |
| SR 3.8.4.4 | Remove visible corrosion and verify battery cell to cell and terminal connections are coated with anti-corrosion material. | 24 months |
| SR 3.8.4.5 | Verify battery connection resistance is $\leq$ 1.5 E-4 ohm for inter-cell connections, $\leq$ 1.5 E-4 ohm for inter-rack connections, $\leq$ 1.5 E-4 ohm for inter-tier connections, and $\leq$ 1.5 E-4 ohm for terminal connections. | 24 months |
| SR 3.8.4.6 | Verify each Division 1 and 2 required battery charger supplies $\geq$ 400 amps at $\geq$ 125 V for $\geq$ 10 hours; and the Division 3 battery charger supplies $\geq$ 50 amps at $\geq$ 125 V for $\geq$ 4 hours. | 24 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.8.4.7 | ----------NOTES----------<br>1. SR 3.8.4.8 may be performed in lieu of SR 3.8.4.7 once per 60 months.<br><br>2. This Surveillance shall not be performed in MODE 1, 2, or 3 (not applicable to Division 3). However, credit may be taken for unplanned events that satisfy this SR.<br>----------<br><br>Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test. | 24 months |

(continued)

5.5 Programs and Manuals (continued)

5.5.7 Ventilation Filter Testing Program (VFTP)

A program shall be established to implement the following required testing of Engineered Safety Feature (ESF) filter ventilation systems at the frequencies specified in Regulatory Guide 1.52, Revision 2, except that testing specified at a frequency of 18 months is required at a frequency of 24 months.

a. Demonstrate for each of the ESF systems that an inplace test of the high efficiency particulate air (HEPA) filters shows a penetration and system bypass < 0.05% when tested in accordance with Regulatory Guide 1.52, Revision 2, and ANSI N510-1975 at the system flowrate specified below ± 10%:

| ESF Ventilation System | Flowrate |
|---|---|
| SGTS | 4000 cfm |
| CRFA | 4000 cfm |

b. Demonstrate for each of the ESF systems that an inplace test of the charcoal adsorber shows a penetration and system bypass < 0.05% when tested in accordance with Regulatory Guide 1.52, Revision 2, and ANSI N510-1975 at the system flowrate specified below ± 10%:

| ESF Ventilation System | Flowrate |
|---|---|
| SGTS | 4000 cfm |

c. Demonstrate for each of the ESF systems that a laboratory test of a sample of the charcoal absorber, when obtained as described in Regulatory Guide 1.52, Revision 2, shows the methyl iodide penetration less than the value specified below when tested in accordance with ASTM D3803-1989 at a temperature of 30°C and the relative humidity specified below:

| ESF Ventilation System | Penetration | RH |
|---|---|---|
| SGTS | 0.5% | 70% |

(continued)

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

# SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

# RELATED TO AMENDMENT NO. 197 TO

# FACILITY OPERATING LICENSE NO. NPF-29

# ENTERGY OPERATIONS, INC., ET AL.

# GRAND GULF NUCLEAR STATION, UNIT 1

# DOCKET NO. 50-416

## 1.0 INTRODUCTION

By application dated October 2, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML122770130), as supplemented by letters dated April 26, June 4, August 15, September 24, September 26, October 14, November 12, December 5, and December 11, 2013 (ADAMS Accession Nos. ML13119A102, ML13162A201, ML13232A057, ML13267A218, ML13270A056, ML13288A179, ML13323A548, ML13340A773, ML13346A283, respectively), Entergy Operations, Inc. (Entergy, the licensee), requested changes to the Technical Specifications (TSs) for the Grand Gulf Nuclear Station, Unit 1 (GGNS). The supplemental letters dated April 26, June 4, August 15, September 24, September 26, October 14, November 12, December 5, and December 11, 2013, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the U.S. Nuclear Regulatory Commission (NRC) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on November 13, 2012 (77 FR 67681). By letter dated December 11, 2013, Entergy withdrew its April 26, 2013, request to modify Surveillance Requirement (SR) 3.7.7.2 in TS 3.7.7, "Main Turbine Bypass System."

The amendment would revise the TSs for the GGNS to support operation with 24-month fuel cycles. Specifically, the amendment would revise the frequency of certain TS SRs from "18 months" to "24 months," in accordance with the guidance of NRC Generic Letter (GL) 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991 (ADAMS Accession No. ML013100215). GL 91-04 provides the NRC staff guidance that identifies the types of information that must be addressed when proposing extensions of SR frequency intervals from 18 months to 24 months. Consistent with the GL, changes were proposed to the Administrative Controls TS Section 5.5.7, "Ventilation Filter Testing Program (VFTP)," to address changes to 18-month frequencies that are specified in NRC Regulatory Guide (RG) 1.52, Revision 2, "Design, Testing, and Maintenance Criteria for Post Accident Engineered-Safety-Feature Atmosphere Cleanup System Air Filtration and Adsorption Units of Light-Water-Cooled Nuclear Power Plants," March 1978 (ADAMS Accession No. ML003740139).

## 2.0 REGULATORY EVALUATION

The NRC staff reviewed the proposed TS changes in the license amendment request (LAR) against the regulatory requirements listed in Section 2.1 and guidance listed in Section 2.2 of this safety evaluation (SE) to ensure that there is reasonable assurance that the systems and components affected by the proposed TS changes will perform their safety functions.

### 2.1 Regulatory Requirements

The NRC staff considered the following regulatory requirements related to this application:

General Design Criterion (GDC) 18, "Inspection and testing of electric power systems," of Appendix A to Part 50 of Title 10 of the *Code of Federal Regulations* (10 CFR) requires that electric power systems that are important to safety must be designed to permit appropriate periodic inspection and testing.

In 10 CFR 50.36, "Technical specifications," the Commission established its regulatory requirements related to the contents of the TS. Specifically, 10 CFR 50.36 states, in part, that

> Each applicant for a license authorizing operation of a production or utilization facility shall include in his application proposed technical specifications in accordance with the requirements of this section.

In addition, 10 CFR 50.36(c)(3) states,

> Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met.

The regulations in 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," require that preventive maintenance activities must not reduce the overall availability of the systems, structures, and components.

Furthermore, the NRC staff used the guidance in Section 2.2 of this SE to review the proposed TS changes against these requirements to ensure that there is reasonable assurance that the systems affected by the proposed TS changes will perform their required safety functions.

### 2.2 Regulatory Guidance

The NRC staff considered the regulatory guidance provided in Generic Letter (GL) 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. The licensee divided the proposed TS changes related to the GL 91-04 surveillance interval extension into two categories: non-calibration-related changes and calibration-related changes.

2.2.1 Non-Calibration-Related Changes

With respect to non-calibration-related changes:

- The licensee should analyze the effect on plant safety from the change in surveillance intervals to accommodate a 24-month fuel cycle. This evaluation should support a conclusion that the effect on safety is small.

- The licensee should confirm that historical maintenance and surveillance data do not invalidate this conclusion that the effect on safety is small.

- The licensee should confirm that the performance of surveillance at the bounding surveillance interval limit would not invalidate any assumption in the plant licensing basis.

For those SRs where the evaluation accomplishes these goals, the licensees need not quantify the effect of the change in surveillance intervals on the availability of individual systems or components. No change in the existence, testability, or availability of plant systems and components is being requested, only the extension in the frequency of tests or inspections.

2.2.2 Calibration-Related Changes

GL 91-04 also stipulates that the licensee should evaluate the following for calibration-related frequency changes:

- Confirm that instrument drift as determined by as-found and as-left calibration data from surveillance and maintenance records has not, except on rare occasions, exceeded acceptable limits for a calibration interval.

- Confirm that the values of drift for each instrument type (make, model, and range) and application have been determined with a high probability and a high degree of confidence. Summarize the methodology and assumptions used to determine the rate of instrument drift with time based upon historical plant calibration data.

- Confirm that the magnitude of instrument drift has been determined with a high probability and a high degree of confidence for a bounding calibration interval of 30 months for each instrument type (make, model number, and range) and application that performs a safety function. Provide a list of the channels by TS section that identifies these instrument applications.

- Confirm that a comparison of the projected instrument drift errors has been made with the values of drift used in the setpoint analysis. If this results in revised setpoints to accommodate larger drift errors, provide proposed TS changes to update trip setpoints. If the drift errors result in a revised safety analysis to support existing setpoints, summarize the updated analysis conclusions to confirm that safety limits and safety analysis assumptions are not exceeded.

- Confirm that the projected instrument errors caused by drift are acceptable for the control of plant parameters to affect a safe shutdown with the associated instrumentation.

- Confirm that all conditions and assumptions of the setpoint and safety analyses have been checked and are appropriately reflected in the acceptance criteria of plant surveillance procedures for channel checks, channel functional tests, and channel calibrations.

- Provide a summary description of the program for monitoring and assessing the effects of increased calibration surveillance intervals on instrument drift and on safety.

NRC Regulatory Guide (RG) 1.105, Revision 3, "Setpoints for Safety-Related Instrumentation," December 1999 (ADAMS Accession No. ML993560062), describes a method that the NRC staff considers acceptable for complying with the agency's regulations for ensuring that setpoints for safety-related instrumentation are initially within and remain within the TS limits. RG 1.105 endorses Part 1 of Instrument Society of America (ISA) Standard 67.04-1994, "Setpoints for Nuclear Safety-Related Instrumentation," subject to NRC staff clarifications. The staff used this guide to establish the adequacy of the licensee's setpoint calculation methodologies and the related plant surveillance procedures.

In NRC Regulatory Issue Summary (RIS) 2006-17, "NRC Staff Position on the Requirements of 10 CFR 50.36, 'Technical Specifications,' Regarding Limiting Safety System Settings during Periodic Testing and Calibration of Instrument Channels," dated August 24, 2006 (ADAMS Accession No. ML051810077), the NRC addresses requirements on limiting safety system settings that are assessed during the periodic testing and calibration of instrumentation. RIS 2006-17 discusses issues that could occur during the testing of limiting safety system settings and that, therefore, may have an adverse effect on equipment operability.

Similar license amendments have been approved for Browns Ferry Nuclear Plant, Unit 1 (September 28, 2006; ADAMS Accession No. ML062170002), Clinton Power Station, Unit 1 (October 21, 2005; ADAMS Accession No. ML052940480), Monticello Nuclear Generating Plant (September 30, 2005; ADAMS Accession No. ML052700252) and River Bend Station, Unit 1 (August 31, 2010; ADAMS Accession No. ML102350266).

## 3.0 TECHNICAL EVALUATION

Improved reactor fuels allow licensees to consider an increase in the duration of the fuel cycle for their facilities. There are significant economic benefits associated with a longer fuel cycle. A longer fuel cycle increases the time interval between refueling outages and the performance of the associated TS SRs. The NRC staff has reviewed requests for individual plants to modify TS surveillance intervals to be compatible with a 24-month fuel cycle. The NRC staff issued GL 91-04 to provide generic guidance to licensees for preparing such LARs.

In addition, NEDC-30936, "BWR Owners' Group Technical Specification Improvement Analyses for ECCS Actuation Instrumentation," showed that the overall safety systems' reliabilities are not dominated by the reliabilities of the logic systems, but by that of the mechanical components. Extending the surveillance test interval for these functional tests is acceptable because more

frequent verification of the various system pumps and valves are tested quarterly in the Inservice Testing program (IST) or a frequency based upon on a specific IST relief justification. The IST testing ensures that the major mechanical components of the various systems will be capable of performing their design functions.

Entergy has prepared this request for changing the following SRs from "18 months" to "24 months" using the guidance in GL 91-04. Historical surveillance test data and associated maintenance records were reviewed in evaluating the effect of these changes on safety. For each of the proposed surveillance extensions, the licensee tried to retrieve the five most recent surveillance test results and associated maintenance records for at least five of the most recent cycles of operation, which is equivalent to approximately 7 years of history or three 30-month surveillance periods. The licensee collected at least 30 samples for each proposed TS change to ensure a 95 percent confidence level 95 percent of time (i.e., 95/95 confidence level). In addition to evaluating the historical drift data with 18-month calibrations, the licensee also evaluated the failure history of the related instruments.

