

- (4) PPL Susquehanna, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
- (5) PPL Susquehanna, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR 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

PPL Susquehanna, LLC is authorized to operate the facility at reactor core power levels not in excess of 3952 megawatts thermal in accordance with the conditions specified herein. The preoperational tests, startup tests, and other items identified in License Conditions 2.C.(36), 2.C.(37), 2.C.(38), and 2.C.(39) to this license shall be completed as specified.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 246 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. PPL Susquehanna, LLC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

For Surveillance Requirements (SRs) that are new in Amendment 178 to Facility Operating License No. NPF-14, the first performance is due at the end of the first surveillance interval that begins at implementation of Amendment 178. For SRs that existed prior to Amendment 178, including SRs with modified acceptance criteria and SRs whose frequency of performance is being extended, the first performance is due at the end of the first surveillance interval that begins on the date the Surveillance was last performed prior to implementation of Amendment 178.

(3) Conduct of Work Activities During Fuel Load and Initial Startup

The operating licensee shall review by committee all facility construction, Preoperational Testing, and System Demonstration activities performed concurrently with facility initial fuel loading or with the facility Startup Test

(32) Emergency Service Water System (Section 6.3.4, SSER #4)

Prior to startup following the first refueling outage, the operating licensee shall complete design modifications to the emergency service water (ESW) system, approved by the staff, to eliminate single failure in the ESW system which leads to the need for an uncooled residual heat removal (RHR) pump.

(33) The Additional Conditions contained in Appendix C, as revised through Amendment No. 188, are hereby incorporated into this license. PPL Susquehanna, LLC shall operate the facility in accordance with the Additional Conditions.

(34) Mitigation Strategy License Condition

Develop and maintain strategies for addressing large fires and explosions and that include the following key areas:

- (a) Fire fighting response strategy with the following elements:
 - 1. Pre-defined coordinated fire response strategy and guidance
 - 2. Assessment of mutual aid fire fighting assets
 - 3. Designated staging areas for equipment and materials
 - 4. Command and control
 - 5. Training of response personnel

- (b) Operations to mitigate fuel damage considering the following:
 - 1. Protection and use of personnel assets
 - 2. Communications
 - 3. Minimizing fire spread
 - 4. Procedures for implementing integrated fire response strategy
 - 5. Identification of readily-available pre-staged equipment
 - 6. Training on integrated fire response strategy
 - 7. Spent fuel pool mitigation measures

- (c) Actions to minimize release to include consideration of:
 - 1. Water spray scrubbing
 - 2. Dose to onsite responders

(35) The licensee shall implement and maintain all Actions required by Attachment 2 to NRC Order EA-06-137, issued June 20, 2006, except the last action that requires incorporation of the strategies into the site security plan, contingency plan, emergency plan and/or guard training and qualification plan, as appropriate.

(36) Potential Adverse Flow Effects

These license conditions provide for monitoring, evaluating, and taking prompt action in response to potential adverse flow effects as a result of power uprate operation on plant structures, systems, and components (including verifying the continued structural integrity of the steam dryer).

- (a) The following requirements are placed on operation of the PPL Susquehanna, LLC (PPL) facility above the licensed thermal power (CLTP) level of 3489 megawatts thermal (MWt):
1. PPL shall obtain at each 3.5% power ascension step up to 107% of 3489 MWt, dryer strain gauge data and compare it to the acceptance criteria during power ascension above 3489 MWt. PPL shall obtain at each 3.5% power ascension step above 107% of 3489 MWt, main steam line strain gauge data and compare it to the limit curve for the dryer strains during power ascension.
 2. PPL shall monitor the main steam line (MSL) strain gauges during power ascension testing above 3489 MWt for increasing pressure fluctuations in the steam lines.
 3. PPL shall hold the facility at each 3.5% ascension step to collect data from License Condition 2.C.(36)(a) and conduct plant inspections and walk-downs, and evaluate steam dryer performance based on the data; shall provide the evaluation to the NRC staff by facsimile or electronic transmission to the NRC project manager upon completion of the evaluation; and shall not increase power above each hold point until 96 hours after the NRC project manager confirms receipt of the transmission.
 4. If any acceptance criteria for steam dryer strains at each 3.5% power ascension step up to 107% of 3489 MWt or frequency peak from the MSL strain gauge data exceeds the limit curve for the MSL strains above 107% of 3489 MWt, PPL shall return the facility to a power level at which the acceptance criteria is not exceeded. PPL shall resolve the discrepancy, document the continued structural integrity of the steam dryer, and provide that documentation to the NRC staff by facsimile or electronic transmission to the NRC project manager prior to further increases in reactor power.
 5. In addition to evaluating the dryer instrumentation data and MSL strain gauge data, PPL shall monitor reactor pressure vessel water level instrumentation and MSL piping accelerometers during power ascension above 3489 MWt. If resonance frequencies are identified as increasing above nominal levels in proportion to instrumentation data, PPL shall stop power ascension, document the continued structural integrity of the steam dryer, and provide that documentation to the NRC staff by facsimile or electronic transmission to the NRC project manager prior to further increases in reactor power.
 6. Following CPPU start-up testing, PPL shall resolve any discrepancies in the steam dryer analysis and provide that resolution to the NRC staff by facsimile or electronic transmission to the NRC project manager. If the discrepancies are not resolved within 90 days of identification, PPL shall return the facility to a power level at which the discrepancy does not exist.

- (b) PPL shall implement the following actions:
1. PPL shall provide to NRC the as-built dryer stress reconciliation and load limit curves 45 days prior to operation above 3489 MWt.
 2. After the dryer stress analysis is benchmarked to the Unit 1 startup test data (Unit 1 data taken up to 107 % of 3489 MWt), the benchmark results and updated MSL limit curves shall be provided to the NRC 90 days prior to operation above 107% of 3489 MWt.
 3. In the event that acoustic signals are identified that challenge the limit curve during power ascension above 107%, PPL shall evaluate dryer loads and re-establish the acceptance criteria based on the new data, and shall perform an assessment of ACM uncertainty at the acoustic signal frequency.
 4. After reaching 107% of CLTP, PPL shall obtain measurements from the steam dryer instrumentation and establish the steam dryer flow-induced vibration load fatigue margin for the facility, update the dryer stress report, and re-establish the limit curve with the updated ACM load definition and revised instrument uncertainty, which will be provided to the NRC staff.
 5. During power ascension above 107 % CLTP, if an engineering evaluation for the steam dryer is required because a Level 1 acceptance criteria is exceeded, PPL shall perform the structural analysis to address frequency uncertainties up to ± 10 % and assure that peak responses that fall within this uncertainty band are addressed.
 6. PPL shall revise the Post Constant Pressure Power Uprate (CPPU) Monitoring & Inspection Program to reflect long-term monitoring of plant parameters potentially indicative of steam dryer failure; to reflect consistency of the facility's steam dryer inspection program with General Electric Service Information Letter (SIL) 644, "BWR/3 Steam Dryer Failure," Revision 2; and to identify the NRC Project Manager for the facility as the point of contact for providing Power Ascension Test Plan (PATP) information during power ascension.
 7. PPL shall submit CPPU steam dryer reports to the NRC. Two written reports will be provided to the NRC. These reports will be issued following completion of testing of Unit 1 power ascension to 107% CLTP and 114% CLTP. Each report will include evaluations or corrective actions that were required to assure steam dryer structural integrity. Additionally, they will include relevant data collected at each power step, comparisons to performance criteria (design predictions), and evaluations performed in conjunction with steam dryer structural integrity monitoring.

8. PPL shall submit the flow-induced vibration related portions of the CPPU startup test procedure to the NRC, including methodology for updating the limit curve, prior to initial power ascension above 3489 MWt.
- (c) PPL shall prepare the CPPU startup test procedure to include the:
1. steam dryer strain gauge acceptance criteria to be used up to 107% of CLTP and the main steam line strain gauge limit curves to be applied for evaluating steam dryer performance above 107% CLTP;
 2. specific hold points and their duration during CPPU power ascension;
 3. activities to be accomplished during hold points;
 4. plant parameters to be monitored;
 5. inspections and walk-downs to be conducted for steam, feedwater, and condensate systems and components during the hold points;
 6. methods to be used to trend plant parameters;
 7. acceptance criteria for monitoring and trending plant parameters, and conducting the walk-downs and inspections;
 8. actions to be taken if acceptance criteria are not satisfied; and
 9. verification of the completion of commitments and planned actions specified in its application and all supplements to the application in support of the CPPU license amendment request pertaining to the steam dryer prior to power increase above 3489 MWt. PPL shall provide the related CPPU startup test procedure sections to the NRC by facsimile or electronic transmission to the NRC project manager prior to increasing power above 3489 MWt.
- (d) The following key attributes of the PATP shall not be made less restrictive without prior NRC approval:
1. During initial power ascension testing above 3489 MWt, each test plateau increment shall be approximately 3.5% of 3489 MWt;
 2. Level 1 performance criteria; and
 3. The methodology for establishing the stress criteria used for the Level 1 and Level 2 performance criteria.

Changes to other aspects of the PATP may be made in accordance with the guidance of Nuclear Energy Institute (NEI) 99-04, "Guidelines for Managing NRC Commitments," issued July 1999.

- (e) During each scheduled refueling outage until at least two full operating cycles at full CPPU conditions have been achieved, a visual inspection shall be conducted of all accessible, susceptible locations of the steam dryer in accordance with BWRVIP-139 and General Electric inspection guidelines.
- (f) The results of the visual inspections of the steam dryer shall be reported to the NRC staff within 60 days following startup. The results of the PATP shall be submitted to the NRC staff in a report within 60 days following the completion of all CPPU power ascension testing.
- (g) This license condition shall expire upon satisfaction of the requirements in License Conditions 2.C.(36)(e) and 2.C.(36)(f) provided that a visual inspection of the steam dryer does not reveal any new unacceptable flaw or unacceptable flaw growth that is due to fatigue.