3.1 Non-Calibration-Related Changes

3.1.1 TS 3.1.7 - Standby Liquid Control (SLC) System

SR 3.1.7.8 Verify flow through one SLC subsystem from pump into reactor pressure vessel.

The surveillance test interval of this SR is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the 25 percent grace period. The flow path through one standby liquid control (SLC) subsystem is verified per SR 3.1.7.8 during every refueling outage on a staggered test basis. This test could inadvertently cause a reactor transient if performed with the unit operating and, therefore, to decrease the potential impact of the test, it is performed during outage conditions.

The SLC system is required to be operable in the event of a plant power failure; therefore, the pumps, heaters, valves, and controls are powered from the standby alternating current power supply. The piping electric heat tracing is powered from the normal power supply. The pumps and valves are powered and controlled from separate buses and circuits so that a single failure will not prevent system operation.

The SLC pumps are tested in accordance with the IST per SR 3.1.7.7 to verify operability. Similarly, the temperature of the sodium pentaborate solution in the storage tank and the temperature of the pump suction piping are verified every 24 hours in accordance with SRs 3.1.7.2 and 3.1.7.3 to preclude precipitation of the boron solution. The equipment and tank containing the solution are installed in a room in which the air temperature is maintained within the range of 70 degrees Fahrenheit (°F) to 100 °F. In addition, an electrical resistance heater system provides a backup heat source to the environment and maintains the solution temperature at 85 °F (automatic operation) to 95 °F (automatic shutoff) to prevent precipitation of the sodium pentaborate from the solution during storage. In addition, SR 3.1.7.4 verifies the continuity of the charge in the explosive valves. These more frequent tests ensure that the SLC system remains operable during the operating cycle, and that, based on this testing performed

during the operating cycle, the impact, if any, from this change on system availability is expected to be small.

In accordance with the GL 91-04 guidance, the licensee reviewed the surveillance history and verified that this subsystem had no previous failures of the TS functions that would have been detected solely by the periodic performance of the related SRs. Therefore, the NRC staff concludes that increasing the surveillance interval will only have a minimal, if any, impact on system availability.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that because of the subsystem testing required by the other TS surveillances and the history of the subsystem performance, the impact, if any, of this change on safety is small. Therefore, the NRC staff concludes that increasing to 24 months the above SR in TS 3.1.7 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.2 TS 3.1.8 - Scram Discharge Volume (SDV) Vent and Drain Valves

SR 3.1.8.3 Verify each SDV vent and drain valve:

a. Closes in ≤ 30 seconds after receipt of an actual or simulated scram signal; and

b. Opens when the actual or simulated scram signal is reset.

The surveillance test interval of this SR is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the 25 percent grace period. This SR ensures that the scram discharge volume (SDV) vent and drain valves close in less than or equal to 30 seconds after receipt of an actual or simulated scram signal and opens when the actual or simulated scram signal is reset. SR 3.1.8.2 requires that the SDV vent and drain valves be cycled fully closed and fully open every 92 days during the operating cycle, which ensures that the mechanical components and a portion of the valve logic remain operable. Additionally, it has been previously accepted that the failure rate of components is dominated by the mechanical components, not by the logic systems.

In accordance with the GL 91-04 guidance, the licensee reviewed the applicable surveillance history and demonstrated that the logic subsystem for the SDV and drain valves had no previous failures of the TS function that would have been detected solely by the periodic performance of this SR. Therefore, the NRC concludes that increasing the surveillance interval will only have a minimal, if any, impact on system availability.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that, because of the manual cycling of the valves to ensure that the valves are operable, as required by SR 3.1.8.2, and the history of the logic subsystem performance, the impact, if any, of this change on safety is small. Therefore, the NRC staff concludes that increasing to 24 months the above SR in TS 3.1.8 is acceptable based on:

(1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.3 TS 3.3.1.1 - Reactor Protection System (RPS) Instrumentation

Functional Tests

The licensee evaluated the following functions under Logic System Functional Tests and Selected Channel Functional Tests:

TS 3.3.1.1 - Reactor Protection System (RPS) Instrumentation

SR 3.3.1.1.11 Perform CHANNEL FUNCTIONAL TEST.

SR 3.3.1.1.13 Perform LOGIC SYSTEM FUNCTIONAL TEST.

TS 3.3.2.1 - Control Rod Block Instrumentation

SR 3.3.2.1.8 Perform CHANNEL FUNCTIONAL TEST.

TS 3.3.3.2 - Remote Shutdown System Instrumentation

SR 3.3.3.2.2 Verify each required control circuit and transfer switch is capable of performing the intended functions.

TS 3.3.4.1 - End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation

SR 3.3.4.1.4 Perform LOGIC SYSTEM FUNCTIONAL TEST, including breaker actuation.

TS 3.3.4.2 - Anticipated Transient Without Scram (ATWS) Recirculation Pump Trip (RPT) Instrumentation

SR 3.3.4.2.5 Perform LOGIC SYSTEM FUNCTIONAL TEST, including breaker actuation.

TS 3.3.5.1 - Emergency Core Cooling System (ECCS) Instrumentation

SR 3.3.5.1.6 Perform LOGIC SYSTEM FUNCTIONAL TEST.

TS 3.3.5.2 - Reactor Core Isolation Cooling (RCIC) System Instrumentation

SR 3.3.5.2.5 Perform LOGIC SYSTEM FUNCTIONAL TEST.

TS 3.3.6.1 - Primary Containment and Drywell Isolation Instrumentation

SR 3.3.6.1.7 Perform LOGIC SYSTEM FUNCTIONAL TEST.

TS 3.3.6.2 - Secondary Containment Isolation Instrumentation

SR 3.3.6.2.6 Perform LOGIC SYSTEM FUNCTIONAL TEST.

TS 3.3.6.3 - Residual Heat Removal (RHR) Containment Spray System Instrumentation

SR 3.3.6.3.6 Perform LOGIC SYSTEM FUNCTIONAL TEST.

TS 3.3.6.4 - Suppression Pool Makeup (SPMU) System Instrumentation

SR 3.3.6.4.6 Perform LOGIC SYSTEM FUNCTIONAL TEST.

TS 3.3.6.5 - Relief and Low-Low Set (LLS) Instrumentation

SR 3.3.6.5.4 Perform LOGIC SYSTEM FUNCTIONAL TEST.

TS 3.3.7.1 - Control Room Fresh Air (CRFA) System Instrumentation

SR 3.3.7.1.1 Perform LOGIC SYSTEM FUNCTIONAL TEST.

TS 3.3.8.1 - Loss of Power (LOP) Instrumentation

SR 3.3.8.1.3 Perform LOGIC SYSTEM FUNCTIONAL TEST.

TS 3.3.8.2 - Reactor Protection System (RPS) Electric Power Monitoring

SR 3.3.8.2.3 Perform a system functional test.

The licensee analyzed the effect on plant safety from the change in surveillance intervals to accommodate a 24-month fuel cycle. This evaluation concluded that the effect on safety is small. Extending the surveillance test interval for the logic system functional tests (LSFTs) and selected functional tests is acceptable because most of the functionality is verified to be operating properly by the performance of more frequent Channel Checks, analog trip module calibration, and visual confirmation of satisfactory operation (as applicable). The Channel Functional Tests and other (non-LSFT) tests listed above are essentially LSFTs of associated circuits; the justification for extending LSFT is also valid for the extension of these SRs. This more frequent testing ensures that a major portion of the circuitry is operating properly and will detect significant failures within the instrument loop.

The licensee confirmed the above evaluation by reviewing the maintenance records of the five most recent cycles. This review of the applicable surveillance history demonstrated that the logic systems for these functions had six failures of the TS functions that would have been detected solely by the periodic performance of one of the SRs. During the audit, the licensee explained that, similar to the request for additional information (RAI) Response N.1 provided in the licensee's letter dated August 14, 2013, the phrase "detected solely by the periodic performance of one of the SRs" should be understood as "The identified failures were detected solely during performance of the TS SR performed every 18 months; however, other more

frequent Tech Spec SRs could have detected these failures as well." Each failure was analyzed and the licensee concluded that these failures were unique, and would only pose a minimal impact on system availability from the proposed change to a 24-month testing frequency. These failures were as follows:

1. On September 9, 2010, Float Switch 1C11-N013C did not trip. The licensee found an actuating screw on a spare micro switch stuck on the micro switch arm which was resolved by adjusting the micro switch pivot arm. The switch passed the surveillance procedure and the As-Left data was all within satisfactory limits.

2. On May 19, 2010, valve P45-F068 did not stroke closed during testing as required by TSs. Replacement of parts resolved the problem.

3. On May 15, 2010, valve 1D23-F591 did not stroke closed on a high drywell pressure initiation signal. Troubleshooting failed to identify any obvious problem. After the troubleshooting, the valve passed the test satisfactorily.

4. On March 29, 2007, a failure of an Agastat relay, 1E21AK108, prevented valve E12-F042A from opening. The relay was replaced. The retesting following the relay replacement was satisfactory.

5. On September 24, 2002, a relay failed and was replaced. The system performed satisfactorily meeting all TS acceptance criteria.

6. On September 18, 2002, an Agastat relay failed and was replaced. The replaced relay met all TS requirements.

For the September 9, 2010, May 19, 2010, and May 15, 2010, issues, no similar failures are identified. Therefore, the failures are not repetitive in nature. No timed-based mechanisms are apparent. Therefore, these failures are unique and any subsequent failure would not result in a significant impact on system/component availability.

For the September 24, 2002, September 18, 2002, and March 29, 2007 issues, there are a total of four failures identified relative to Agastat relays over the review period. Of the four Agastat relay failures, one failure was to Model EGPI, one was to Model FGPD, one was to Model EGPB, and one was to Model EGPD. In all four Agastat relay failures, the defective relays were replaced. The Agastat Model EGPI failure occurred in 2002 and was in the residual heat removal (RHR) Valve Isolation logic for Division 1. The Agastat Model FGPD failure occurred in 2002 and was in the Drywell Chilled Water Supply and Return Lines and Equipment Drain Transfer Tank Pump Discharge Line Valve Isolation Logic for Division II. The Agastat EGPB failure occurred in 2005 and was in the Control Room heating, ventilation and air conditioning (HVAC) B Breaker Logic in the loss of power (LOP) Division 2 Load Shed Test. The Agastat Model EGPD relay failure occurred in 2007 and was in the RHR A Containment Spray Initiation Logic Division 1. There does not appear to be any common cause for these failures and no time-based mechanisms are apparent in these failures based on the fact that the failures are in different plant systems and are spread out over a 5-year period with not more than two failures in any one year. When considering the total number of Agastat relays in the various plant system applications, a total of four different relay failures over the review period is a small

percentage of the total population of relays tested. Therefore, the NRC staff concluded that when considering these failures, increasing the surveillance interval will only have a minimal, if any, impact on system availability. Based on other more frequent testing of portions of the circuits, and the history of logic system performance and the corrective action for relay failures, the impact of this change on safety, if any, is small.

Therefore, the NRC staff concludes that increasing the surveillance test intervals of the surveillances listed above from once every 18 months to once every 24 months (for a maximum interval of 30 months including the 25 percent grace period) is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.4 Response Time Tests

The licensee evaluated the following functions under Response Time Tests:

TS 3.3.1.1 - Reactor Protection System (RPS) Instrumentation

SR 3.3.1.1.15 Verify the RPS RESPONSE TIME is within limits.

TS 3.3.4.1 - End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation

SR 3.3.4.1.6 Verify the EOC-RPT SYSTEM RESPONSE TIME is within limits.

TS 3.3.6.1 - Primary Containment and Drywell Isolation Instrumentation

SR 3.3.6.1.8 Verify the ISOLATION SYSTEM RESPONSE TIME for the Main Steam Isolation Valves is within limits.

TS 3.3.6.2 - Secondary Containment Isolation Instrumentation

SR 3.3.6.2.7 Verify the ISOLATION SYSTEM RESPONSE TIME for air operated Secondary Containment isolation dampers is within limits.

The licensee analyzed the effect on plant safety from the change in surveillance intervals to accommodate a 24-month fuel cycle. This evaluation concluded that the effect on safety is small. Extending the surveillance test interval for the response time tests is acceptable because most of the functionality is verified to be operating properly by the performance of more frequent Channel Checks, analog trip module calibration, and visual confirmation of satisfactory operation (as applicable). This more frequent testing ensures that a major portion of the circuitry is operating properly and will detect significant failures within the instrument loop.

The licensee's review of the surveillance history demonstrated that the circuits tested by the TS surveillances listed above had no previous failures of the TS response time function that would have been detected solely by the periodic performance of these SRs. Therefore, the NRC staff

concludes that increasing the surveillance interval will only have a minimal, if any, impact on system availability. In addition other, more frequent, testing (i.e., channel checks) ensures that a significant portion of the circuitry is operating properly.

Therefore, the NRC staff concludes that increasing the surveillance test intervals of the surveillances listed above from once every 18 months to once every 24 months (for a maximum interval of 30 months including the 25 percent grace period) is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision..

3.1.5 TS 3.4.2 - Flow Control Valves (FCVs)

SR 3.4.2.1 Verify each FCV fails "as is" on loss of hydraulic pressure at the hydraulic unit.

SR 3.4.2.2 Verify average rate of each FCV movement is:

a. ≤ 11% of stroke per second for opening; and

b. ≤ 11% of stroke per second for closing.

The surveillance test interval of these SRs is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the 25 percent grace period. For SR 3.4.2.1, the hydraulic power unit pilot operated isolation valves located between the servo valves and the common "open" and "close" lines are required to close on a loss of hydraulic pressure. When closed, these valves inhibit FCV motion by blocking hydraulic pressure from the servo valve to the common open and close lines as well as to the alternate subloop. This surveillance verifies the FCV lockup on a loss of hydraulic pressure assuring that the FCV fails "as-is" on loss of hydraulic pressure. For SR 3.4.2.2, the test ensures the overall average rate of FCV movement at all positions is maintained within the analyzed limits. Due to the nature of the control components in this application, there are no definable components or any timed-based conditions that could appreciably change the rate of change for opening or closing the FCV during the operating cycle. The FCV actuator has an inherent rate-limiting feature that will limit the resulting rate of change of core flow and power to within safe limits in the event of an upscale or downscale failure of the valve position or velocity control system. This surveillance verifies the rate-limiting feature of the FCV that will limit the resulting rate of change of core flow and power to within safe limits in the event of an upscale or downscale failure of the valve position or velocity control system.

In accordance with the GL 91-04 guidance, the licensee reviewed the applicable GGNS surveillance history and demonstrated that the hydraulic power unit pilot operated lock-out valves had no previous failures of the TS function that would have been detected solely by the periodic performance of this SR. Therefore, the NRC determined that increasing the surveillance interval will only have a minimal, if any, impact on system availability.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that, based on the reliability of the check valves and the history of

system performance, the impact of this change on safety, if any, is small. The NRC staff concludes that increasing to 24 months the above SRs in TS 3.4.2 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.6 TS 3.4.4 - Safety/Relief Valves (S/RVs)

SR 3.4.4.2 Verify each required relief function S/RV actuates on an actual or simulated automatic initiation signal.

The surveillance test interval of SR 3.4.4.2 is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the 25 percent grace period. The required relief function S/RVs are to actuate automatically upon receipt of specific initiation signals. A system functional test (i.e., SR 3.4.4.2) is performed to verify that the mechanical portions of the automatic relief function operate as designed when initiated either by an actual or simulated initiation signal. The Logic System Functional Test (LSFT) in SR 3.3.6.5.4 overlaps this SR to provide complete testing of the safety function. Valve operability and the setpoints for overpressure protection are verified, per American Society of Mechanical Engineers (ASME) requirements, prior to valve installation by performance of SR 3.4.4.1. This verification assures that the valve was actually functioning when installed and that the mechanical valve components were in good condition. In addition, the valves are normally tested prior to or soon after startup and, therefore, any failure of actual valve function is expected to be noted and corrective action taken prior to plant operation.

In accordance with the GL 91-04 guidance, the licensee reviewed the applicable GGNS surveillance history and demonstrated that the S/RVs had three previous failures of the TS functions that would have been detected solely by the periodic performance of these SRs. The identified failures were unique and did not occur on a repetitive basis and were not associated with a time-based failure mechanism. Therefore, these failures are not expected to have significant impact on an extension to a 24-month surveillance interval.

Of a total of three failures identified relative to Dikkers Model G-471.6 Relief Valves over the review period, each involved a different Main Steam Relief Valve and each failure occurred during a different refueling cycle (i.e., one failure in 2005, one in 2007, and one in 2008). In each case, the valve was replaced with a rotatable spare. No timed-based mechanisms were apparent. Therefore, as these failures are unique any subsequent failure would not result in a significant impact on system/component availability and increasing the surveillance interval will only have a minimal, if any, impact on system availability.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that, based on the system testing required by the other TS surveillances and the history of the system performance, that the impact of this change on safety, if any, is small. The NRC staff concludes that increasing to 24 months the above SR in TS 3.4.4 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.7 TS 3.4.7 - RCS Leakage Detection Instrumentation

SR 3.4.7.3 Perform CHANNEL CALIBRATION of required leakage detection instrumentation.

The surveillance test interval of SR 3.4.7.3 is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the 25 percent grace period. The RCS leakage detection system consists of instrumentation for the following three functions:

1) Drywell floor drain sump,
2) Drywell atmospheric particulate or atmospheric gaseous, and
3) Drywell air cooler condensate flow rate.

No allowable value is applicable to these functions. The leakage detection instrumentation differs from other TS instrumentation in that they are not associated with a function trip, but provide indication only to the control room operator. As such, these instruments are not expected to function with the same high degree of accuracy demanded of functions with assumed trip actuations for accident detection and mitigation. The leakage detection instrumentation devices are expected to maintain sufficient accuracy to detect trends or the existence or non-existence of an excessive leakage condition.

In accordance with the GL 91-04 guidance, the licensee reviewed the applicable GGNS surveillance history and found that the RCS Leakage Detection System had two previous failures of the TS function that would have been detected solely by the periodic performance of this SR. These identified failures were:

1) On August 2, 2009, the detector for particulate Radiation Monitor 1D23-K601 was determined to be inoperable when non-Technical Specification as-found trip values were out of tolerance and a proper detector curve was unable to be obtained. Work Order 193632 was written to replace the detector. Following detector replacement, 06-IC-1 D23-R-1 002 was successfully performed in accordance with Work Order 51674100.

2) On June 12, 2003, the D23K063 Gaseous Radiation Monitor efficiency failed low and the LCO was entered. MAI 333946 was written and implemented to troubleshoot and replace the Gaseous Radiation Monitor. The surveillance was re-performed on June 19, 2003, following the replacement of the monitor.

The licensee stated in its submittal that these identified failures are unique and do not occur on a repetitive basis and are not associated with a time-based failure mechanism. During the audit, the licensee explained that, similar to RAI Response N.1 provided in the licensee's letter dated August 15, 2013, the phrase "detected solely by the periodic performance of one of the SRs" should be understood as "The identified failures were detected solely during performance of the TS SR performed every 18 months; however, other more frequent TS SRs could have detected these failures as well." In addition, the licensee noted that its contractor for this review made conservative determinations of the operability of these systems. The licensee stated that it believes these systems were still operable. Therefore, as these failures are unique any

subsequent failure would not result in a significant impact on system/component availability and increasing the surveillance interval will only have a minimal, if any, impact on system availability.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that because of the redundancy of the leakage detection systems and the more frequent verification of the instrument functions that are accomplished by SR 3.4.7.1 (Channel Check of the required drywell atmospheric monitoring system) once every 12 hours and SR 3.4.7.2 (Channel Functional Tests of the required leakage detection instrumentation) once every 31 days and the history of the system performance, the impact of this change on safety, if any, is small. Therefore, the NRC staff concludes that increasing to 24 months the above SR in TS 3.4.7 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.8 TS 3.5.1 - Emergency Core Cooling System (ECCS)-Operating and TS 3.5.2 - Emergency Core Cooling System (ECCS)-Shutdown

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| SR 3.5.1.5 | Verify each ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal. |
| SR 3.5.1.6 | Verify the ADS actuates on an actual or simulated automatic initiation signal. |
| SR 3.5.1.8 | Verify the ECCS RESPONSE TIME for the HPCS System is within limits. |
| SR 3.5.2.6 | Verify each required ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal. |

The surveillance test interval of these SRs is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the 25 percent grace period. These emergency core cooling system (ECCS) and automatic depressurization system (ADS) functional tests (SR 3.5.1.5, SR 3.5.1.6, and SR 3.5.2.6) ensure that a system initiation signal (actual or simulated) to the automatic initiation logic will cause the systems or subsystems to operate as designed. SR 3.5.1.8 ensures that the high pressure core spray (HPCS) System response time is less than or equal to the maximum value assumed in the accident analysis. The ECCS network has built-in redundancy so that no single active failure prevents accomplishing the safety function of the ECCS. The pumps and valves associated with ECCS are tested quarterly in accordance with the IST and SR 3.5.1.4. This testing ensures that the major components of the systems are capable of performing their design function. The tests proposed to be extended need to be performed during outage conditions since they have the potential to initiate an unplanned transient if performed during operating conditions.

In accordance with the GL 91-04 guidance, the licensee reviewed the applicable GGNS surveillance history and demonstrated that ECCS had no previous failures of the TS functions that would have been detected solely by the periodic performance of these SRs. Therefore, the

NRC concludes that increasing the surveillance frequency will only have a minimal, if any, impact, on system availability.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that, based on the redundancy of the system, other more frequent testing of the system, and the history of system performance, the impact of this change on safety, if any, is small. Therefore, the NRC staff concludes that increasing to 24 months the above SRs in TS 3.5.1 and TS 3.5.2 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.9 TS 3.5.3 - Reactor Core Isolation Cooling (RCIC) System

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| SR 3.5.3.4 | Verify, with RCIC steam supply pressure ≤ 165 psig and ≥ 150 psig, the RCIC pump can develop a flow rate ≥ 800 gpm against a system head corresponding to reactor pressure. |
| SR 3.5.3.5 | Verify the RCIC System actuates on an actual or simulated automatic initiation signal. |

The surveillance test interval of these SRs is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the 25 percent grace period. These reactor core isolation cooling (RCIC) functional tests ensure that the system will operate as designed. The pumps and valves associated with the RCIC system are generally tested quarterly in accordance with the IST (although some valves may have independent relief justifying less frequent testing). This testing ensures that the major components of the system are capable of performing their design function.

In accordance with the GL 91-04 guidance, the licensee reviewed the applicable GGNS surveillance history and demonstrated that RCIC had no previous failures of these TS functions that would have been detected solely by the periodic performance of these SRs. Therefore, the NRC concludes that increasing the surveillance frequency will only have a minimal, if any, impact on system availability.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that, based on other more frequent testing of the system, and the history of system performance, the impact of this change on safety, if any, is small. Therefore, the NRC staff concludes that increasing to 24 months the above SRs in TS 3.5.3 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.10 TS 3.6.1.2 - Primary Containment Air Locks

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| SR 3.6.1.2.4 | Verify, from an initial pressure of 90 psig, the primary containment air lock seal pneumatic system pressure does not decay at a rate equivalent to > 2 psig for a period of 48 hours. |

The surveillance test interval of this SR is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the allowed 25 percent interval extension. A separate surveillance test, SR 3.6.1.2.2, exists for verifying primary containment air lock seal air flask pressure to be greater than or equal to 90 pounds per square inch gauge (psig) every 7 days to ensure that the seal system remains viable. Additionally, SR 3.6.1.2.3 exists for verifying every 24 months that only one of the two air lock doors can be opened at one time. The containment air lock doors are redundant.