(37) Transient Testing

- (a) PPL will demonstrate through performance of transient testing on each SSES unit that the loss of one condensate pump will not result in a complete loss of reactor feedwater. The test shall be performed on each unit during the unit's CPPU power ascension test program within 336 hours of achieving and prior to exceeding a nominal power level of 3733 MWt with feedwater and condensate flow rates stabilized. PPL shall confirm that the plant response to the transient is as expected in accordance with the acceptance criteria that are established. If a loss of all reactor feedwater occurs as a result of the test, the test failure shall be addressed in accordance with corrective action program requirements and the provisions of the power ascension test program prior to continued operation of the SSES Unit above 3489 MWt.
- (b) Unless the NRC issues a letter notifying the licensee that the tests specified by License Condition 2.C.(37)(a) adequately demonstrate that a single condensate pump trip will not result in a loss of all feedwater while operating at the full CPPU power level of 3952 MWt, PPL shall perform the transient test on either SSES unit (whichever unit is first to achieve the following specified operating conditions) specified by License Condition 2.C.(37)(a) during the power ascension test program while operating at 3872 MWt to 3952 (98% to 100% of the full CPPU power level) with feedwater and condensate flow rates stabilized. The test shall be performed within 90 days of operating at greater than 3733 MWt and within 336 hours of achieving a nominal power level of 3872 MWt with feedwater and condensate flow rates stabilized. PPL will demonstrate through performance of transient testing on either Susquehanna Unit 1 or Unit 2 (whichever unit is first to achieve the specified conditions) that the loss of one condensate pump will not result in a complete loss of reactor feedwater. PPL shall confirm that the plant response to the transient is as expected in accordance with the acceptance criteria that are established. If a loss of all feedwater occurs as a result of the test, the test failure shall be addressed in accordance with corrective action

program requirements and the provisions of the power ascension test program prior to continued operation of either SSES Unit above 3733 MWt.

(38) Neutronic Methods

- (a) An OPRM amplitude setpoint penalty will be applied to account for a reduction in thermal neutrons around the LPRM detectors caused by transients that increase voiding. This penalty will reduce the OPRM scram setpoint according to the methodology described in Response No. 3 of PPL letter, PLA-6306, dated November 30, 2007. This penalty will be applied until NRC evaluation determines that a penalty to account for this phenomenon is not warranted.
- (b) For SSES SLMCPR, a conservatively adjusted pin power distribution uncertainty and bundle power correlation coefficient will be applied as stated in Response No. 4 of PPL letter, PLA-6306, dated November 30, 2007, when performing the analyses in accordance with ANF-524(P)(A), "Critical Power Methodology for Boiling Water Reactors," using the uncertainty parameters associated with EMF-2158(P)(A) "Siemens Power Corporations Methodology for Boiling Water Reactors: Evaluation and Validation of CASMO-4/MICROBURN-B2."

(39) Containment Operability for EPU

PPL shall ensure that the CPPU containment analysis is consistent with the SSES 1 and 2 operating and emergency procedures. Prior to operation above CLTP, PPL shall notify the NRC project manager that all appropriate actions have been completed.

- D. The operating licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security, guard training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The plans, which contain Safeguards Information protected under 10 CFR 73.21, are entitled: "Susquehanna Steam Electric Station Physical Security Plan," with revisions submitted through September 24, 1987; "Susquehanna Steam Electric Station Guard Training and Qualification Plan," with revisions submitted through May 28, 1985; and "Susquehanna Steam Electric Station Safeguards Contingency Plan," with revisions submitted through September 24, 1987. Changes made in accordance with 10 CFR 73.55 shall be implemented in accordance with the schedules set forth therein.
- E. Exemptions from certain requirements of Appendices G and H to 10 CFR Part 50 are described in the Safety Evaluation Report and Supplements 1 and 2 to the Safety Evaluation Report. In addition, an exemption was requested until receipt of new fuel for first refueling from the requirements for criticality monitors in the spent fuel pool area, 10 CFR Part 70.24. Also, an exemption was

requested from the requirements of Appendix J of 10 CFR Part 50 for the first fuel cycle when performing local leak rate testing of Residual Heat Removal (RHR) relief valves in accordance with Technical Specification 4.6.1.2. This latter exemption is described in the safety evaluation of License Amendment No. 13. These exemptions are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest and have been granted pursuant to 10 CFR 50.12. Except as here exempted, the facility will operate, to the extent authorized herein, in conformity with the application, as amended, and the rules and regulations of the Commission and the provisions of the Act.

- F. This license is subject to the following additional condition for the protection of the environment:

Before engaging in additional construction or operational activities which may result in a significant adverse environmental impact that was not evaluated or that is significantly greater than that evaluated in the Final Environmental Statement and its Addendum, PPL Susquehanna, LLC shall provide a written notification to the Director of the Office of Nuclear Reactor Regulation and receive written approval from that office before proceeding with such activities.

- G. Deleted.

- H. PPL Susquehanna, LLC shall have and maintain financial protection of such type and in such amounts as the Commission shall require in accordance with Section 170 of the Atomic Energy Act of 1954, as amended, to cover public liability claims.

- I. In accordance with the Commission's direction in its Statement of Policy, Licensing and Regulatory Policy and Procedures for Environmental Protection; Uranium Fuel Cycle Impacts, October 29, 1982, this license is subject to the final resolution of the pending litigation involving Table S-3. See, Natural Resources Defense Council v. NRC, No. 74-1586 (April 27, 1982).
- J. This license is effective as of the date of issuance and shall expire at midnight on July 17, 2022.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by Harold R. Denton

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Attachments:

- 1. Attachment 1
- 2. Appendix A - Technical Specifications (NUREG-0931)
- 3. Appendix B - Environmental Protection Plan

Date of Issuance: July 17, 1982 (5% Power Issuance)

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by Darrell G. Eisenhut

Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

Date of Issuance: November 12, 1982 (100% Full Power Issuance)

1.1 Definitions (continued)

RATED THERMAL POWER
(RTP)

RTP shall be a total reactor core heat transfer rate to the reactor coolant of 3952 MWt.

REACTOR PROTECTION SYSTEM
(RPS) RESPONSE TIME

The RPS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RPS trip setpoint at the channel sensor until de-energization of the scram pilot valve solenoids. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.

SHUTDOWN MARGIN (SDM):

SDM shall be the amount of reactivity by which the reactor is subcritical or would be subcritical assuming that:

- a. The reactor is xenon free;
- b. The moderator temperature is 68°F; and
- c. All control rods are fully inserted except for the single control rod of highest reactivity worth, which is assumed to be fully withdrawn.

With control rods not capable of being fully inserted, the reactivity worth of these control rods must be accounted for in the determination of SDM.

STAGGERED TEST BASIS

A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems, channels, or other designated components during the interval specified by the Surveillance Frequency, so that all systems, subsystems, channels, or other designated components are tested during η Surveillance Frequency intervals, where η is the total number of systems, subsystems, channels, or other designated components in the associated function.

THERMAL POWER

THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.

TURBINE BYPASS SYSTEM
RESPONSE TIME

The TURBINE BYPASS SYSTEM RESPONSE TIME consists of the time from when the turbine bypass control unit generates a turbine bypass valve flow signal

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2.0 SAFETY LIMITS (SLs)

2.1 SLs

2.1.1 Reactor Core SLs

2.1.1.1 With the reactor steam dome pressure < 785 psig or core flow < 10 million lbm/hr:

THERMAL POWER shall be \leq 23% RTP.

2.1.1.2 With the reactor steam dome pressure \geq 785 psig and core flow \geq 10 million lbm/hr:

MCPR shall be \geq 1.09 for two recirculation loop operation or \geq 1.12 for single recirculation loop operation.

2.1.1.3 Reactor vessel water level shall be greater than the top of active irradiated fuel.

2.1.2 Reactor Coolant System Pressure SL

Reactor steam dome pressure shall be \leq 1325 psig.

2.2 SL Violations

With any SL violation, the following actions shall be completed within 2 hours:

2.2.1 Restore compliance with all SLs; and

2.2.2 Insert all insertable control rods.

3.2 POWER DISTRIBUTION LIMITS

3.2.1 AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)

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

APPLICABILITY: THERMAL POWER \geq 23% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any APLHGR not within limits.	A.1 Restore APLHGR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < 23% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.1.1 Verify all APLHGRs are less than or equal to the limits specified in the COLR.	Once within 24 hours after $\geq 23\%$ RTP <u>AND</u> 24 hours thereafter <u>AND</u> Prior to exceeding 44% RTP

3.2 POWER DISTRIBUTION LIMITS

3.2.2 MINIMUM CRITICAL POWER RATIO (MCPR)

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

APPLICABILITY: THERMAL POWER \geq 23% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any MCPR not within limits.	A.1 Restore MCPR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < 23% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.2.1 Verify all MCPs are greater than or equal to the limits specified in the COLR.	Once within 24 hours after $\geq 23\%$ RTP <u>AND</u> 24 hours thereafter <u>AND</u> Prior to exceeding 44% RTP
SR 3.2.2.2 Determine the MCP limits.	Once within 72 hours after each completion of SRs in 3.1.4

3.2 POWER DISTRIBUTION LIMITS

3.2.3 LINEAR HEAT GENERATION RATE (LHGR)

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

APPLICABILITY: THERMAL POWER \geq 23% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any LHGR not within limits.	A.1 Restore LHGR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < 23% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.3.1 Verify all LHGRs are less than or equal to the limits specified in the COLR.	Once within 24 hours after $\geq 23\%$ RTP <u>AND</u> 24 hours thereafter <u>AND</u> Prior to exceeding 44% RTP

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 Enter the Condition referenced in Table 3.3.1.1-1 for the channels.	Immediately
E. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	E.1 Reduce THERMAL POWER to < 26% RTP.	4 hours
F. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	F.1 Be in MODE 2.	6 hours
G. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	G.1 Be in MODE 3.	12 hours
H. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	H.1 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately
I. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	I.1 Initiate alternate method to detect and suppress thermal hydraulic instability oscillations. <u>AND</u> I.2 Restore required channels to OPERABLE.	12 hours 120 days
J. Required Action and associated Completion Time of Condition I not met.	J.1 Reduce THERMAL POWER to <23% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

NOTES

1. Refer to Table 3.3.1.1-1 to determine which SRs apply for each RPS Function.
2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains RPS trip capability.