The LAR indicated that only one failure of SR 3.6.1.2.4 has occurred. This resulted in as-found leakage rate of the lower containment inner door exceeding the TS allowable leakage rate values. The cause was determined to be a leak on a fitting to a pressure switch which was repaired. The licensee determined that there was no time based failure mechanism involved. Therefore, as this failure is unique any subsequent failure would not result in a significant impact on system/component availability and increasing the surveillance interval will only have a minimal, if any, impact on system availability.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that, based on other more frequent testing of the system, system design, and the history of system performance, the impact of this change on plant safety, if any, is small. Therefore, the NRC staff concludes that increasing to 24 months the above SR in TS 3.6.1.2 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.11 TS 3.6.1.3 - Primary Containment Isolation Valves (PCIVs)

SR 3.6.1.3.7 Verify each automatic PCIV actuates to the isolation position on an actual or simulated isolation signal.

The surveillance test interval of this SR is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the TS SR 3.0.2 allowed 25 percent interval extension. A separate surveillance test, SR 3.6.1.3.4, exists for verifying the acceptable isolation time of these valves in accordance with the IST. For most primary containment isolation valves (PCIVs), this is performed quarterly. These tests provide information about the condition of the PCIVs and much of the actuation circuitry. Most PCIVs are a redundant barrier in a containment penetration. The LAR indicated that the history search showed only five failures of the TS functions that would have been detected solely by the periodic performance of one of these SRs, four of which had to do with Agastat relay failures.

The LAR concluded that when considering the total number of Agastat relays in the various plant system applications, a total of four different relay failures over the review period is a small percentage of the total population of relays tested. Therefore, as these failures represent a small percentage of the total population of relays any subsequent failure would not result in a significant impact on system/component availability and increasing the surveillance interval will only have a minimal, if any, impact on system availability.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that, based on other more frequent testing of portions of the circuits, the history of logic system performance, and the corrective action for relay failures, the impact of this change on safety, if any, is small. Therefore, the NRC staff concludes that increasing to 24 months the above SR in TS 3.6.1.3 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.12 TS 3.6.1.6 - Low-Low Set (LLS) Valves

SR 3.6.1.6.2 Verify the LLS System actuates on an actual or simulated automatic initiation signal.

The surveillance test interval of this SR is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the 25 percent grace period. The function is verified to be operating properly by the performance of more frequent Channel Functional Tests (i.e., SR 3.3.6.5.1) and analog trip module calibrations (i.e., SR 3.3.6.5.2). This more frequent testing ensures that the major portion of the circuitry is operating properly and detects significant failures within the instrument loop. In addition, the low-low set (LLS) valves (i.e., safety/relief valves assigned to the LLS logic) are designed to meet applicable reliability, redundancy, single failure, and qualification standards and regulations as described in the GGNS Updated Final Safety Analysis Report (UFSAR). As such, these functions are designed to be highly reliable, thus extending the surveillance test interval for these functional tests will only have a minimal, if any, impact on system availability.

In accordance with the GL 91-04 guidance, the licensee reviewed the applicable GGNS surveillance test history and verified that the LLS valves have had three previous failures of the TS functions that would have been detected solely by the periodic performance of these SRs. There were a total of three failures identified relative to Dikkers Model G-471.6 Relief Valves over the review period. Of the three identified failures, each involved a different Main Steam Relief Valve and each failure occurred during a different refueling cycle (i.e., one failure in 2005, one in 2007, and one in 2008). In each case, the valve was replaced with a rotatable spare. No timed-based mechanisms were apparent. Therefore, as these failures are unique any subsequent failure would not result in a significant impact on system/component availability and increasing the surveillance interval will only have a minimal, if any, impact on system availability.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that, based on other more frequent testing of the system, system design, and the history of system performance, the impact of this change on plant safety, if any, is small. Therefore, the NRC staff concludes that increasing to 24 months the above SR in TS 3.6.1.6 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.13 TS 3.6.1.7 - Residual Heat Removal (RHR) Containment Spray System

SR 3.6.1.7.3 Verify each RHR containment spray subsystem automatic valve in the flow path actuates to its correct position on an actual or simulated automatic initiation signal.

The surveillance test interval of this SR is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the TS SR 3.0.2 allowed 25 percent interval extension. The RHR Containment Spray System has built-in redundancy so that no single active failure prevents the ability to mitigate the effects of bypass leakage and low energy line breaks. The pumps and valves associated with the RHR Containment Spray System are tested quarterly in accordance with the IST and SR 3.6.1.7.2. The test proposed to be extended needs to be performed during outage conditions since there is the potential to initiate an unplanned transient if performed during operating conditions.

In accordance with the GL 91-04 guidance, the licensee reviewed the applicable GGNS surveillance test history and identified one previous failure of the TS function (i.e., failure of Agastat relay 1E21AK108 prevented valve E12-F042A from opening) that would have been detected solely by the periodic performance of this SR. The identified failure is unique and does not occur on a repetitive basis and is not associated with a time-based failure mechanism. Therefore, as this failure is unique, any subsequent failure would not result in a significant impact on system/component availability and increasing the surveillance interval will only have a minimal, if any, impact on system availability.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that, based on other more frequent testing of the system, system design and redundancy, and the history of system performance, the impact of this change on safety, if any, is small. Therefore, the NRC staff concludes that increasing to 24 months the above SR in TS 3.6.1.7 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.14 TS 3.6.1.9 - Main Steam Isolation Valve (MSIV) Leakage Control System (LCS)

SR 3.6.1.9.3 Perform a system functional test of each MSIV LCS subsystem.

The surveillance test interval of this SR is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the 25 percent grace period. A system functional test is performed to ensure that the main steam isolation valve leakage control system (MSIV-LCS) will operate through its operating sequence. A separate surveillance test, SR 3.6.1.9.1, operates each outboard MSIV-LCS blower greater than or equal to 15 minutes every 31 days. This more frequent testing ensures that the major components of the outboard subsystems are capable of performing their design function. Since the major components of this manually initiated system are tested on a more frequent basis, this testing would indicate any degradation to the MSIV-LCS. In addition, the MSIV-LCS subsystems are designed to perform their safety function in the event of any single active failure and, therefore, are highly reliable. The test proposed to be extended needs to be performed during outage

conditions since it has the potential to initiate an unplanned transient if performed during operating conditions.

In accordance with the GL 91-04 guidance, the licensee reviewed the applicable GGNS surveillance history and demonstrated that the MSIV-LCS had no previous failure of the TS function that would have been detected solely by the periodic performance of this SR. Therefore, the NRC concludes that increasing the surveillance interval will only have a minimal, if any, impact on system availability.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that, based on other more frequent testing of the system, system design, and the history of system performance, the impact of this change on safety, if any, is small. Therefore, the NRC staff concludes that increasing to 24 months the above SR in TS 3.6.1.9 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.15 TS 3.6.2.4 - Suppression Pool Makeup (SPMU) System

SR 3.6.2.4.5 Verify each SPMU subsystem automatic valve actuates to the correct position on an actual or simulated automatic initiation signal.

The surveillance test interval of this SR is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the TS SR 3.0.2 allowed 25 percent interval extension. The function of the suppression pool makeup (SPMU) system is to transfer water from the upper containment pool to the suppression pool after a loss-of-coolant accident (LOCA). This SR requires a verification that each SPMU subsystem automatic valve actuates to its correct position on receipt of an actual or simulated automatic initiation signal. This includes verification of the correct automatic positioning of the valves and of the operation of each interlock and timer. The logic system functional test in SR 3.3.6.4.6 overlaps this SR to provide complete testing of the safety function.

In accordance with the GL 91-04 guidance, the licensee reviewed the applicable GGNS surveillance history and determined that no failures of the system TS function would have been detected solely by the periodic performance of this SR. Therefore, the NRC concludes that increasing the surveillance interval will only have a minimal, if any, impact on system availability.

NEDC-30936, "BWR Owners' Group Technical Specification Improvement Analyses for ECCS Actuation Instrumentation," showed that the overall safety systems' reliabilities are not dominated by the reliabilities of the logic systems, but by that of the mechanical components. Extending the surveillance test interval for these functional tests is acceptable because more frequent verification of the SPMU system valves is conducted quarterly in the IST or a frequency based upon on a specific IST relief justification. The IST testing ensures that the major mechanical components of the SPMU system will be capable of performing their design function.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that, based on the redundancy of the system, the more frequent testing of the SPMU system valves, and the infrequency of system failures that the impact on plant safety, if any, is small. Therefore, the NRC staff concludes that increasing to 24 months the above SR in TS 3.6.2.4 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.16 TS 3.6.3.2 - Primary Containment and Drywell Hydrogen Igniters

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| SR 3.6.3.2.3 | Verify each required igniter in inaccessible areas develops sufficient current draw for a ≥ 1700°F surface temperature. |
| SR 3.6.3.2.4 | Verify each required igniter in accessible areas develops a surface temperature of ≥ 1700°F. |

The surveillance test interval of these SRs is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the TS SR 3.0.2 allowed 25 percent interval extension. Separate SRs exist to obtain electrical current versus voltage data to verify the likely proper functioning of the hydrogen igniters every 184 days or 92 days.

There are two redundant divisions of igniters in the hydrogen control system. In accordance with the GL 91-04 guidance, the licensee reviewed the applicable GGNS surveillance history and demonstrated that the hydrogen igniter system had 19 previous igniter failures (six failed in 2001, one failed in 2002, two failed in 2003, one failed in 2004, two failed in 2006, two failed in 2008, three failed in 2009, and two failed in 2010) of the TS function that would have been detected solely by the periodic performance of these SRs. The LAR stated that each failure was unique and not associated with a time-based failure mechanism. Therefore, as these failures are unique any subsequent failure would not result in a significant impact on system/component availability and increasing the surveillance interval will only have a minimal, if any, impact on system availability.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that, based on the redundancy of the system divisions and igniters involved, the other more frequent SRs that provide indication of igniter condition, the infrequency of igniter failures relative to the total number of igniters, and the associated maintenance history of the igniters that the impact on plant safety, if any, is small. Therefore, the NRC staff concludes that increasing to 24 months the above SRs in TS 3.6.3.2 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.17 TS 3.6.3.3 - Drywell Purge System

SR 3.6.3.3.3 Verify each drywell purge subsystem flow rate is ≥ 1000 cfm.

SR 3.6.3.3.4 Verify the opening pressure differential of each vacuum breaker and isolation valve is ≤ 1.0 psid.

The surveillance test interval of these SRs are proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the TS SR 3.0.2 allowed 25 percent interval extension. A separate surveillance test, SR 3.6.3.3.2, exists that requires each primary containment/drywell purge subsystem to be operated every 92 days. The drywell purge system has built-in redundancy so that no single failure prevents system operation. Another surveillance test, SR 3.6.3.3.1, exists that requires performing a channel functional test of the isolation valve pressure actuation instrumentation every 31 days.

In accordance with the GL 91-04 guidance, the licensee reviewed the applicable GGNS surveillance history and demonstrated that no failures of the system TS function would have been detected solely by the periodic performance of this SR. Therefore, the NRC staff concludes that increasing the surveillance interval will only have a minimal, if any, impact on system availability.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that, based on the redundancy of the system, the other potentially more frequent SRs that provide some indication of system condition, and the infrequency of system failures, the impact on plant safety, if any, would be small. Therefore, the NRC staff concludes that increasing to 24 months the above SRs in TS 3.6.3.3 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.18 TS 3.6.4.1 - Secondary Containment

SR 3.6.4.1.3 Verify the secondary containment can be drawn down to ≥ 0.25 inch of vacuum water gauge in ≤ 180 seconds using one standby gas treatment (SGT) subsystem.

SR 3.6.4.1.4 Verify the secondary containment can be maintained ≥ 0.266 inch of vacuum water gauge for 1 hour using one SGT subsystem at a flow rate ≤ 4000 cfm.

The surveillance test interval of these SRs is proposed to be increased from once every 18 months (on a staggered test basis) to once every 24 months (on a staggered test basis), for a maximum interval of 30 months including the TS SR 3.0.2 allowed 25 percent interval extension. To ensure that all fission products are treated, the tests required per SR 3.6.4.1.3 and SR 3.6.4.1.4 are performed utilizing one standby gas treatment (SGT) subsystem (on a staggered test basis) to ensure secondary containment boundary integrity. SRs 3.6.4.1.1 (every 31 days) and 3.6.4.1.2 (every 31 days) provide more frequent assurance that no significant boundary degradation has occurred.

In accordance with the GL 91-04 guidance, the licensee reviewed the applicable GGNS surveillance history and demonstrated that no failures of the secondary containment TS function detectable solely by periodic performance of this SR have occurred during the historical review period. Therefore, the NRC concludes that increasing the surveillance interval will only have a minimal, if any, impact on system availability.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that, based on the more frequent SRs (which provide indication of secondary containment boundary condition) and the infrequency of SR failure the impact on plant safety, if any, is small. Therefore, the NRC staff concludes that increasing to 24 months the above SRs in TS 3.6.4.1 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.19 TS 3.6.4.2 - Secondary Containment Isolation Valves (SCIVs)

SR 3.6.4.2.3 Verify each automatic SCIV actuates to the isolation position on an actual or simulated automatic isolation signal.

The surveillance test interval of this SR is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the TS SR 3.0.2 allowed 25 percent interval extension. During the operating cycle, a separate surveillance test, SR 3.6.4.2.2, requires that the isolation time of each power-operated automatic secondary containment isolation valve (SCIV) be tested (i.e., stroke timed to the closed position) in accordance with the IST (some valves may have independent relief justifying less frequent testing). The stroke testing of these SCIVs tests a portion of the same circuitry and mechanical function, and provides more frequent testing to detect failures.

In accordance with the GL 91-04 guidance, the licensee reviewed the applicable GGNS surveillance history and demonstrated that SCIVs had previous failures (May 19, 2010, May 15, 2010, September 24, 2002, and September 18, 2002) of the TS function that would have been detected solely by the periodic performance of this SR During September 24, 2002, and September 18, 2002, four failures were identified due to failed Agastat relays. Of the four Agastat relay failures, one failure was to Model EGPI, one was to Model FGPD, one was to Model EGPB, and one was to Model EGPD. In all four Agastat relay failures, the defective relays were replaced. The licensee stated that when considering the total number of Agastat relays in the various plant system applications, a total of four different relay failures over the review period is a small percentage of the total population of relays tested. Therefore, as these failures are unique, any subsequent failure would not result in a significant impact on system/component availability and increasing the surveillance interval will only have a minimal, if any, impact on system availability.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that, based on the redundancy of the components, the other, more frequent tests that provide some indication of valve and actuation circuitry condition, the infrequency of SR failure and associated maintenance history of the SCIVs and associated

actuation circuitry, the impact on plant safety, if any, is small. Therefore, the NRC staff concludes that increasing to 24 months the above SR in TS 3.6.4.2 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.20 TS 3.6.4.3 - Standby Gas Treatment (SGT) System

SR 3.6.4.3.3 Verify each SGT subsystem actuates on an actual or simulated initiation signal.

The surveillance test interval of this SR is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the TS SR 3.0.2 allowed 25 percent interval extension. This SR requires verification that each standby gas treatment (SGT) subsystem starts upon receipt of an actual or simulated initiation signal. The logic system functional test in SR 3.3.6.2.6 overlaps this SR to provide complete testing of the safety function.

The LAR states that the SGT subsystems are redundant so that no single failure prevents accomplishing the safety function of filtering the discharge from secondary containment. More frequent verification of portions of the SGT system function is accomplished by operating each SGT subsystem and heater every 31 days (i.e., SR 3.6.4.3.1). The LAR further states that, in accordance with the GL 91-04 guidance, the licensee reviewed the applicable GGNS surveillance history and demonstrated that no failures of the SGT system TS function detectable solely by periodic performance of these SRs have occurred during the historical review period. Therefore, the NRC concludes that increasing the surveillance interval will only have a minimal, if any, impact on system availability.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that, based on other more frequent SRs (which provide indication of SGT system condition) and the infrequency of SR failure, the impact on plant safety, if any, is small. Therefore, the NRC staff concludes that increasing to 24 months the above SR in TS 3.6.4.3 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.21 TS 3.6.5.3 - Drywell Isolation Valves

SR 3.6.5.3.4 Verify each automatic drywell isolation valve actuates to the isolation position on an actual or simulated isolation signal.

The surveillance test interval of this SR is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the TS SR 3.0.2 allowed 25 percent interval extension. The LAR states that during the operating cycle, automatic drywell isolation valve isolation times are tested per existing SR 3.6.5.3.3 in accordance with the IST. The LAR further stated that stroke testing of drywell isolation valves tests a significant portion of the circuitry as well as the mechanical function, which will detect

failures of this circuitry or failures with valve movement. The frequency of this testing is typically quarterly.

As stated in its letter dated September 24, 2013, in accordance with the GL 91-04 guidance, the licensee reviewed the applicable GGNS surveillance history and demonstrated that four failures of this TS function had occurred during the surveillance history period reviewed that would have been detected solely by periodic performance of SR 3.6.5.3.4. The four failures occurred on September 24, 2002, involving four valves that did not close on an isolation signal because Agastat relay 1M71R065 failed-plunger stuck in the energized position. MAI 321408 replaced the Agastat relay and performed satisfactory retesting with all TS acceptance criteria met. As stated in its letter dated September 24, 2013, the licensee is committed to replace the Agastat relay every 10 years as a result of industry concerns/awareness of repetitive failures. Therefore, no age-related failures are expected.

The identified failures are unique and not repetitive failures and are not associated with any time- based failure mechanism. Therefore, as these failures are unique, any subsequent failure would not result in a significant impact on system/component availability and increasing the surveillance interval will only have a minimal, if any, impact on system availability.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that, based on the other more frequent SR that provides some indication of isolation valve and actuation circuitry condition and the infrequency of SR failures, the impact on plant safety is small. Therefore, the NRC staff concludes that increasing the above SR to 24 months in TS 3.6.5.3 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.22 TS 3.6.5.6 - Drywell Vacuum Relief System

SR 3.6.5.6.3 Verify the opening pressure differential of each vacuum breaker and isolation valve is ≤ 1.0 psid.

The surveillance test interval of this SR is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the TS SR 3.0.2 allowed 25 percent interval extension. Verification of the opening pressure differential is necessary to ensure that the safety analysis assumption that the vacuum breaker or isolation valve will open fully at a differential pressure of 1.0 pounds per square inch differential (psid) is valid. More frequent verification of portions of the Drywell Vacuum Relief System is accomplished by verification that each vacuum breaker and its associated isolation valve is closed every 7 days and by performance of a functional test every 31 days (i.e., SRs 3.6.5.6.1 and 3.6.5.6.2, respectively).

In accordance with the GL 91-04 guidance, the licensee reviewed the applicable GGNS surveillance history and demonstrated that the Drywell Vacuum Relief System had no previous failure of the TS functions that would have been detected solely by the periodic performance of these SRs. Therefore, the NRC staff concludes that increasing the surveillance interval will only have a minimal, if any, impact on system availability.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that, based on other more frequent SRs that provide some indication of isolation valve and actuation circuitry condition and the infrequency of SR failures, the impact on plant safety, if any, is small. Therefore, the NRC staff concludes that increasing to 24 months the above SR in TS 3.6.5.6 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.23 TS 3.7.1 - Standby Service Water (SSW) System and Ultimate Heat Sink (UHS) and TS 3.7.2 - High Pressure Core Spray (HPCS) Service Water System (SWS)

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| SR 3.7.1.4 | Verify each SSW subsystem actuates on an actual or simulated initiation signal. |
| SR 3.7.2.2 | Verify the HPCS SWS actuates on an actual or simulated initiation signal. |

The surveillance test interval of these SRs is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the 25 percent grace period. These SRs verify that the automatic isolation valves of the standby service water (SSW) and high pressure core spray (HPCS) service water system (SWS) will automatically switch to the safety or emergency position to provide cooling water exclusively to the safety-related equipment during an accident.

SR 3.7.1.4 and SR 3.7.2.2 are performed by use of an actual or simulated initiation signal. These surveillances are implemented as part of integrated ECCS testing, during which it is demonstrated that the SSW system and the HPCS SWS system actuates in response to an initiation signal and that the divisional SSW pumps and HPCS SWS pump start, and the system aligns to provide cooling to Safety Related systems in accordance with its requirements during the specified event. The licensee has stated that this actuation circuitry for the integrated SSW and HPCS SWS surveillances are tested only once per cycle.

NEDC-30936, "BWR Owners' Group Technical Specification Improvement Analyses for ECCS Actuation Instrumentation," showed that the overall safety systems' reliabilities are not dominated by the reliabilities of the logic systems, but by that of the mechanical components. The licensee states that extending the surveillance test interval for these functional tests is acceptable because more frequent verification of the SSW system pumps and valves are conducted quarterly in the IST or at a frequency based upon on a specific IST relief justification. The IST testing ensures that the major mechanical components of the SSW system will be capable of performing their design function. Additionally, SR 3.7.1.3 verifies that valves in the flow path are in the correct position monthly.

In accordance with the GL 91-04 guidance, the licensee reviewed the applicable GGNS surveillance history for SR 3.7.1.4 and SR 3.7.2.2 and found no previous failure of these TS surveillances that would have been detected solely by performance of these surveillances.

Therefore, the NRC staff concludes that increasing the surveillance interval will only have a minimal, if any, impact on system availability

The NRC staff reviewed the proposed changes and the licensee's justification for the changes. The NRC staff determined that because of the more frequent subsystem testing required by the IST and the history of the system performance, the impact of this change on safety, if any, is small. The NRC staff concludes that increasing to 24 months the above SRs in TSs 3.7.1 and 3.7.2 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.24 TS 3.7.3 - Control Room Fresh Air (CRFA) System

SR 3.7.3.3 Verify each CRFA subsystem actuates on an actual or simulated initiation signal.

The surveillance test interval of this SR is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the TS SR 3.0.2 allowed 25 percent interval extension. The LAR stated that the control room fresh air (CRFA) subsystems are redundant and no single failure would prevent accomplishing their safety function. An SR exists for verifying that both CRFA subsystems are functional by operating them every 31 days (i.e., 3.7.3.1).

In accordance with the GL 91-04 guidance, the licensee reviewed the applicable GGNS surveillance history and demonstrated that no failures of this TS function had occurred during the surveillance history period reviewed that could have been detected solely during periodic performance of this SR. Therefore, the NRC staff concludes that increasing the surveillance interval will only have a minimal, if any, impact on system availability.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that, based on the redundancy of the CRFA subsystems, the other more frequent SR that provides some indication of system condition, and the infrequency of SR failures of the CRFA subsystems, the impact on plant safety, if any, is small. Therefore, the NRC staff concludes that increasing to 24 months the above SR in TS 3.7.3 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.25 TS 3.7.4 - Control Room Air Conditioning (AC) System

SR 3.7.4.1 Verify each control room AC subsystem has the capability to remove the assumed heat load.

The surveillance test interval of this SR is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the TS SR 3.0.2 allowed 25 percent interval extension. This SR involves a combination of testing and calculation to verify that each control room air conditioning (AC) subsystem is capable of removing the heat load assumed in the safety analysis. The LAR stated that a control room AC subsystem is

normally operating and thus most malfunctions are detected and corrected as a matter of routine. The LAR also indicated that the active components and power supplies are redundant such that a single failure would not prevent the system from accomplishing its safety function.

In accordance with the GL 91-04 guidance, the licensee reviewed the applicable GGNS surveillance history and demonstrated that no failures of this TS function had occurred during the surveillance history period reviewed that could have been detected solely during periodic performance of this SR. Therefore, the NRC staff concludes that increasing the surveillance interval will only have a minimal, if any, impact on system availability.