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.1.1.2	Perform CHANNEL CHECK.	24 hours
SR 3.3.1.1.3	<p style="text-align: center;">NOTE</p> <p>Not required to be performed until 12 hours after THERMAL POWER \geq 23% RTP.</p> <hr/> <p>Verify the absolute difference between the average power range monitor (APRM) channels and the calculated power is \leq 2% RTP while operating at \geq 23% RTP.</p>	7 days
SR 3.3.1.1.4	<p style="text-align: center;">NOTE</p> <p>Not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2.</p> <hr/> <p>Perform CHANNEL FUNCTIONAL TEST.</p>	7 days

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.5	Perform CHANNEL FUNCTIONAL TEST.	7 days
SR 3.3.1.1.6	Verify the source range monitor (SRM) and intermediate range monitor (IRM) channels overlap.	Prior to fully withdrawing SRMs from the core.
SR 3.3.1.1.7	<p>-----NOTE-----</p> <p>Only required to be met during entry into MODE 2 from MODE 1.</p> <p>-----</p> <p>Verify the IRM and APRM channels overlap.</p>	7 days
SR 3.3.1.1.8	Calibrate the local power range monitors.	2000 MWD/MT average core exposure
SR 3.3.1.1.9	<p>-----NOTE-----</p> <p>A test of all required contacts does not have to be performed.</p> <p>-----</p> <p>Perform CHANNEL FUNCTIONAL TEST.</p>	92 days
SR 3.3.1.1.10	Perform CHANNEL CALIBRATION.	92 days

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.11	<p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. Neutron detectors are excluded. 2. For Function 1.a, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. <p>-----</p> <p>Perform CHANNEL CALIBRATION.</p>	184 days
SR 3.3.1.1.12	<p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. For Function 2.a, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. 2. For Functions 2.b and 2.f, the CHANNEL FUNCTIONAL TEST includes the recirculation flow input processing, excluding the flow transmitters. <p>-----</p> <p>Perform CHANNEL FUNCTIONAL TEST</p>	184 days
SR 3.3.1.1.13	Perform CHANNEL CALIBRATION.	24 months
SR 3.3.1.1.14	Perform CHANNEL FUNCTIONAL TEST.	24 months
SR 3.3.1.1.15	Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months
SR 3.3.1.1.16	Verify Turbine Stop Valve-Closure and Turbine Control Valve Fast Closure, Trip Oil Pressure-Low Functions are not bypassed when THERMAL POWER is $\geq 26\%$ RTP.	24 months

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.3.1.1.17</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. Neutron detectors are excluded. 2. For Function 5 "n" equals 4 channels for the purpose of determining the STAGGERED TEST BASIS Frequency 3. For Function 2.e, "n" equals 8 channels for the purpose of determining the STAGGERED TEST BASIS Frequency. Testing of APRM and OPRM outputs shall alternate. <p>-----</p> <p>Verify the RPS RESPONSE TIME is within limits.</p>	<p>24 months on a STAGGERED TEST BASIS</p>
<p>SR 3.3.1.1.18</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. Neutron detectors are excluded. 2. For Functions 2.b and 2.f, the recirculation flow transmitters that feed the APRMs are included. <p>-----</p> <p>Perform CHANNEL CALIBRATION</p>	<p>24 months</p>
<p>SR 3.3.1.1.19</p> <p>Verify OPRM is not bypassed when APRM Simulated Thermal Power is $\geq 25\%$ and recirculation drive flow is \leq value equivalent to the core flow value defined in the COLR.</p>	<p>24 months</p>
<p>SR 3.3.1.1.20</p> <p>Adjust recirculation drive flow to conform to reactor core flow.</p>	<p>24 months</p>

Table 3.3.1.1-1 (page 1 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Intermediate Range Monitors					
a. Neutron Flux-High	2	3	G	SR 3.3.1.1.1 SR 3.3.1.1.4 SR 3.3.1.1.6 SR 3.3.1.1.7 SR 3.3.1.1.11 SR 3.3.1.1.15	≤ 122/125 divisions of full scale
	5 ^(a)	3	H	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.11 SR 3.3.1.1.15	≤ 122/125 divisions of full scale
b. Inop	2	3	G	SR 3.3.1.1.4 SR 3.3.1.1.15	NA
	5 ^(a)	3	H	SR 3.3.1.1.5 SR 3.3.1.1.15	NA
2. Average Power Range Monitors					
a. Neutron Flux-High (Setdown)	2	3 ^(c)	G	SR 3.3.1.1.2 SR 3.3.1.1.7 SR 3.3.1.1.8 SR 3.3.1.1.12 SR 3.3.1.1.18	≤ 20% RTP
b. Simulated Thermal Power-High	1	3 ^(c)	F	SR 3.3.1.1.2 SR 3.3.1.1.3 SR 3.3.1.1.8 SR 3.3.1.1.12 SR 3.3.1.1.18 SR 3.3.1.1.20	≤ 0.55 W + 60.7% RTP ^(b) and ≤ 115.5% RTP

(continued)

- (a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.
- (b) $0.55 (W-\Delta W) + 60.7\% \text{ RTP}$ when reset for single loop operation per LCO 3.4.1, "Recirculation Loops Operating."
- (c) Each APRM channel provides inputs to both trip systems.

Table 3.3.1.1-1 (page 2 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. Average Power Range Monitors (continued)					
c. Neutron Flux-High	1	3 ^(c)	F	SR 3.3.1.1.2 SR 3.3.1.1.3 SR 3.3.1.1.8 SR 3.3.1.1.12 SR 3.3.1.1.18	≤ 120% RTP
d. Inop	1,2	3 ^(c)	G	SR 3.3.1.1.12	NA
e. 2-Out-Of-4 Voter	1,2	2	G	SR 3.3.1.1.2 SR 3.3.1.1.12 SR 3.3.1.1.15 SR 3.3.1.1.17	NA
f. OPRM Trip	≥ 23% RTP	3 ^(c)	I	SR 3.3.1.1.2 SR 3.3.1.1.8 SR 3.3.1.1.12 SR 3.3.1.1.18 SR 3.3.1.1.19 SR 3.3.1.1.20	(d)
3. Reactor Vessel Steam Dome Pressure-High	1,2	2	G	SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.15	≤ 1093 psig
4. Reactor Vessel Water Level-Low, Level 3	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.15	≥ 11.5 inches
5. Main Steam Isolation Valve-Closure	1	8	F	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.17	≤ 11% closed
6. Drywell Pressure-High	1,2	2	G	SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.15	≤ 1.88 psig

(continued)

(c) Each APRM channel provides inputs to both trip systems.

(d) See COLR for OPRM period based detection algorithm (PBDA) setpoint limits.

Table 3.3.1.1-1 (page 3 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
7. Scram Discharge Volume Water Level-High					
a. Level Transmitter	1,2	2	G	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 66 gallons
	5 ^(a)	2	H	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 66 gallons
b. Float Switch	1,2	2	G	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 62 gallons
	5 ^(a)	2	H	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 62 gallons
8. Turbine Stop Valve-Closure	≥ 26% RTP	4	E	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.16 SR 3.3.1.1.17	≤ 7% closed
9. Turbine Control Valve Fast Closure, Trip Oil Pressure-Low	≥ 26% RTP	2	E	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.16 SR 3.3.1.1.17	≥ 460 psig
10. Reactor Mode Switch-Shutdown Position	1,2	2	G	SR 3.3.1.1.14 SR 3.3.1.1.15	NA
	5 ^(a)	2	H	SR 3.3.1.1.14 SR 3.3.1.1.15	NA
11. Manual Scram	1,2	2	G	SR 3.3.1.1.5 SR 3.3.1.1.15	NA
	5 ^(a)	2	H	SR 3.3.1.1.5 SR 3.3.1.1.15	NA

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

3.3 INSTRUMENTATION

3.3.2.2 Feedwater - Main Turbine High Water Level Trip Instrumentation

LCO 3.3.2.2 Three channels of feedwater - main turbine high water level trip instrumentation shall be OPERABLE.

APPLICABILITY: THERMAL POWER \geq 23% RTP.

ACTIONS

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

CONDITION		REQUIRED ACTION	COMPLETION TIME
A.	One feedwater - main turbine high water level trip channel inoperable.	A.1 Place channel in trip.	7 days
B.	Two or more feedwater - main turbine high water level trip channels inoperable.	B.1 Restore feedwater - main turbine high water level trip capability.	2 hours
C.	Required Action and associated Completion Time of Conditions A or B not met.	C.1 Reduce THERMAL POWER to < 23% RTP.	4 hours

3.3 INSTRUMENTATION

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

- LCO 3.3.4.1 a. Two channels per trip system for each EOC-RPT instrumentation Function listed below shall be OPERABLE:
1. Turbine Stop Valve (TSV)—Closure; and
 2. Turbine Control Valve (TCV) Fast Closure, Trip Oil Pressure Low.
- OR
- b. LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)," limits for inoperable EOC-RPT as specified in the COLR are made applicable.

APPLICABILITY: THERMAL POWER \geq 26% RTP.

ACTIONS

-----NOTE-----

Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels inoperable. <u>AND</u> MCPR limit for inoperable EOC-RPT not made applicable.	A.1 Restore channel to OPERABLE status.	72 hours
	<u>OR</u> A.2 -----NOTE----- Not applicable if inoperable channel is the result of an inoperable breaker. Place channel in trip.	72 hours
	<u>OR</u>	

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3 Apply the MCPR limit for inoperable EOC-RPT as specified in the COLR.	72 hours
B. One or more Functions with EOC-RPT trip capability not maintained. <u>AND</u> MCPR limit for inoperable EOC-RPT not made applicable.	B.1 Restore EOC-RPT trip capability. <u>OR</u> B.2 Apply the MCPR limit for inoperable EOC-RPT as specified in the COLR.	2 hours 2 hours
C. Required Action and associated Completion Time not met.	C.1 Remove the associated recirculation pump from service. <u>OR</u> C.2 Reduce THERMAL POWER to < 26% RTP.	4 hours 4 hours

SURVEILLANCE REQUIREMENTS

-----NOTE-----

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

SURVEILLANCE	FREQUENCY
<p>SR 3.3.4.1.1 ----- A test of all required contacts does not have to be performed. ----- Perform CHANNEL FUNCTIONAL TEST.</p>	92 days
<p>SR 3.3.4.1.2 Perform CHANNEL CALIBRATION. The Allowable Values shall be: TSV—Closure: $\leq 7\%$ closed; and TCV Fast Closure, Trip Oil Pressure—Low: ≥ 460 psig.</p>	24 months
<p>SR 3.3.4.1.3 Perform LOGIC SYSTEM FUNCTIONAL TEST including breaker actuation.</p>	24 months
<p>SR 3.3.4.1.4 Verify TSV—Closure and TCV Fast Closure, Trip Oil Pressure—Low Functions are not bypassed when THERMAL POWER is $\geq 26\%$ RTP.</p>	24 months

(continued)

Table 3.3.6.1-1 (page 1 of 6)
 Primary Containment 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 SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.5	≥ -136 inches
b. Main Steam Line Pressure - Low	1	2	E	SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ 841 psig
c. Main Steam Line Flow - High	1,2,3	2 per MSL	D	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.5	≤ 179 psid
d. Condenser Vacuum - Low	1 2 ^(a) , 3 ^(a)	2	D	SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5	≥ 8.8 inches Hg vacuum
e. Reactor Building Main Steam Tunnel Temperature - High	1,2,3	2	D	SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5	≤ 184°F
f. Manual Initiation	1,2,3	1	G	SR 3.3.6.1.5	NA

(continued)

(a) With any main turbine stop valve not closed.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR	3.4.2.1 -----NOTES----- 1. Not required to be completed until 4 hours after associated recirculation loop is in operation. 2. Not required to be completed until 24 hours after > 23% RTP. ----- Verify at least two of the following criteria (a, b, or c) are satisfied for each operating recirculation loop: a. Recirculation loop drive flow versus Recirculation Pump speed differs by $\leq 10\%$ from established patterns. b. Recirculation loop drive flow versus total core flow differs by $\leq 10\%$ from established patterns. c. Each jet pump diffuser to lower plenum differential pressure differs by $\leq 20\%$ from established patterns, or each jet pump flow differs by $\leq 10\%$ from established patterns.	24 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.3 Safety/Relief Valves (S/RVs)

LCO 3.4.3 The safety function of 14 S/RVs shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION		REQUIRED ACTION	COMPLETION TIME
A.1	One or more required S/RVs inoperable.	A.1 Be in MODE 3.	12 hours
		<u>AND</u>	
		A.2 Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.4.10.3 -----NOTE----- Only required to be met in MODES 1, 2, 3, and 4 during recirculation pump start.</p> <p>Verify the difference between the bottom head coolant temperature and the reactor pressure vessel (RPV) coolant temperature is $\leq 145^{\circ}\text{F}$.</p>	<p>Once within 15 minutes prior to each startup of a recirculation pump</p>
<p>SR 3.4.10.4 -----NOTE----- Only required to be met in MODES 1, 2, 3, and 4 during recirculation pump start.</p> <p>Verify the difference between the reactor coolant temperature in the recirculation loop to be started and the RPV coolant temperature is $\leq 50^{\circ}\text{F}$.</p>	<p>Once within 15 minutes prior to each startup of a recirculation pump</p>
<p>SR 3.4.10.5 -----NOTE----- Only required to be met in single loop operation when:</p> <p>a. THERMAL POWER $\leq 27\%$ RTP; or</p> <p>b. The operating recirculation loop flow $\leq 21,320$ gpm.</p> <p>Verify the difference between the bottom head coolant temperature and the RPV coolant temperature is $\leq 145^{\circ}\text{F}$.</p>	<p>Once within 15 minutes prior to an increase in THERMAL POWER or an increase in loop flow</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.4.10.6</p> <p>-----NOTE-----</p> <p>Only required to be met in single loop operation when the idle recirculation loop is not isolated from the RPV, and:</p> <p>a. THERMAL POWER \leq 27% RTP; or</p> <p>b. The operating recirculation loop flow \leq 21,320 gpm.</p> <p>-----</p> <p>Verify the difference between the reactor coolant temperature in the recirculation loop not in operation and the RPV coolant temperature is \leq 50°F.</p>	<p>Once within 15 minutes prior to an increase in THERMAL POWER or an increase in loop flow.</p>
<p>SR 3.4.10.7</p> <p>-----NOTE-----</p> <p>Only required to be performed when tensioning the reactor vessel head bolting studs.</p> <p>-----</p> <p>Verify reactor vessel flange and head flange temperatures are \geq 70°F.</p>	<p>30 minutes</p>
<p>SR 3.4.10.8</p> <p>-----NOTE-----</p> <p>Not required to be performed until 30 minutes after RCS temperature \leq 80°F in MODE 4.</p> <p>-----</p> <p>Verify reactor vessel flange and head flange temperatures are \geq 70°F.</p>	<p>30 minutes</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.10	Remove and test the explosive squib from each shear isolation valve of the TIP System.	24 months on a STAGGERED TEST BASIS
SR 3.6.1.3.11	<p>-----NOTES----- Only required to be met in MODES 1, 2, and 3. -----</p> <p>Verify the combined leakage rate for all secondary containment bypass leakage paths is ≤ 9 scfh when pressurized to $\geq P_a$.</p>	In accordance with the Primary Containment Leakage Rate Testing Program.
SR 3.6.1.3.12	<p>-----NOTES----- Only required to be met in MODES 1, 2, and 3. -----</p> <p>Verify leakage rate through each MSIV is ≤ 100 scfh and ≤ 300 scfh for the combined leakage including the leakage from the MS Line Drains, when the MSIVs are tested at ≥ 24.3 psig or P_a and the MS Line Drains are tested at P_a.</p>	In accordance with the Primary Containment Leakage Rate Testing Program.

(continued)

3.7 PLANT SYSTEMS

3.7.1 Residual Heat Removal Service Water (RHRSW) System and the Ultimate Heat Sink (UHS)

LCO 3.7.1 Two RHRSW subsystems and the UHS shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

-----NOTE-----
Enter applicable Conditions and Required Actions of LCO 3.4.8, "Residual Heat Removal (RHR) Shutdown Cooling System-Hot Shutdown," for RHR shutdown cooling made inoperable by RHRSW System.

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. -----NOTE----- Separate Condition entry is allowed for each valve.</p> <hr/> <p>One valve in Table 3.7.1-1 inoperable.</p> <p><u>OR</u></p> <p>One valve in Table 3.7.1-2 inoperable.</p> <p><u>OR</u></p> <p>One valve in Table 3.7.1-3 inoperable.</p> <p><u>OR</u></p> <p>Any combination of valves in Table 3.7.1-1, Table 3.7.1-2, or Table 3.7.1-3 in the same return loop inoperable.</p>	<p>A.1 Declare the associated RHRSW subsystems inoperable</p> <p><u>AND</u></p> <p>A.2 Establish an open flow path to the UHS.</p> <p><u>AND</u></p> <p>A.3 Restore the inoperable valve(s) to OPERABLE status.</p>	<p>Immediately</p> <p>8 hours</p> <p>8 hours from the discovery of an inoperable RHRSW subsystem in the opposite loop from the inoperable valve(s)</p> <p><u>AND</u></p> <p>72 hours</p>

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.1.6	Verify that valves HV-01224A2 and B2 (the small spray array valves) close upon receipt of a closing signal and open upon receipt of an opening signal.	92 days
SR 3.7.1.7	Verify that valves 012287A and 012287B (the spray array bypass manual valves) are capable of being opened and closed.	92 days

TABLE 3.7.1-1

Ultimate Heat Sink Spray Array Valves

VALVE NUMBER	VALVE DESCRIPTION
HV-01224A1	Loop A large spray array valve
HV-01224B1	Loop B large spray array valve
HV-01224A2	Loop A small spray array valve
HV-01224B2	Loop B small spray array valve

TABLE 3.7.1-2

Ultimate Heat Sink Spray Array Bypass Valves

VALVE NUMBER	VALVE DESCRIPTION
HV-01222A	Loop A spray array bypass valve
HV-01222B	Loop B spray array bypass valve

TABLE 3.7.1-3

Ultimate Heat Sink Spray Array Bypass Manual Valves

VALVE NUMBER	VALVE DESCRIPTION
012287A	Loop A spray array bypass manual valve
012287B	Loop B spray array bypass manual valve

3.7 PLANT SYSTEMS

3.7.6 Main Turbine Bypass System

LCO 3.7.6 The Main Turbine Bypass System shall be OPERABLE.

OR

Apply the following limits for an inoperable Main Turbine Bypass System as specified in the COLR:

- a. LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)," and
- b. LCO 3.2.3, "LINEAR HEAT GENERATION RATE (LHGR)."

APPLICABILITY: THERMAL POWER \geq 23% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. Main Turbine Bypass System inoperable.</p> <p><u>AND</u></p> <p>Requirements of LCO 3.2.2 not met.</p> <p><u>OR</u></p> <p>Requirements of LCO 3.2.3 not met.</p>	<p>A.1 Satisfy the requirements of the LCO or restore Main Turbine Bypass System to OPERABLE status.</p>	<p>2 hours</p>
<p>B. Required Action and associated Completion Time not met.</p>	<p>B.1 Reduce THERMAL POWER to < 23% RTP.</p>	<p>4 hours</p>

3.7 PLANT SYSTEMS

3.7.8 Main Turbine Pressure Regulation System

LCO 3.7.8 Both Main Turbine Pressure Regulators shall be OPERABLE.

OR

Apply the following limits for an inoperable Main Turbine Pressure Regulator as specified in the COLR:

- a. LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)", and
- b. LCO 3.2.3, "LINEAR HEAT GENERATION RATE (LHGR)."

APPLICABILITY: THERMAL POWER \geq 23% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One Main Turbine Pressure Regulator inoperable.</p> <p><u>AND</u></p> <p>Requirements of LCO 3.2.2 not met.</p> <p><u>OR</u></p> <p>Requirements of LCO 3.2.3 not met.</p>	<p>A.1 Satisfy the requirements of the LCO or restore Main Turbine Pressure Regulator to OPERABLE status.</p>	<p>2 hours</p>
<p>B. Required Action and Associated Completion Time not met.</p>	<p>B.1 Reduce THERMAL POWER to < 23% RTP.</p>	<p>4 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.8.1 Verify that both Main Turbine Pressure Regulators are each capable of controlling main steam pressure.	92 days
SR 3.7.8.2 Perform a system functional test.	24 months

5.5 Programs and Manuals

5.5.11 Safety Function Determination Program (SFDP) (continued)

The SFDP identifies where a loss of safety function exists. If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered. When a loss of safety function is caused by the inoperability of a single Technical Specification support system, the appropriate Conditions and Required Actions to enter are those of the support system.

5.5.12 Primary Containment Leakage Rate Testing Program

A program shall be established, implemented, and maintained to comply with the leakage rate testing of the containment as required by 10 CFR 50.54(o) and 10 CFR 50, Appendix J, Option B, as modified by approved exemptions. This program shall be in accordance with the guidelines contained in Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995, as modified by the following exceptions:

- a. The visual examination of containment concrete surfaces intended to fulfill the requirements of 10 CFR 50, Appendix J, Option B testing, will be performed in accordance with the requirements of and frequency specified by the ASME Section XI Code, Subsection IWL, except where relief has been authorized by the NRC.
- b. The visual examination of the steel liner plate inside containment intended to fulfill the requirements of 10 CFR 50, Appendix J, Option B, will be performed in accordance with the requirements of and frequency specified by the ASME Section XI Code, Subsection IWE, except where relief has been authorized by the NRC.
- c. NEI 94-01-1995, Section 9.2.3: The first Type A test performed after the May 4, 1992 Type A test shall be performed no later than May 3, 2007.

The peak calculated containment internal pressure for the design basis loss of coolant accident, Pa, is 48.6 psig.

The maximum allowable primary containment leakage rate, La, at Pa, shall be 1% of the primary containment air weight per day.

(continued)

5.6 Reporting Requirements (continued)

5.6.4 Not Used

5.6.5 CORE OPERATING LIMITS REPORT (COLR)

- a. Core operating limits shall be established prior to each reload cycle, or prior to any remaining portion of a reload cycle, and shall be documented in the COLR for the following:
 - 1. The Average Planar Linear Heat Generation Rate for Specification 3.2.1;
 - 2. The Minimum Critical Power Ratio for Specification 3.2.2;
 - 3. The Linear Heat Generation Rate for Specification 3.2.3;
 - 4. The Shutdown Margin for Specification 3.1.1;
 - 5. Oscillation Power Range Monitor (OPRM) Trip Setpoints, for Specification 3.3.1.1; and
 - 6. The Allowable Values and power range setpoints for Rod Block Monitor Upscale Functions for Specification 3.3.2.1, Table 3.3.2.1-1.
- b. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC.