The NRC staff reviewed the proposed change and the licensee's justification for the change. The NRC staff determined that, based on the redundancy of the control room AC subsystems, the other more frequent monitoring of system operation that provides some indication of system condition, and the infrequency of SR failures of the control room AC subsystems, the impact on plant safety is minimal. Therefore, the NRC staff concludes that increasing to 24 months the above SR in TS 3.7.4 is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

3.1.26 TS 3.7.7 - Main Turbine Bypass System

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| SR 3.7.7.2 | Perform a system functional test. |

By letter dated December 11, 2013, Entergy withdrew its April 26, 2013, request to revise the surveillance interval for this surveillance from 18 to 24 months. Therefore, the NRC staff is neither evaluating a change to, nor changing, the surveillance interval of SR 3.7.7.2.

3.1.27 TS 3.8.1 - Alternating Current (AC) Sources - Operating

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| SR 3.8.1.8 | Verify manual transfer of unit power supply from the normal offsite circuit to required alternate offsite circuit. |
| SR 3.8.1.9 | Verify each DG rejects a load greater than or equal to its associated single largest post accident load and engine speed is maintained less than nominal plus 75% of the difference between nominal speed and the overspeed setpoint or 15% above nominal, whichever is lower. |
| SR 3.8.1.10 | Verify each DG does not trip and voltage is maintained $\leq$ 5000 V during and following a load rejection of a load $\geq$ 5450 kW and $\leq$ 5740 kW for DG 11 and DG 12 and $\geq$ 3300 kW for DG 13. |
| SR 3.8.1.11 | Verify on an actual or simulated loss of offsite power signal:<br>a. De-energization of emergency buses; |

b. Load shedding from emergency buses for Divisions 1 and 2; and

c. DG auto-starts from standby condition and:

1. energizes permanently connected loads in ≤ 10 seconds,

2. energizes auto-connected shutdown loads,

3. maintains steady state voltage ≥ 3744 V and ≤ 4576 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.

SR 3.8.1.12 Verify on an actual or simulated Emergency Core Cooling System (ECCS) initiation signal each DG auto-starts from standby condition and:

a. In ≤ 10 seconds after auto-start and during tests, achieve voltage ≥ 3744 V and frequency ≥ 58.8 Hz;

b. Achieves steady state voltage ≥ 3744 V and ≤ 4576 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz;

c. Operates for ≥ 5 minutes; and

d. Emergency loads are auto-connected to the offsite power system.

SR 3.8.1.13 Verify each DG's non-critical automatic trips are bypassed on an actual or simulated ECCS initiation signal.

SR 3.8.1.14 Verify each DG operates for ≥ 24 hours:

a. For DG 11 and DG 12 loaded ≥ 5450 kW and ≤ 5740 kW; and

b. For DG 13:

1. For ≥ 2 hours loaded ≥ 3630 kW, and

2. For the remaining hours of the test loaded ≥ 3300 kW.

SR 3.8.1.15 Verify each DG starts and achieves:

a. in ≤ 10 seconds, voltage ≥ 3744 V and frequency ≥ 58.8 Hz; and

b. steady state voltage ≥ 3744 V and ≤ 4576 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.

SR 3.8.1.16 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.

SR 3.8.1.17 Verify, with a DG operating in test mode and connected to its bus, an actual or simulated ECCS initiation signal overrides the test mode by:

a. Returning DG to ready-to-load operation; and

b. Automatically energizing the emergency loads from offsite power.

SR 3.8.1.18 Verify interval between each sequenced load block is within ± 10% of design interval for each automatic load sequencer.

SR 3.8.1.19 Verify, on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ECCS initiation signal:

a. De-energization of emergency buses;

b. Load shedding from emergency buses for Divisions 1 and 2; and

c. DG auto-starts from standby condition and:

1. energizes permanently connected loads in ≤ 10 seconds,

2. energizes auto-connected emergency loads,

3. achieves steady state voltage ≥ 3744 V and ≤ 4576 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.

The surveillance test interval of these SRs is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the TS SR 3.0.2 allowed 25 percent interval extension. The GGNS Class 1E AC power distribution system supplies electrical power to three divisional load groups, with each division system powered by an independent Class 1E 4.16 kiloVolt (kV) Engineered Safety Feature (ESF) bus. Each ESF bus has three separate and independent offsite sources of power and a dedicated onsite diesel generator (DG). The ESF systems of any two of the three divisions provide for the minimum safety functions necessary to shut down the plant and maintain it in a safe shutdown condition. This design provides substantial redundancy in AC power sources. In Attachment 5 of the LAR, the licensee stated that the DGs are infrequently operated, thus, the risk of wear-related degradation is minimal. Furthermore, historical testing and surveillance testing during operation prove the ability of the diesel engines to start and operate under various load conditions. Through the normal engineering design process, all load additions and deletions are tracked and any changes to loading are verified to be within the capacity of their power sources. Furthermore, the licensee stated that more frequent testing of the AC sources is required as follows:

- Verifying correct breaker alignment and indicated power availability for each required offsite circuit every 7 days (i.e., SR 3.8.1.1);

- Verifying the DG starting and load carrying capability is demonstrated every 31 days (i.e., SRs 3.8.1.2 and 3.8.1.3), the ability to continuously supply makeup fuel oil is also demonstrated every 31 days (i.e., SR 3.8.1.6), and the load shedding and sequencing panels ability to respond within design criteria is demonstrated every 31 days (i.e., SR 3.8.1.7);

- Verifying the necessary support for DG start and operation as well as verifying the DG factors that are subject to degradation due to aging, such as fuel oil quality (i.e., SRs 3.8.1.4, 3.8.1.5, 3.8.3.1, 3.8.3.2, and 3.8.3.4), are required every 31 days and/or prior to addition of new fuel oil.

The licensee has identified the following seven previous failures of the TS functions that were detected solely during the periodic performance of the above SRs:

1. The Division 2 DG outside air fan breaker failed to automatically close after the load shed signal was initiated.

2. The Division 3 DG experienced voltage and amperage fluctuations.

3. The Division 2 DG tripped 13.22 hours into a 24-hour performance run.

4. The DG tripped on high vibration approximately three minutes into the diesel generator run due to the spurious actuation of the AMOT vibration switch.

5. The Division 3 DG failed to reach the required frequency in the required time.

6. The overspeed trip micro switch for Division 3 DG would not actuate without agitation.

7. The control room HVAC "B" breaker did not reclose following the load shed signals due to Agastat load shed relay failure.

The licensee stated that, because failures 1, 2, 3, 5, and 6 did not occur on a repetitive basis, were unique, and were not associated with a time based failure mechanism, they would not impact an extension to a 24-month surveillance interval. The licensee has identified that failure 4 occurred twice during Divisions 1 and 2 DG 24-hour run time tests and failure 7 occurred four times in different plant systems over the review period. The licensee has evaluated these failures and determined that there were no time-based mechanisms apparent. Thus, the licensee concluded that these failures were unique and an increase in the surveillance test interval would not result in a significant impact on system/component availability and increasing the surveillance interval will only have a minimal, if any, impact on system availability. In response to the NRC staff's RAI dated March 18, 2013 (ADAMS Accession No. ML13077A366), the licensee stated in its letter dated August 15, 2013, that failures 2, 3, 4, and 5 would have been detected by the performance of more frequent SR 3.8.1.3 and either SR 3.8.1.2 or SR 3.8.1.21, while failures 1, 6, and 7 would have only been detected during the performance of SR 3.8.1.11, SR 3.8.1.9, and SR 3.8.1.19, respectively. The licensee further stated that, based on the above more frequent testing of the system, system design, and the history of system performance, the impact of this change on safety, if any, is small.

On page 11 of Attachment 1 of the LAR, the licensee has evaluated the impact of the proposed changes against the assumptions in the GGNS licensing bases. The licensee stated that in some cases, the change to a 24-month fuel cycle may require a change to licensing bases information as described in the UFSAR. In response to the NRC staff's RAI, the licensee affirmed, in its letter dated December 5, 2013, that no assumptions in the existing GGNS licensing basis would be invalidated by the TS AC Sources – Operating changes as a result of implementing a 24-month fuel cycle.

The NRC staff used the guidance provided in GL 91-04 to determine that the TS changes are acceptable. The first criterion of GL 91-04 requires the licensee to evaluate the effects on safety due to the change to a 24-month fuel cycle. The NRC staff has reviewed the licensee's evaluation of the proposed SRs and verified that the impact of this change on safety is small due to the redundancy in the AC power sources and the more frequent testing of the AC power sources. The second criterion of GL 91-04 requires the licensee to confirm that historical maintenance and surveillance data support the conclusion that the effect of the proposed changes on safety is small. The NRC staff has reviewed the licensee's evaluation of the seven previous failures as discussed above related to these SRs and concludes that these failures did not occur as a result of a time-based mechanism; thus, in combination with other more frequently performed SRs, an increase in the frequency of surveillances would not be expected to significantly impact system/component availability. The third criterion requires the licensee to confirm that the performance of surveillances at the bounding surveillance interval limit provided

to accommodate a 24-month fuel cycle would not invalidate any assumption in the plant licensing basis. The NRC staff confirmed that the licensee evaluated the impact of the proposed changes against the assumptions in the GGNS licensing basis and determined that no assumptions would be invalidated. Based on the above, the NRC staff concludes that the change to above SRs' frequencies from 18 months to 24 months is consistent with the criteria in GL 91-04 and, therefore, is acceptable.

3.1.28 TS 3.8.4 - Direct Current (DC) Sources - Operating

| | |
|---|---|
| SR 3.8.4.3 | Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration that could degrade battery performance. |
| SR 3.8.4.4 | Remove visible corrosion and verify battery cell to cell and terminal connections are coated with anti-corrosion material. |
| SR 3.8.4.5 | Verify battery connection resistance is ≤ 1.5 E-4 ohm for inter-cell connections, ≤ 1.5 E-4 ohm for inter-rack connections, ≤ 1.5 E-4 ohm for inter-tier connections, and ≤ 1.5 E-4 ohm for terminal connections. |
| SR 3.8.4.6 | Verify each Division 1 and 2 required battery charger supplies ≥ 400 amps at ≥ 125 V for ≥ 10 hours; and the Division 3 battery charger supplies ≥ 50 amps at ≥ 125 V for ≥ 4 hours. |
| SR 3.8.4.7 | 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 the GGNS UFSAR, the licensee stated that the direct current (DC) power systems supply adequate power for station emergency auxiliaries and for control and switching during all modes of operation. The three divisions that are essential to the safe shutdown of the reactor are supplied from three independent 125 Volt (V) DC systems. Each Division 1 and Division 2 125 V DC systems includes a Class 1E battery and two battery chargers. Division 3 125 V DC system includes a Class 1E battery and its battery charger. Each battery charger has enough power-output capacity for the steady-state operation of connected loads required during normal operation while maintaining its battery in a fully charged state. Each battery has sufficient stored energy to power required connected essential loads for a minimum period following a loss of AC power to the battery charger. The 125 V DC systems are designed so that no single failure in any of the systems will result in conditions that prevent safe shutdown of the plant. In Attachment 5 of the LAR, the licensee stated that the following more frequent testing of the DC power sources would provide prompt identification of any substantial degradation or failure of the battery and/or battery chargers:

- Verifying battery terminal voltage and pilot cell float voltage, electrolyte level and specific gravity, respectively every 7 days (i.e., SR 3.8.4.1 and SR 3.8.6.1).

- Verifying each cell float voltage, each cell electrolyte level, each cell specific gravity, and pilot cell temperature every 92 days (i.e., SR 3.8.6.2 and SR 3.8.6.3).

- Verifying no visible battery terminal/connector corrosion or high resistance every 92 days (i.e., SR 3.8.4.2)

The licensee has identified, over the review period, three previous failures of the TS functions that would have only been detected by the periodic performance of the proposed SRs. All three failures were relative to the current limit board of the battery charger 1A4. In all three cases, the current limit board amperes were out of tolerance; in two cases, the control B board was replaced and in the third case, the current limit board was recalibrated. The licensee stated that no time-based mechanisms are apparent; therefore, these failures are unique and any subsequent failure would not result in a significant impact on system/component availability and increasing the surveillance interval will only have a minimal, if any, impact on system availability. In addition, the licensee stated that, based on other more frequent testing of the system, and the history of system performance, the impact of this change on safety, if any, is small.

The NRC staff requested additional information on how the determination was made that there was no time-based mechanism considering that the same battery charger 1A4 failed to meet the TS requirements in 2003, 2007, and 2009. In its response letter dated August 15, 2013, the licensee stated that each Class 1E 125 V DC battery in Division 1 and Division 2 is provided with two battery chargers, each of which is capable of recharging its battery from a minimum discharged state in 12 hours while supplying the largest combined demand of the various steady-state DC loads. The licensee stated that the fact that all three failures, identified during the performance of TS SR 3.8.4.6 or SR 3.8.5.1, were associated with only one battery charger in Division 1 while the other three chargers exhibited no similar failures, that indicated that there was no time-based failure mechanism. The NRC staff further requested the licensee to confirm whether the battery charger 1A4 is tracked under the maintenance rule program and to discuss the corrective actions taken regarding the multiple failures. In its RAI response letter dated October 14, 2013, the licensee stated that a review of the GGNS Maintenance Rule Program history concluded that the failures were not Maintenance Rule Functional Failure events. The licensee also stated that preventive maintenance tasks are in place to maintain the battery chargers in an acceptable condition when considering age-related sensitive failures. In addition, the licensee stated that a corrective maintenance was performed in 2010 to replace the circuit boards in battery charger 1A4 along with the current limit preload resistor and since then, the charger has performed in an acceptable manner.

On page 11 of Attachment 1 of the LAR, the licensee has evaluated the impact of the proposed changes against the assumptions in the GGNS licensing basis. The licensee stated that in some cases, the change to a 24-month fuel cycle may require a change to licensing basis information as described in the UFSAR. In response to the NRC staff's RAI, the licensee affirmed, in its letter dated December 5, 2013, that no assumptions in the existing GGNS licensing basis would be invalidated by the TS DC Sources – Operating changes as a result of implementing a 24-month fuel cycle.

The NRC staff used the guidance provided in GL 91-04 to determine that the above TS 3.8.4 changes are acceptable. The first criterion of GL 91-04 requires the licensee to evaluate the

effects on safety due to the change to a 24-month fuel cycle. The NRC staff has reviewed the licensee's evaluation of the SRs and verified that the more frequently performed SRs listed above would indicate any degradation or failure of the battery and/or battery chargers. The second criterion of GL 91-04 requires the licensee to confirm that historical maintenance and surveillance data support the conclusion that the effect of the proposed changes on safety is small. The NRC staff has reviewed the licensee's evaluation of the three previous failures as discussed above related to these SRs and agrees with the licensee's conclusion that no time-based failure mechanisms are apparent and that any subsequent failure would not result in a significant impact on system/component availability as there are two battery chargers in Division 1. The third criterion requires the licensee to confirm that the performance of surveillances at the bounding surveillance interval limit provided to accommodate a 24-month fuel cycle would not invalidate any assumption in the plant licensing basis. The NRC staff confirmed that the licensee evaluated the impact of the proposed changes against the assumptions in the GGNS licensing basis and determined that no assumptions would be invalidated. Based on the above, the NRC staff concludes that the change to the above SR frequencies from 18 months to 24 months is consistent with the criteria in GL 91-04 and, therefore, is acceptable.

3.1.29 TS 5.5.7 – Ventilation Filter Testing Program (VFTP).

| | |
|---|---|
| SR 3.6.4.3.2 | Perform required SGT filter testing in accordance with the Ventilation Filter Testing Program (VFTP). |
| SR 3.7.3.2 | Perform required CRFA filter testing in accordance with the Ventilation Filter Testing Program (VFTP). |

TS Section 5.5.7 requires testing at frequencies specified in Regulatory Guide (RG) 1.52 Revision 2, "Design, Testing, and Maintenance Criteria for Post Accident Engineered-Safety-Feature Atmosphere Cleanup System Air Filtration and Adsorption Units of Light-Water-Cooled Nuclear Power Plants." RG 1.52 Revision 2, Regulatory Position C.5 states that at least once per 18 months an in-place High Energy Particulate Air (HEPA) filter Dioctyl Phthalate (DOP) penetration test should be performed for filter efficiency and that an in-place test of activated carbon adsorber filters bypass leakage with a halogenated hydrocarbon refrigerant should be performed. Regulatory Position C.6 states that at least once per 18 months a sample of the activated carbon adsorber should be laboratory tested for iodine decontamination efficiency.

The required interval of these tests is proposed to be increased from once every 18 months to once every 24 months, for a maximum interval of 30 months including the TS SR 3.0.2 allowed 25 percent interval extension. These tests of the ESF ventilation system filter units verify that they remain capable of providing the designed protection from airborne radionuclides.

In accordance with the GL 91-04 guidance, the licensee reviewed the applicable GGNS surveillance history and demonstrated that no failures of this TS function had occurred during the surveillance history period reviewed that could have been detected solely during periodic performance of these tests (and that these tests would continue to be performed based on the operating conditions or events as described in RG 1.52 Revision 2). Therefore, the NRC staff concludes that increasing the surveillance interval will have a only minimal, if any, impact on system availability.

The licensee stated that the exception to the RG 1.52 interval is explicitly addressed in a proposed change to the GGNS TS 5.5.7. Administrative Control Specification 5.5.7 is proposed to be revised to state as follows (inserted text shown underlined):

> 5.5.7 A program shall be established to implement the following required testing of Engineered Safety Feature (ESF) filter ventilation systems at the frequencies specified in Regulatory Guide 1.52, Revision 2, <u>except that testing specified at a frequency of 18 months is required at a frequency of 24 months</u>.

The LAR further stated that the ventilation filter (HEPA and charcoal) testing will continue to be performed in accordance with the other frequencies specified in RG 1.52, specifically: (1) on initial installation and (2) following painting, fire, or chemical release in any ventilation zone communicating with the system. Additionally, RG 1.52 requires that a sample of the charcoal adsorber be removed and tested after each 720 hours of system operation, and that an in-place charcoal test be performed following removal of these samples if the integrity of the adsorber section was affected. The licensee clarified that the proposed amendment request will not change the commitment to perform the above tests.

The NRC staff reviewed the proposed change to Administrative Control Specification 5.5.7 and the licensee's justification for the change. The NRC staff determined that, based on the infrequency of failure of the tests related to this change, the impact on plant safety, if any, is small. In addition, in Revision 3 of RG 1.52, dated June 2001 (ADAMS Accession No. ML011710176), the general acceptability of this longer testing interval was recognized with the change in the recommended frequency to at least once each 24 months. Therefore, the NRC staff concludes that increasing to 24 months the frequency of the above SRs by amending 5.5.7 as proposed is acceptable based on: (1) consistency with the guidance provided in the GL 91-04, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision. SRs 3.6.4.3.2 and 3.7.3.2 do not require any wording changes because they require testing in accordance with the VFTP and do not identify any frequency or performance interval.

3.2 <u>Calibration-Related Changes</u>

The licensee evaluated the following calibration-related TS changes against the criteria described in SE Section 2.2.2 (i.e., according to GL 91-04, RG 1.105, and RIS 2006-17):

<u>TS 3.3.1.1 - Reactor Protection System (RPS) Instrumentation</u>

| | |
|---|---|
| SR 3.3.1.1.12 | Perform CHANNEL CALIBRATION. |
| SR 3.3.1.1.14 | Verify Turbine Stop Valve Closure, Trip Oil Pressure-Low and Turbine Control Valve Fast Closure Trip Oil Pressure-Low Functions are not bypassed when THERMAL POWER is $\geq$ 35.4% RTP. |
| SR 3.3.1.1.17 | Perform APRM recirculation flow transmitter calibration. |

TS 3.3.1.2 - Source Range Monitor (SRM) Instrumentation

SR 3.3.1.2.6 Perform CHANNEL CALIBRATION.

TS 3.3.3.1 - Post Accident Monitoring (PAM) Instrumentation

SR 3.3.3.1.3 Perform CHANNEL CALIBRATION.

TS 3.3.3.2 - Remote Shutdown System

SR 3.3.3.2.3 Perform CHANNEL CALIBRATION for each required instrumentation channel.

TS 3.3.4.1 - End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation

SR 3.3.4.1.3 Perform CHANNEL CALIBRATION. The Allowable Values shall be:

a. TSV Closure, Trip Oil Pressure-Low: $\geq$37 psig.

b. TCV Fast Closure, Trip Oil Pressure-Low: $\geq$ 42 psig.

SR 3.3.4.1.5 Verify TSV Closure, Trip Oil Pressure-Low and TCV Fast Closure, Trip Oil Pressure-Low Functions are not bypassed when THERMAL POWER is $\geq$ 35.4% RTP.

TS 3.3.4.2 - Anticipated Transient Without Scram Recirculation Pump Trip (ATWS-RPT) - Instrumentation

SR 3.3.4.2.4 Perform CHANNEL CALIBRATION. The Allowable Values shall be:

a. Reactor Vessel Water Level-Low Low, Level 2: $\geq$ -43.8 inches; and

b. Reactor Vessel Pressure-High: $\leq$ 1139 psig.

TS 3.3.5.1 - Emergency Core Cooling System (ECCS) Instrumentation

SR 3.3.5.1.5 Perform CHANNEL CALIBRATION.

TS 3.3.5.2 - Reactor Core Isolation Cooling (RCIC) System Instrumentation

SR 3.3.5.2.4 Perform CHANNEL CALIBRATION.

TS 3.3.6.1 - Primary Containment and Drywell Isolation Instrumentation

SR 3.3.6.1.6 Perform CHANNEL CALIBRATION.

TS 3.3.6.2 - Secondary Containment Isolation Instrumentation

SR 3.3.6.2.5 Perform CHANNEL CALIBRATION.

TS 3.3.6.3 - Residual Heat Removal (RHR) Containment Spray System Instrumentation

SR 3.3.6.3.5 Perform CHANNEL CALIBRATION.

TS 3.3.6.4 - Suppression Pool Makeup (SPMU) System Instrumentation

SR 3.3.6.4.5 Perform CHANNEL CALIBRATION.

TS 3.3.6.5 - Relief and Low-Low Set (LLS) Instrumentation

SR 3.3.6.5.3 Perform CHANNEL CALIBRATION. The Allowable Values shall be:

a. Relief Function

| | |
|---|---|
| Low: | 1103 ± 15 psig |
| Medium: | 1113 ± 15 psig |
| High: | 1123 ± 15 psig |

b. LLS Function

| | | |
|---|---|---|
| Low | open: | 1033 ± 15 psig |
| | close: | 926 ± 15 psig |
| Medium | open: | 1073 ± 15 psig |
| | close: | 936 ± 15 psig |
| High | open: | 1113 ± 15 psig |
| | close: | 946 ± 15 psig |

TS 3.3.8.1 - Loss of Power (LOP) Instrumentation

SR 3.3.8.1.2 Perform CHANNEL CALIBRATION.

TS 3.3.8.2 - Reactor Protection System (RPS) Electric Power Monitoring

SR 3.3.8.2.2 Perform CHANNEL CALIBRATION. The Allowable Values shall be:

a. Overvoltage

Bus A ≤ 132.9 V
Bus B ≤ 133.0 V

b. Undervoltage

Bus A ≥ 115.0 V
Bus B ≥ 115.9 V

c. Underfrequency (with time delay set to ≤ 4 seconds)

Bus A ≥ 57 Hz
Bus B ≥ 57 Hz

The licensee evaluated the effect of the proposed longer calibration intervals on the TS instrumentation (listed above) by performing a review of the surveillance test history for the affected instrumentation including, where appropriate, an instrument drift study. In performing these historical evaluations, the licensee retrieved recorded channel calibration data for associated instruments for at least five operating cycles. By obtaining this past recorded calibration data, an acceptable basis for drawing conclusions about the expectation of satisfactory performance can be made. The failure history evaluation and drift study found that instrument drift has not exceeded the current TS Allowable Values except for the SR test failures.