(continued)

5.6 Reporting Requirements

5.6.5 COLR (continued)

The approved analytical methods are described in the following documents, the approved version(s) of which are specified in the COLR.

1. XN-NF-81-58(P)(A), "RODEX2 Fuel Rod Thermal-Mechanical Response Evaluation Model," Exxon Nuclear Company.
2. XN-NF-85-67(P)(A), "Generic Mechanical Design for Exxon Nuclear Jet pump BWR Reload Fuel," Exxon Nuclear Company.
3. EMF-85-74(P)(A), "RODEX2A (BWR) Fuel Rod Thermal-Mechanical Evaluation Model," Siemens Power Corporation.
4. ANF-89-98(P)(A), "Generic Mechanical Design Criteria for BWR Fuel Designs," Advanced Nuclear Fuels Corporation.
5. XN-NF-80-19(P)(A), "Exxon Nuclear Methodology for Boiling Water Reactors," Exxon Nuclear Company.
6. EMF-2158(P)(A), "Siemens Power Corporation Methodology for Boiling Water Reactors: Evaluation and Validation of CASMO-4/MICROBURN-B2," Siemens Power Corporation.
7. EMF-2361(P)(A), "EXEM BWR-2000 ECCS Evaluation Model," Framatome ANP.
8. EMF-2292(P)(A), "ATRIUM™-10: Appendix K Spray Heat Transfer Coefficients," Siemens Power Corporation

(continued)

5.6 Reporting Requirements

5.6.5 COLR (continued)

9. XN-NF-84-105(P)(A), "XCOBRA-T: A Computer Code for BWR Transient Thermal-Hydraulic Core Analysis," Exxon Nuclear Company.
 10. ANF-524(P)(A), "ANF Critical Power Methodology for Boiling Water Reactors," Advanced Nuclear Fuels Corporation.
 11. ANF-913(P)(A), "COTRANSA2: A Computer Program for Boiling Water Reactor Transient Analyses," Advanced Nuclear Fuels Corporation.
 12. ANF-1358(P)(A), "The Loss of Feedwater Heating Transient in Boiling Water Reactors," Advanced Nuclear Fuels Corporation.
 13. EMF-2209(P)(A), "SPCB Critical Power Correlation," Siemens Power Corporation.
 14. EMF-CC-074(P)(A), "BWR Stability Analysis - Assessment of STAIF with Input from MICROBURN-B2," Siemens Power Corporation.
 15. NE-092-001A, "Licensing Topical Report for Power Uprate With Increased Core Flow," Pennsylvania Power & Light Company.

 16. NEDO-32465-A, "BWROG Reactor Core Stability Detect and Suppress Solutions Licensing Basis Methodology for Reload Applications.
- c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems (ECCS) limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.
- d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

(continued)

- (4) PPL Susquehanna, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
- (5) PPL Susquehanna, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR 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

PPL Susquehanna, LLC is authorized to operate the facility at reactor core power levels not in excess of 3952 megawatts thermal in accordance with the conditions specified herein. The preoperational tests, startup tests, and other items identified in License Conditions 2.C.(20), 2.C.(21), 2.C.(22), and 2.C.(22) to this license shall be completed as specified.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 224, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. PPL Susquehanna, LLC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

For Surveillance Requirements (SRs) that are new in Amendment 151 to Facility Operating License No. NPF-22, the first performance is due at the end of the first surveillance interval that begins at implementation of Amendment 151. For SRs that existed prior to Amendment 151, including SRs with modified acceptance criteria and SRs whose frequency of performance is being extended, the first performance is due at the end of the first surveillance interval that begins on the date the Surveillance was last performed prior to implementation of Amendment 151.

- 2.C.(3) PPL Susquehanna, LLC shall implement and maintain in effect all provisions of the approved fire protection program as described in the Fire Protection Review Report for the facility and as approved in Fire Protection Program, Section 9.5, SER, SSER#1, SSER#2, SSER#3, SSER#4, SSER#6, Safety Evaluation of Fire Protection Report dated August 9, 1989, Safety Evaluation

- (a) Fire fighting response strategy with the following elements:
 - 1. Pre-defined coordinated fire response strategy and guidance
 - 2. Assessment of mutual aid fire fighting assets
 - 3. Designated staging areas for equipment and materials
 - 4. Command and control
 - 5. Training of response personnel
 - (b) Operations to mitigate fuel damage considering the following:
 - 1. Protection and use of personnel assets
 - 2. Communications
 - 3. Minimizing fire spread
 - 4. Procedures for implementing integrated fire response strategy
 - 5. Identification of readily-available pre-staged equipment
 - 6. Training on integrated fire response strategy
 - 7. Spent fuel pool mitigation measures
 - (c) Actions to minimize release to include consideration of:
 - 1. Water spray scrubbing
 - 2. Dose to onsite responders
- (19) The licensee shall implement and maintain all Actions required by Attachment 2 to NRC Order EA-06-137, issued June 20, 2006, except the last action that requires incorporation of the strategies into the site security plan, contingency plan, emergency plan and/or guard training and qualification plan, as appropriate.

(20) Potential Adverse Flow Effects

These license conditions provide for monitoring, evaluating, and taking prompt action in response to potential adverse flow effects as a result of power uprate operation on plant structures, systems, and components (including verifying the continued structural integrity of the steam dryer).

- (a) The following requirements are placed on operation of the PPL Susquehanna, LLC (PPL) facility above the licensed thermal power (CLTP) level of 3489 megawatts thermal (MWt):
 - 1. PPL shall obtain at each 3.5 % power ascension step, main steam line strain gauge data and compare it to the limit curve for the dryer strains during power ascension.
 - 2. PPL shall monitor the main steam line (MSL) strain gauges during power ascension above 3489 MWt for increasing pressure fluctuations in the steam lines.
 - 3. PPL shall hold the facility at each 3.5% ascension step to collect data from License Condition 2.C.(20)(a) and conduct plant inspections and walk-downs, and evaluate steam dryer performance based on the data; shall provide the evaluation to the NRC staff by facsimile or electronic

transmission to the NRC project manager upon completion of the evaluation; and shall not increase power above each hold point until 96 hours after the NRC project manager confirms receipt of transmission.

4. If any frequency peak from the MSL strain gauge data exceeds the limit curve for dryer strains above 3489 MWt, PPL shall return the facility to a power level at which the acceptance criteria is not exceeded. PPL shall resolve the discrepancy, document the continued structural integrity of the steam dryer, and provide that documentation to the NRC staff by facsimile or electronic transmission to the NRC project manager prior to further increases in reactor power.
 5. In addition to evaluating the dryer strain and MSL strain gauge data, PPL shall monitor reactor pressure vessel water level instrumentation or MSL piping accelerometers during power ascension above 3489 MWt. If resonance frequencies are identified as increasing above nominal levels in proportion to instrumentation data, PPL shall stop power ascension, document the continued structural integrity of the steam dryer, and provide that documentation to the NRC staff by facsimile or electronic transmission to the NRC project manager prior to further increases in reactor power.
 6. Following CPPU start-up testing, PPL shall resolve the discrepancies in the steam dryer analysis and provide that resolution to the NRC staff by facsimile or electronic transmission to the NRC project manager. If the discrepancies are not resolved within 90 days of identification, PPL shall return the facility to a power level at which the discrepancy does not exist.
- (b) PPL shall implement the following actions:
1. PPL shall provide to NRC the as-built dryer stress analysis and load limit curves 45 days prior to operation above 3489 MWt.
 2. After the dryer stress analysis is benchmarked to the Unit 1 startup test data (Unit 1 data taken up to 107 % of 3489 MWt), the benchmarked PATP and MSL limit curves shall be provided to the NRC 90 days prior to operation above 107% of 3489 MWt..
 3. In the event that acoustic signals are identified that challenge the limit curves during power ascension above 3489 MWt, PPL shall evaluate dryer loads and re-establish the acceptance criteria based on the new data, and shall perform an assessment of ACM uncertainty at the acoustic signal frequency.
 4. After reaching full CPPU, PPL shall obtain measurements from the MSL strain gauges and establish the steam dryer flow-induced vibration load fatigue margin for the facility, update the dryer stress report, if required, and re-establish the limit curve with the updated ACM load definition and revised instrument uncertainty, which will be provided to the NRC staff.

5. During power ascension above 3489 MWt, if an engineering evaluation for the steam dryer is required because a Level 1 acceptance criteria is exceeded, PPL shall perform the structural analysis to address frequency uncertainties up to $\pm 10\%$ and assure that peak responses that fall within this uncertainty band are addressed.
 6. PPL shall revise the Post Constant Pressure Power Uprate (CPPU) Monitoring & Inspection Program to reflect long-term monitoring of plant parameters potentially indicative of steam dryer failure; to reflect consistency of the facility's steam dryer inspection program with General Electric Service Information Letter (SIL) 644, "BWR/3 Steam Dryer Failure," Revision 2; and to identify the NRC Project Manager for the facility as the point of contact for providing PATP information during power ascension.
 7. PPL shall submit a CPPU steam dryer report to the NRC. The report will be issued following completion of Unit 2 ascension to 114 % CLTP. The report shall include evaluations or corrective actions that were required to assure steam dryer structural integrity. Additionally, it shall include relevant data collected at each power step, comparisons to performance criteria (design predictions), and evaluations performed in conjunction with steam dryer structural integrity monitoring.
 8. PPL shall submit the flow-induced vibration related portions of the CPPU startup test procedure to the NRC, including methodology for updating the limit curve, prior to initial power ascension above 3489 MWt.
- (c) PPL shall prepare the CPPU startup test procedure to include the:
1. main steam line strain gauge limit curves to be used up to 114 % of CLTP;
 2. specific hold points and their duration during CPPU power ascension;
 3. activities to be accomplished during hold points;
 4. plant parameters to be monitored;
 5. inspections and walk-downs to be conducted for steam, feedwater, and condensate systems and components during the hold points;
 6. methods to be used to trend plant parameters;
 7. acceptance criteria for monitoring and trending plant parameters, and conducting the walk-downs and inspections;
 8. actions to be taken if acceptance criteria are not satisfied; and

9. verification of the completion of commitments and planned actions specified in its application and all supplements to the application in support of the CPPU license amendment request pertaining to the steam dryer prior to power increase above 3489 MWt. PPL shall provide the related CPPU startup test procedure sections to the NRC by facsimile or electronic transmission to the NRC project manager prior to increasing power above 3489 MWt.
- (d) The following key attributes of the PATP shall not be made less restrictive without prior NRC approval:
 1. During initial power ascension testing above 3489 MWt, each test plateau increment shall be approximately 3.5 % of 3489 MWt;
 2. Level 1 performance criteria; and
 3. The methodology for establishing the stress criteria used for the Level 1 and Level 2 performance criteria.