The licensee evaluated the effect of the proposed longer calibration intervals on the TS instrumentation by performing an instrument drift study. In performing these drift studies, the licensee tried to retrieve recorded/channel calibration data for associated instruments for at least five surveillance intervals. By obtaining this past recorded calibration data, a true representation of instrument drift was determined. The methodology used to perform the drift analysis, was provided in an attachment to the application, and is consistent with the methodology utilized by other utilities requesting to transition to a 24-month fuel cycle. This methodology is based on the October 1998 Electric Power Research Institute (EPRI) Technical Report (TR)-103335, "Statistical Analysis of Instrument Calibration Data," Revision 1, which was originally endorsed (and therefore there is precedent for its use) in the NRC's August 31, 2010, SE of the River Bend Station, Unit 1, surveillance interval extension (ADAMS Accession No. ML102350266). The NRC found that this methodology determines, with high probability and a high degree of confidence, the drift values for each instrument type.

The licensee determined the magnitude of instrument drift with a high degree of confidence and a high degree of probability (at least 95/95 confidence level) for a bounding calibration interval of 30 months for each instrument make, model, and range associated with the above SRs. For instruments not in service long enough to establish a projected drift value, or where an

insufficient number of calibrations have been performed to utilize the statistical methods (i.e., fewer than 30 calibrations for any given group of instruments), the SR frequency is to be extended to a 24-month interval based on more frequent testing or other justification obtained from analysis.

The licensee compared projected drift values to the design allowances as calculated in the associated instrument setpoint analyses. Since the 30-month projected drift value for an instrument could be accommodated within the existing or revised setpoint analysis, the SR frequency can be changed to "24 months" with no change to the TS Allowable Value or licensing basis analytical limit. As necessary, affected calibration and functional test procedures, must be revised prior to implementation, to reflect the new 30-month drift values. The revised setpoint calculations were developed in accordance with Setpoint Methodology in Calculations JC-Q1B21-N678-1, Revision 2p; JC-Q1B21-N681-1, Revision 1; JC-Q1B21-N694-1, Revision 1; and JC-Q1P81-90024, Revision 3. These calculations determined the instrument loop uncertainty and setpoints for the affected functions. The setpoints were determined in a manner suitable to establish limits for their application. As such, the setpoints ensure that sufficient margins are maintained in the applicable safety analyses to confirm the affected instruments are capable of performing their intended design function.

The licensee compared the calculated drift values to drift allowances in the GGNS design basis. In no cases were changes to safe shutdown analyses required to support any change to a 24-month frequency.

The licensee reviewed applicable surveillance test procedures and updated acceptance criteria to incorporate the necessary changes resulting from any revision to setpoint calculations. Any necessary changes resulting from the reviews must be incorporated into the instrument surveillance procedures prior to the implementation of the 24-month surveillance test frequency. Existing plant processes ensure that all conditions and assumptions of the setpoint and safety analyses have been checked and are appropriately reflected in the acceptance criteria of plant surveillance procedures for Channel Checks, Channel Functional Tests, and Channel Calibrations.

The licensee stated that the instruments with TS calibration surveillance frequencies extended to 24 months will be monitored and trended. The as-found and as-left calibration data will be recorded for each 24-month calibration activity for a period of three cycles. This will identify occurrences of instruments found outside of their allowable value and instruments whose performance is not as assumed in the drift or setpoint analysis. When as-found conditions are outside the allowable value, an evaluation will be performed in accordance with the GGNS corrective action program to determine if the assumptions made to extend the calibration frequency are still valid and to evaluate the effect on plant safety.

The licensee performed uncertainty calculations in accordance with Calculations JC-Q1B21-N678-1, Revision 2; JC-Q1B21-N681-1, Revision 1; JC-Q1B21-N694-1, Revision 1' and JC-Q1P81-90024, Revision 3. This procedure allows for drift values to be calculated from as-found and as-left data, which was done. In addition, this procedure specifies the calculation of as-left-tolerance and as-found-tolerance using methods that are consistent with Technical Specifications Task Force (TSTF)-493, and the calculations reviewed during the audit followed this methodology. In addition, the NRC staff reviewed the setpoint uncertainty calculations in

accordance with RG 1.105, and RIS 2006-17 and determined that the setpoint calculation methodology used by the licensee is consistent with these documents and, therefore, is acceptable.

Therefore, the NRC staff concludes that increasing the surveillance test intervals of the surveillances listed above from once every 18 months to once every 24 months (for a maximum interval of 30 months including the 25 percent grace period) is acceptable based on: (1) consistency with the guidance listed in SE Section 2.2, (2) historical plant maintenance and surveillance data supporting the conclusion, and (3) that the assumptions in the plant licensing basis would not be invalidated as a result of this revision.

The NRC staff also concludes that the licensee has conservatively used the as-found tolerance to be the same as the as-left tolerance, and there is no change in any allowable value in the TS or in any nominal trip setpoint value in the plant's Technical Requirements Manual because of implementation of the 24-month fuel cycle. Based on these considerations, the NRC staff concludes that there is reasonable assurance that the systems and components affected by the proposed extension of the above SR intervals to 24 months will perform their safety functions. Therefore, the proposed amendments are acceptable.

3.3 Other Editorial TS Changes

3.3.1 TS 3.3.6.1 - Primary Containment and Drywell Isolation Instrumentation

During the evaluation of the 18-month SRs, the licensee determined that current SR 3.3.6.1.7 for Function 2.g., "Containment and Drywell Ventilation Exhaust Radiation – High," from TS Table 3.3.6.1-1 was not eligible to be extended to 24 months and as such this interval needed to be maintained. All other functions in Table 3.3.6.1-1 were eligible to be extended to 24 months. Editorial changes were needed to maintain the 18-month interval for Function 2.g. including adding new SR 3.3.6.1.8 for a 24-month interval for the remaining functions in Table 3.3.6.1-1.

Therefore, current SR 3.3.6.1.6 has been revised from "Perform CHANNEL CALIBRATION" to "Perform LOGIC FUNCTIONAL TEST." This SR now only applies to Function 2.g. SR 3.3.6.1.7 has been revised from "Perform LOGIC SYSTEM FUNCTIONAL TEST," to "Perform CHANNEL CALIBRATION." This SR has been changed to 24 months as discussed in Section 3.2. New SR 3.3.6.1.8 for the logic functional test has been added to extend the interval to 24 months for all other functions in Table 3.3.6.1-1 as discussed in Section 3.1.3. In addition, as a result of adding new SR 3.3.6.1.8, old SRs 3.3.6.1.8 and 3.3.6.1.9 were renumbered to SRs 3.3.6.1.9 and 3.3.6.1.10, respectively. For these reasons, the NRC staff concludes that these changes are editorial-in-nature and appropriately reflect the approval of the 24-month interval and, therefore, are acceptable.

3.3.2 TS 3.3.8.1 Loss of Power (LOP) Instrumentation

During the evaluation of the 18-month SRs, the licensee determined that current SR 3.3.8.1.2 for Function 1.a., "Divisions 1 and 2 – 4.16 kV Emergency Bus Undervoltage, Loss of Voltage – 4.16 kV basis" and Function 1.c., "Divisions 1 and 2 – 4.16 kV Emergency Bus Undervoltage, Degraded Voltage – 4.16 kV basis" from Table 3.3.8.1-1 were not eligible to be extended to 24 months and as such this interval needed to be maintained. All other functions in Table

3.3.8.1-1 were eligible to be extended to 24 months. Editorial changes were needed to maintain the 18-month interval for Functions 1.a. and 1.c. including adding a new SR 3.3.8.1.3 for a 24-month interval for the remaining functions in Table 3.3.8.1-1.

Therefore, current SR 3.3.8.1.3 has been changed to reflect a 24-month interval for the logic system functional test as discussed in Section 3.1.3 and renumbered to SR 3.3.8.1.4. New SR 3.3.8.1.3 for the channel calibration test has been added to extend the interval to 24 months for all other functions in Table 3.3.8.1-1 as discussed in Section 3.2. For these reasons, the NRC staff concludes that these changes are editorial-in-nature and appropriately reflect the approval of the 24-month interval and therefore, are acceptable.

## 4.0 CONCLUSION

The NRC staff has reviewed the licensee's request for proposed revisions to the TS SRs to support the implementation of a 24-month fuel cycle for the GGNS. The proposed LAR was evaluated by the NRC staff to determine whether applicable regulations and requirements continue to be met. The NRC staff determined that the proposed changes do not require any exemptions or relief from regulatory requirements, other than the TS. Furthermore, following the requested changes to the TS, applicable regulatory requirements will continue to be met, adequate defense-in-depth will be maintained, and sufficient safety margins will be maintained.

Based on the results of these reviews, the NRC staff concludes that there is no adverse effect on plant safety due to increasing the specified surveillance test intervals from 18 to 24 months with the continued application of the 25 percent grace period associated with SR 3.0.2. As provided by GL 91-04, the assumptions in the GGNS plant licensing basis were reviewed, and it was confirmed that the plant licensing basis would not be invalidated as a result of the proposed changes. Therefore, the NRC staff concludes that the licensee's proposed TS changes are acceptable based on their conformance to existing applicable regulations, consistency with NRC guidance, and provision of reasonable assurance that the impact of the interval extensions on safety would be small.

## 5.0 REGULATORY COMMITMENTS

While there are no regulatory commitments, in its letter dated October 14, 2013, the licensee stated that the following paragraph from page 29 of Attachment 5 to the LAR:

> Additionally, upon approval of this amendment request, commitments outlined in the Grand Gulf UFSAR related to RG 1.32, "Criteria for Safety-related Electric Power Systems for Nuclear Power Plants," RG 1.129, "Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," and to IEEE-450, "Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," to perform the battery service test (i.e., SR 3.8.4.7) during refueling outages, or at some other outage, with intervals between tests "not to exceed 18 months," will be revised to reflect intervals between tests "not to exceed 30 months."

will be revised to state:

> Additionally, upon approval of this amendment request, commitments outlined in the Grand Gulf UFSAR related to RG 1.32, "Criteria for Safety-related Electric Power Systems for Nuclear Power Plants," RG 1.129, "Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," and to IEEE-450, "Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," to perform the battery service test (i.e., SR 3.8.4.7) during refueling outages, or at some other outage, with intervals between tests "not to exceed 18 months," will be revised to reflect intervals between tests "not to exceed 24 months."

In addition, by letter dated December 11, 2013, Entergy withdrew its proposed request to modify SR 3.7.7.2 in TS 3.7.7, "Main Turbine Bypass System."

## 6.0 TS BASES

In Attachment 3 to the LAR, the licensee identified changes to the TS Bases for the proposed LAR. The changes to the TS Bases are for the entirety of the proposed LAR dated October 2, 2012, and in identifying changes to the TS Bases, the licensee is not requesting that the NRC approve these changes. The identified changes to the TS Bases are controlled by TS 5.5.11, "Technical Specifications (TS) Bases Control Program," which provides the means for the licensee to process TS Bases changes. While the NRC staff does not approve these changes, the NRC staff did review the Bases changes and has no disagreement with the identified changes to the TS Bases.

## 7.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Mississippi State official was notified of the proposed issuance of the amendment. The State official had no comments.

## 8.0 ENVIRONMENTAL CONSIDERATION

The amendment changes requirements with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding published in the *Federal Register* on November 13, 2012 (77 FR 67681). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

## 9.0 CONCLUSION

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

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Date: December 26, 2013

A copy of the related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely,

**/RA/**

Alan Wang, Project Manager
Plant Licensing IV-2 and Decommissioning
Transition Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-416

Enclosures:
1. Amendment No. 197 to NPF-29
2. Safety Evaluation

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| OFFICE | NRR/DSS/SBPB/BC | NRR/DSS/SCVB/BC | NRR/DE/EICB/BC | NRR/DE/EEEB/BC |
| NAME | GCasto | RDennig* | JThorp* | JZimmerman* |
| DATE | 12/17/13 | 10/7/13 | 11/26/13 | 12/11/13 |
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| NAME | JWachutka | DBroaddus( KFeintuch for) | AWang (NKalyanam for) | |
| DATE | 12/18/13 | 12/26/13 | 12/26/13 | |

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