Changes to other aspects of the PATP may be made in accordance with the guidance of Nuclear Energy Institute (NEI) 99-04, "Guidelines for Managing NRC Commitments," issued July 1999.

- (e) During the first two scheduled refueling outages after reaching full CPPU conditions, a visual inspection shall be conducted of all accessible, susceptible locations of the steam dryer in accordance with BWRVIP-139 and General Electric inspection guidelines.
- (f) The results of the visual inspections of the steam dryer shall be reported to the NRC staff within 60 days following startup. The results of the PATP shall be submitted to the NRC staff in a report within 60 days following the completion of all CPPU power ascension testing.
- (g) This license condition shall expire upon satisfaction of the requirements in License Conditions 2.C.(20)(e) and 2.C.(20)(f) provided that a visual inspection of the steam dryer does not reveal any new unacceptable flaw or unacceptable flaw growth that is due to fatigue.

(21) Transient Testing

- (a) PPL will demonstrate through performance of transient testing on each SSES unit that the loss of one condensate pump will not result in a complete loss of reactor feedwater. The test shall be performed on each unit during the unit's CPPU power ascension test program within 336 hours of achieving and prior to exceeding a nominal power level of 3733 MWt with feedwater and condensate flow rates stabilized. PPL shall confirm that the plant response to the transient is as expected in accordance with the acceptance criteria that are established. If a loss of all reactor feedwater occurs as a result of the test, the test failure shall be

addressed in accordance with corrective action program requirements and the provisions of the power ascension test program prior to continued operation of the SSES Unit above 3489 MWt.

- (b) Unless the NRC issues a letter notifying the licensee that the tests specified by License Condition 2.C.(21)(a) adequately demonstrate that a single condensate pump trip will not result in a loss of all feedwater while operating at the full CPPU power level of 3952 MWt, PPL shall perform the transient test on either SSES unit (whichever unit is first to achieve the following specified operating conditions) specified by License Condition 2.C.(21)(a) during the power ascension test program while operating at 3872 MWt to 3952 (98% to 100% of the full CPPU power level) with feedwater and condensate flow rates stabilized. The test shall be performed within 90 days of operating at greater than 3733 MWt and within 336 hours of achieving a nominal power level of 3872 MWt with feedwater and condensate flow rates stabilized. PPL will demonstrate through performance of transient testing on either Susquehanna Unit 1 or Unit 2 (whichever unit is first to achieve the specified conditions) that the loss of one condensate pump will not result in a complete loss of reactor feedwater. PPL shall confirm that the plant response to the transient is as expected in accordance with the acceptance criteria that are established. If a loss of all feedwater occurs as a result of the test, the test failure shall be addressed in accordance with corrective action program requirements and the provisions of the power ascension test program prior to continued operation of either SSES Unit above 3733 MWt.

(22) Neutronic Methods

- (a) An OPRM amplitude setpoint penalty will be applied to account for a reduction in thermal neutrons around the LPRM detectors caused by transients that increase voiding. This penalty will reduce the OPRM scram setpoint according to the methodology described in Response No. 3 of PPL letter, PLA-6306, dated November 30, 2007. This penalty will be applied until NRC evaluation determines that a penalty to account for this phenomenon is not warranted.
- (b) For SSES SLMCPR, a conservatively adjusted pin power distribution uncertainty and bundle power correlation coefficient will be applied as stated in Response No. 4 of PPL letter, PLA-6306, dated November 30, 2007, when performing the analyses in accordance with ANF-524(P)(A), "Critical Power Methodology for Boiling Water Reactors," using the uncertainty parameters associated with EMF-2158(P)(A) "Siemens Power Corporations Methodology for Boiling Water Reactors: Evaluation and Validation of CASMO-4/MICROBURN-B2."

(23) Containment Operability for EPU

PPL shall ensure that the CPPU containment analysis is consistent with the SSES 1 and 2 operating and emergency procedures. Prior to operation above CLTP, PPL shall notify the NRC project manager that all appropriate actions have been completed.

2. D. The operating licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security, guard training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The plans, which contain Safeguards Information protected under 10 CFR 73.21, are entitled: "Susquehanna Steam Electric Station Physical Security Plan," with revisions submitted through September 24, 1987; "Susquehanna Steam Electric Station Guard Training and Qualification Plan," with revisions submitted through May 28, 1985; and "Susquehanna Steam Electric Station Safeguards Contingency Plan," with revisions submitted through September 24, 1987. Changes made in accordance with 10 CFR 73.55 shall be implemented in accordance with the schedules set forth therein.
- E. Deleted.
- F. PPL Susquehanna, LLC shall have and maintain financial protection of such type and in such amounts as the Commission shall require in accordance with Section 170 of the Atomic Energy Act of 1954, as amended, to cover public liability claims.
- G. This license is effective as of the date of issuance and shall expire at midnight on March 23, 2024.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by Darrell G. Eisenhut
for Harold R. Denton

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Attachments:

1. Attachment 1
2. Attachment 2
3. Appendix A - Technical
Specifications (NUREG-1042)
4. Appendix B - Environmental
Protection Plan

Date of Issuance: March 23, 1984

1.1 Definitions (continued)

RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 3952 MWt.
REACTOR PROTECTION SYSTEM (RPS) RESPONSE TIME	The RPS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RPS trip setpoint at the channel sensor until de-energization of the scram pilot valve solenoids. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.
SHUTDOWN MARGIN (SDM)	<p>SDM shall be the amount of reactivity by which the reactor is subcritical or would be subcritical assuming that:</p> <ol style="list-style-type: none">The reactor is xenon free;The moderator temperature is 68°F; andAll control rods are fully inserted except for the single control rod of highest reactivity worth, which is assumed to be fully withdrawn. <p>With control rods not capable of being fully inserted, the reactivity worth of these control rods must be accounted for in the determination of SDM.</p>
STAGGERED TEST BASIS	A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems, channels, or other designated components during the interval specified by the Surveillance Frequency, so that all systems, subsystems, channels, or other designated components are tested during n Surveillance Frequency intervals, where n is the total number of systems, subsystems, channels, or other designated components in the associated function.
THERMAL POWER	THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.
TURBINE BYPASS SYSTEM RESPONSE TIME	The TURBINE BYPASS SYSTEM RESPONSE TIME consists of the time from when the turbine bypass control unit generates a turbine bypass valve flow signal

(continued)

2.0 SAFETY LIMITS (SLs)

2.1 SLs

2.1.1 Reactor Core SLs

2.1.1.1 With the reactor steam dome pressure < 785 psig or core flow < 10 million lbm/hr:

THERMAL POWER shall be \leq 23% RTP.

2.1.1.2 With the reactor steam dome pressure \geq 785 psig and core flow \geq 10 million lbm/hr:

MCPR shall be \geq 1.11 for two recirculation loop operation or \geq 1.14 for single recirculation loop operation.

2.1.1.3 Reactor vessel water level shall be greater than the top of active irradiated fuel.

2.1.2 Reactor Coolant System Pressure SL

Reactor steam dome pressure shall be \leq 1325 psig.

2.2 SL Violations

With any SL violation, the following actions shall be completed within 2 hours:

2.2.1 Restore compliance with all SLs; and

2.2.2 Insert all insertable control rods.

3.2. POWER DISTRIBUTION LIMITS

3.2.1 AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)

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

APPLICABILITY: THERMAL POWER \geq 23% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any APLHGR not within limits.	A.1 Restore APLHGR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < 23% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.1.1 Verify all APLHGRs are less than or equal to the limits specified in the COLR.	Once within 24 hours after $\geq 23\%$ RTP <u>AND</u> 24 hours thereafter <u>AND</u> Prior to exceeding 44% RTP

3.2 POWER DISTRIBUTION LIMITS

3.2.2 MINIMUM CRITICAL POWER RATIO (MCPR)

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

APPLICABILITY: THERMAL POWER \geq 23% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any MCPR not within limits.	A.1 Restore MCPR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < 23% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.2.1 Verify all MCPRs are greater than or equal to the limits specified in the COLR.	Once within 24 hours after $\geq 23\%$ RTP <u>AND</u> 24 hours thereafter <u>AND</u> Prior to exceeding 44% RTP
SR 3.2.2.2 Determine the MCPR limits.	Once within 72 hours after each completion of SRs in 3.1.4

3.2 POWER DISTRIBUTION LIMITS

3.2.3 LINEAR HEAT GENERATION RATE (LHGR)

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

APPLICABILITY: THERMAL POWER \geq 23% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any LHGR not within limits.	A.1 Restore LHGR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < 23% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR. 3.2.3.1 Verify all LHGRs are less than or equal to the limits specified in the COLR.	Once within 24 hours after $\geq 23\%$ RTP <u>AND</u> 24 hours thereafter <u>AND</u> Prior to exceeding 44% RTP

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 Enter the Condition referenced in Table 3.3.1.1-1 for the channels.	Immediately
E. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	E.1 Reduce THERMAL POWER to < 26% RTP.	4 hours
F. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	F.1 Be in MODE 2.	6 hours
G. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	G.1 Be in MODE 3.	12 hours
H. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	H.1 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately
I. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	I.1 Initiate alternate method to detect and suppress thermal hydraulic instability oscillations. <u>AND</u> I.2 Restore required channels to OPERABLE.	12 hours 120 days
J. Required Action and associated Completion Time of Condition I not met.	J.1 Reduce THERMAL POWER to <23% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.1.1-1 to determine which SRs apply for each RPS Function.
 2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains RPS trip capability.
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SURVEILLANCE		FREQUENCY
SR 3.3.1.1.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.1.1.2	Perform CHANNEL CHECK.	24 hours
SR 3.3.1.1.3	<p>-----NOTE-----</p> <p>Not required to be performed until 12 hours after THERMAL POWER \geq 23% RTP.</p> <p>-----</p> <p>Verify the absolute difference between the average power range monitor (APRM) channels and the calculated power is \leq 2% RTP while operating at \geq 23% RTP.</p>	7 days
SR 3.3.1.1.4	<p>-----NOTE-----</p> <p>Not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2.</p> <p>-----</p> <p>Perform CHANNEL FUNCTIONAL TEST.</p>	7 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.5	Perform CHANNEL FUNCTIONAL TEST.	7 days
SR 3.3.1.1.6	Verify the source range monitor (SRM) and intermediate range monitor (IRM) channels overlap.	Prior to fully withdrawing SRMs from the core.
SR 3.3.1.1.7	<p>-----NOTE----- Only required to be met during entry into MODE 2 from MODE 1. -----</p> <p>Verify the IRM and APRM channels overlap.</p>	7 days
SR 3.3.1.1.8	Calibrate the local power range monitors.	2000 MWD/MT average core exposure
SR 3.3.1.1.9	<p>-----NOTE----- A test of all required contacts does not have to be performed. -----</p> <p>Perform CHANNEL FUNCTIONAL TEST.</p>	92 days
SR 3.3.1.1.10	Perform CHANNEL CALIBRATION.	92 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.11	<p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. Neutron detectors are excluded. 2. For Function 1.a, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. <p>-----</p> <p>Perform CHANNEL CALIBRATION.</p>	184 days
SR 3.3.1.1.12	<p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. For Function 2.a, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. 2. For Functions 2.b and 2.f, the CHANNEL FUNCTIONAL TEST includes the recirculation flow input processing, excluding the flow transmitters. <p>-----</p> <p>Perform CHANNEL FUNCTIONAL TEST</p>	184 days
SR 3.3.1.1.13	Perform CHANNEL CALIBRATION.	24 months
SR 3.3.1.1.14	Perform CHANNEL FUNCTIONAL TEST.	24 months
SR 3.3.1.1.15	Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months
SR 3.3.1.1.16	Verify Turbine Stop Valve—Closure and Turbine Control Valve Fast Closure, Trip Oil Pressure—Low Functions are not bypassed when THERMAL POWER is $\geq 26\%$ RTP.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.17	<p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. Neutron detectors are excluded. 2. For Function 5, "n" equals 4 channels for the purpose of determining the STAGGERED TEST BASIS Frequency. 3. For Function 2.e, "n" equals 8 channels for the purpose of determining the STAGGERED TEST BASIS Frequency. Testing of APRM and OPRM outputs shall alternate. <p>-----</p> <p>Verify the RPS RESPONSE TIME is within limits.</p>	24 months on a STAGGERED TEST BASIS
SR 3.3.1.1.18	<p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. Neutron detectors are excluded. 2. For Functions 2b and 2.f, the recirculation flow transmitters that feed the APRMs are included. <p>-----</p> <p>Perform CHANNEL CALIBRATION</p>	24 months
SR 3.3.1.1.19	Verify OPRM is not bypassed when APRM Simulated Thermal Power is $\geq 25\%$ and recirculation drive flow is \leq value equivalent to the core flow value defined in the COLR.	24 months
SR 3.3.1.1.20	Adjust recirculation drive flow to conform to reactor core flow.	24 months

Table 3.3.1.1-1 (page 1 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Intermediate Range Monitors					
a. Neutron Flux-High	2	3	G	SR 3.3.1.1.1 SR 3.3.1.1.4 SR 3.3.1.1.6 SR 3.3.1.1.7 SR 3.3.1.1.11 SR 3.3.1.1.15	≤ 122/125 divisions of full scale
	5 ^(a)	3	H	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.11 SR 3.3.1.1.15	≤ 122/125 divisions of full scale
b. Inop	2	3	G	SR 3.3.1.1.4 SR 3.3.1.1.15	NA
	5 ^(a)	3	H	SR 3.3.1.1.5 SR 3.3.1.1.15	NA
2. Average Power Range Monitors					
a. Neutron Flux-High (Setdown)	2	3 ^(c)	G	SR 3.3.1.1.2 SR 3.3.1.1.7 SR 3.3.1.1.8 SR 3.3.1.1.12 SR 3.3.1.1.18	≤ 20% RTP
b. Simulated Thermal Power-High	1	3 ^(c)	F	SR 3.3.1.1.2 SR 3.3.1.1.3 SR 3.3.1.1.8 SR 3.3.1.1.12 SR 3.3.1.1.18 SR 3.3.1.1.20	≤ 0.55 W + 60.7% RTP ^(b) and ≤ 115.5% RTP

(continued)

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

(b) 0.55 (W-ΔW) + 60.7% RTP when reset for single loop operation per LCO 3.4.1, "Recirculation Loops Operating."

(c) Each APRM channel provides inputs to both trip systems.

Table 3.3.1.1-1 (page 2 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. Average Power Range Monitors (continued)					
c. Neutron Flux—High	1	3 ^(c)	F	SR 3.3.1.1.2 SR 3.3.1.1.3 SR 3.3.1.1.8 SR 3.3.1.1.12 SR 3.3.1.1.18	≤ 120% RTP
d. Inop	1,2	3 ^(c)	G	SR 3.3.1.1.12	NA
e. 2-Out-Of-4 Voter	1,2	2	G	SR 3.3.1.1.2 SR 3.3.1.1.12 SR 3.3.1.1.15 SR 3.3.1.1.17	NA
f. OPRM Trip	≥ 23% RTP	3 ^(c)	I	SR 3.3.1.1.2 SR 3.3.1.1.8 SR 3.3.1.1.12 SR 3.3.1.1.18 SR 3.3.1.1.19 SR 3.3.1.1.20	^(d)
3. Reactor Vessel Steam Dome Pressure—High	1,2	2	G	SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.15	≤ 1093 psig
4. Reactor Vessel Water Level—Low, Level 3	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.15	≥ 11.5 inches
5. Main Steam Isolation Valve—Closure	1	8	F	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.17	≤ 11% closed
6. Drywell Pressure—High	1,2	2	G	SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.15	≤ 1.88 psig

(continued)

(c) Each APRM channel provides inputs to both trip systems.

(d) See COLR for OPRM period based detection algorithm (PBDA) setpoint limits.

Table 3.3.1.1-1 (page 3 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
7. Scram Discharge Volume Water Level—High					
a. Level Transmitter	1,2	2	G	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 66 gallons
	5 ^(a)	2	H	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 66 gallons
b. Float Switch	1,2	2	G	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 62 gallons
	5 ^(a)	2	H	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 62 gallons
8. Turbine Stop Valve—Closure	≥ 26% RTP	4	E	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.16 SR 3.3.1.1.17	≤ 7% closed
9. Turbine Control Valve Fast Closure, Trip Oil Pressure—Low	≥ 26% RTP	2	E	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.16 SR 3.3.1.1.17	≥ 460 psig
10. Reactor Mode Switch—Shutdown Position	1,2	2	G	SR 3.3.1.1.14 SR 3.3.1.1.15	NA
	5 ^(a)	2	H	SR 3.3.1.1.14 SR 3.3.1.1.15	NA
11. Manual Scram	1,2	2	G	SR 3.3.1.1.5 SR 3.3.1.1.15	NA
	5 ^(a)	2	H	SR 3.3.1.1.5 SR 3.3.1.1.15	NA

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

3.3 INSTRUMENTATION

3.3.2.2 Feedwater - Main Turbine High Water Level Trip Instrumentation

LCO 3.3.2.2 Three channels of feedwater - main turbine high water level trip instrumentation shall be OPERABLE.

APPLICABILITY: THERMAL POWER \geq 23% RTP.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One feedwater - main turbine high water level trip channel inoperable.	A.1 Place channel in trip.	7 days
B. Two or more feedwater - main turbine high water level trip channels inoperable.	B.1 Restore feedwater - main turbine high water level trip capability.	2 hours
C. Required Action and associated Completion Time of Conditions A or B not met.	C.1 Reduce THERMAL POWER to < 23% RTP.	4 hours

3.3 INSTRUMENTATION

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

- LCO 3.3.4.1 a. Two channels per trip system for each EOC-RPT instrumentation Function listed below shall be OPERABLE:
1. Turbine Stop Valve (TSV)—Closure; and
 2. Turbine Control Valve (TCV) Fast Closure, Trip Oil Pressure Low.

OR

- b. LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)," limits for inoperable EOC-RPT as specified in the COLR are made applicable.

APPLICABILITY: THERMAL POWER > 26% RTP.

ACTIONS

-----NOTE-----

Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels inoperable. <u>AND</u> MCPR limit for inoperable EOC-RPT not made applicable.	A.1 Restore channel to OPERABLE status.	72 hours
	<u>OR</u> A.2 -----NOTE----- Not applicable if inoperable channel is the result of an inoperable breaker. Place channel in trip.	72 hours
	<u>OR</u>	(continued)

ACTIONS		
CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3 Apply the MCPR limit for inoperable EOC-RPT as specified in the COLR.	72 hours
B. One or more Functions with EOC-RPT trip capability not maintained. <u>AND</u> MCPR limit for inoperable EOC-RPT not made applicable	B.1 Restore EOC-RPT trip capability.	2 hours
	<u>OR</u> B.2 Apply the MCPR limit for inoperable EOC-RPT as specified in the COLR.	2 hours
C. Required Action and associated Completion Time not met.	C.1 Remove the associated recirculation pump from service.	4 hours
	<u>OR</u> C.2 Reduce THERMAL POWER to < 26% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

NOTE

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

SURVEILLANCE	FREQUENCY
<p>SR 3.3.4.1.1</p> <p>A test of all required contacts does not have to be performed.</p> <p>Perform CHANNEL FUNCTIONAL TEST.</p>	<p>92 days</p>
<p>SR 3.3.4.1.2</p> <p>Perform CHANNEL CALIBRATION. The Allowable Values shall be:</p> <p>TSV—Closure: $\leq 7\%$ closed;</p> <p>and</p> <p>TCV Fast Closure, Trip Oil Pressure—Low: ≥ 460 psig.</p>	<p>24 months</p>
<p>SR 3.3.4.1.3</p> <p>Perform LOGIC SYSTEM FUNCTIONAL TEST including breaker actuation.</p>	<p>24 months</p>
<p>SR 3.3.4.1.4</p> <p>Verify TSV—Closure and TCV Fast Closure, Trip Oil Pressure—Low Functions are not bypassed when THERMAL POWER is $\geq 26\%$ RTP.</p>	<p>24 months</p>

(continued)

Table 3.3.6.1-1 (page 1 of 6)
Primary Containment 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 SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.5	≥ -136 inches
b. Main Steam Line Pressure - Low	1	2	E	SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ 841 psig
c. Main Steam Line Flow - High	1,2,3	2 per MSL	D	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.5	≤ 179 psid
d. Condenser Vacuum - Low	1 2 ^(a) , 3 ^(a)	2	D	SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5	≥ 8.8 inches Hg vacuum
e. Reactor Building Main Steam Tunnel Temperature - High	1,2,3	2	D	SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5	≤ 184°F
f. Manual Initiation	1,2,3	1	G	SR 3.3.6.1.5	NA

(continued)

(a) With any main turbine stop valve not closed.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.4.2.1 -----NOTES-----</p> <ol style="list-style-type: none"> 1. Not required to be completed until 4 hours after associated recirculation loop is in operation. 2. Not required to be completed until 24 hours after > 23% RTP. <hr/> <p>Verify at least two of the following criteria (a, b, or c) are satisfied for each operating recirculation loop:</p> <ol style="list-style-type: none"> a. Recirculation loop drive flow versus Recirculation Pump speed differs by $\leq 10\%$ from established patterns. b. Recirculation loop drive flow versus total core flow differs by $\leq 10\%$ from established patterns. c. Each jet pump diffuser to lower plenum differential pressure differs by $\leq 20\%$ from established patterns, or each jet pump flow differs by $\leq 10\%$ from established patterns. 	<p>24 hours</p>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.3 Safety/Relief Valves (S/RVs)

LCO 3.4.3 The safety function of 14 S/RVs shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION		REQUIRED ACTION	COMPLETION TIME
A.1	One or more required S/RVs inoperable.	A.1 Be in MODE 3.	12 hours
		<u>AND</u>	
		A.2 Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.4.10.3</p> <p>-----NOTE----- Only required to be met in MODES 1, 2, 3, and 4 during recirculation pump start.</p> <p>-----</p> <p>Verify the difference between the bottom head coolant temperature and the reactor pressure vessel (RPV) coolant temperature is $\leq 145^{\circ}\text{F}$.</p>	<p>Once within 15 minutes prior to each startup of a recirculation pump</p>
<p>SR 3.4.10.4</p> <p>-----NOTE----- Only required to be met in MODES 1, 2, 3, and 4 during recirculation pump start.</p> <p>-----</p> <p>Verify the difference between the reactor coolant temperature in the recirculation loop to be started and the RPV coolant temperature is $\leq 50^{\circ}\text{F}$.</p>	<p>Once within 15 minutes prior to each startup of a recirculation pump</p>
<p>SR 3.4.10.5</p> <p>-----NOTE----- Only required to be met in single loop operation when:</p> <p>a. THERMAL POWER $\leq 27\%$ RTP; or</p> <p>b. The operating recirculation loop flow $\leq 21,320$ gpm.</p> <p>-----</p> <p>Verify the difference between the bottom head coolant temperature and the RPV coolant temperature is $\leq 145^{\circ}\text{F}$.</p>	<p>Once within 15 minutes prior to an increase in THERMAL POWER or an increase in loop flow</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.4.10.6</p> <p>-----NOTE----- Only required to be met in single loop operation when the idle recirculation loop is not isolated from the RPV, and:</p> <p>a. THERMAL POWER \leq 27% RTP; or</p> <p>b. The operating recirculation loop flow \leq 21,320 gpm.</p> <p>-----</p> <p>Verify the difference between the reactor coolant temperature in the recirculation loop not in operation and the RPV coolant temperature is \leq 50°F.</p>	<p>Once within 15 minutes prior to an increase in THERMAL POWER or an increase in loop flow.</p>
<p>SR 3.4.10.7</p> <p>-----NOTE----- Only required to be performed when tensioning the reactor vessel head bolting studs.</p> <p>-----</p> <p>Verify reactor vessel flange and head flange temperatures are \geq 70°F.</p>	<p>30 minutes</p>
<p>SR 3.4.10.8</p> <p>-----NOTE----- Not required to be performed until 30 minutes after RCS temperature \leq 80°F in MODE 4.</p> <p>-----</p> <p>Verify reactor vessel flange and head flange temperatures are \geq 70°F.</p>	<p>30 minutes</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.11	<p>-----NOTES----- Only required to be met in MODES 1, 2, and 3. -----</p> <p>Verify the combined leakage rate for all secondary containment bypass leakage paths is ≤ 9 scfh when pressurized to $\geq P_a$.</p>	In accordance with the Primary Containment Leakage Rate Testing Program.
SR 3.6.1.3.12	<p>-----NOTES----- Only required to be met in MODES 1, 2, and 3. -----</p> <p>Verify leakage rate through each MSIV is ≤ 100 scfh and ≤ 300 scfh for the combined leakage including the leakage from the MS Line Drains when the MSIVs are tested at ≥ 24.3 psig or P_a and the MS Line Drains are tested at P_a.</p>	In accordance with the Primary Containment Leakage Rate Testing Program.

(continued)

3.7 PLANT SYSTEMS

3.7.1 Residual Heat Removal Service Water (RHRSW) System and the Ultimate Heat Sink (UHS)

LCO 3.7.1 Two RHRSW subsystems and the UHS shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

NOTE

Enter applicable Conditions and Required Actions of LCO 3.4.8, "Residual Heat Removal (RHR) Shutdown Cooling System-Hot Shutdown," for RHR shutdown cooling made inoperable by RHRSW System.

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. NOTE Separate Condition entry is allowed for each valve.</p>	<p>A.1 Declare the associated RHRSW subsystems inoperable.</p>	<p>Immediately</p>
<p>One valve in Table 3.7.1-1 inoperable.</p>	<p><u>AND</u> A.2 Establish an open flow path to the UHS.</p>	<p>8 hours</p>
<p><u>OR</u> One valve in Table 3.7.1-2 inoperable.</p>	<p><u>AND</u> A.3 Restore the inoperable valve(s) to OPERABLE status.</p>	<p>8 hours from the discovery of an inoperable RHRSW subsystem in the opposite loop from the inoperable valve(s)</p>
<p><u>OR</u> One valve in Table 3.7.1-3 inoperable.</p>		<p><u>AND</u></p>
<p><u>OR</u> Any combination of valves in Table 3.7.1-1, Table 3.7.1-2, or Table 3.7.1-3 in the same return loop inoperable.</p>		<p>72 hours</p>

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.1.1 Verify the water level is greater than or equal to 678 feet 1 inch above Mean Sea Level.	12 hours
SR 3.7.1.2 Verify the average water temperature of the UHS is: <p>a. -----NOTE----- Only applicable with both units in MODE 1 or 2, or with either unit in MODE 3 for less than twelve (12) hours:</p> <p style="text-align: center;">≤ 85°F; or</p> <p>b. -----NOTE----- Only applicable when either unit has been in MODE 3 for at least twelve (12) hours but not more than twenty-four (24) hours.</p> <p style="text-align: center;">≤ 87°F; or</p> <p>c. -----NOTE----- Only applicable when either unit has been in MODE 3 for at least twenty-four (24) hours.</p> <p style="text-align: center;">≤ 88°F.</p>	24 hours
SR 3.7.1.3 Verify each RHRSW manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position or can be aligned to the correct position.	31 days
SR 3.7.1.4 Verify that valves HV-01222A and B (the spray array bypass valves) close upon receipt of a closing signal and open upon receipt of an opening signal.	92 days
	(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.1.5	Verify that valves HV-01224A1 and B1 (the large spray array valves) close upon receipt of a closing signal and open upon receipt of an opening signal.	92 days
SR 3.7.1.6	Verify that valves HV-01224A2 and B2 (the small spray array valves) close upon receipt of a closing signal and open upon receipt of an opening signal.	92 days
SR 3.7.1.7	Verify that valves 012287A and 012287B (the spray array bypass manual valves) are capable of being opened and closed.	92 days

TABLE 3.7.1-1

Ultimate Heat Sink Spray Array Valves

VALVE NUMBER	VALVE DESCRIPTION
HV-01224A1	Loop A large spray array valve
HV-01224B1	Loop B large spray array valve
HV-01224A2	Loop A small spray array valve
HV-01224B2	Loop B small spray array valve

TABLE 3.7.1-2

Ultimate Heat Sink Spray Array Bypass Valves

VALVE NUMBER	VALVE DESCRIPTION
HV-01222A	Loop A spray array bypass valve
HV-01222B	Loop B spray array bypass valve

TABLE 3.7.1-3

Ultimate Heat Sink Spray Array Bypass Manual Valves

VALVE NUMBER	VALVE DESCRIPTION
012287A	Loop A spray array bypass manual valve
012287B	Loop B spray array bypass manual valve

3.7 PLANT SYSTEMS

3.7.6 Main Turbine Bypass System

LCO 3.7.6 The Main Turbine Bypass System shall be OPERABLE.

OR

Apply the following limits for an inoperable Main Turbine Bypass System as specified in the COLR:

- a. LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)," and
- b. LCO 3.2.3, "LINEAR HEAT GENERATION RATE (LHGR)."

APPLICABILITY: THERMAL POWER \geq 23% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. Main Turbine Bypass System inoperable.</p> <p><u>AND</u></p> <p>Requirements of LCO 3.2.2 not met.</p> <p><u>OR</u></p> <p>Requirements of LCO 3.2.3 not met.</p>	<p>A.1 Satisfy the requirements of the LCO or restore Main Turbine Bypass System to OPERABLE status.</p>	<p>2 hours</p>
<p>B. Required Action and associated Completion Time not met.</p>	<p>B.1 Reduce THERMAL POWER to < 23% RTP.</p>	<p>4 hours</p>

3.7 PLANT SYSTEMS

3.7.8 Main Turbine Pressure Regulation System

LCO 3.7.8 Both Main Turbine Pressure Regulators shall be OPERABLE.

OR

Apply the following limits for an inoperable Main Turbine Pressure Regulator as specified in the COLR:

- a. LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)", and
- b. LCO 3.2.3, "LINEAR HEAT GENERATION RATE (LHGR)."

APPLICABILITY: THERMAL POWER \geq 23% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One Main Turbine Pressure Regulator inoperable.</p> <p><u>AND</u></p> <p>Requirements of LCO 3.2.2 not met.</p> <p><u>OR</u></p> <p>Requirements of LCO 3.2.3 not met.</p>	<p>A.1 Satisfy the requirements of the LCO or restore Main Turbine Pressure Regulator to OPERABLE status.</p>	2 hours
<p>B. Required Action and associated Completion Time not met.</p>	<p>B.1 Reduce THERMAL POWER to < 23% RTP.</p>	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.8.1 Verify that both Main Turbine Pressure Regulators are each capable of controlling main steam pressure.	92 days
SR 3.7.8.2 Perform a system functional test.	24 months

5.5 Programs and Manuals

5.5.11 Safety Function Determination Program (SFDP) (continued)

The SFDP identifies where a loss of safety function exists. If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered. When a loss of safety function is caused by the inoperability of a single Technical Specification support system, the appropriate Conditions and Required Actions to enter are those of the support system.

5.5.12 Primary Containment Leakage Rate Testing Program

A program shall be established, implemented, and maintained to comply with the leakage rate testing of the containment as required by 10 CFR 50.54(o) and 10 CFR 50, Appendix J, Option B, as modified by approved exemptions. This program shall be in accordance with the guidelines contained in Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995, as modified by the following exceptions:

- a. The visual examination of containment concrete surfaces intended to fulfill the requirements of 10CFR 50, Appendix J, Option B testing, will be performed in accordance with the requirements of and frequency specified by the ASME Section XI Code, Subsection IWL, except where relief has been authorized by the NRC.
- b. The visual examination of the steel liner plate inside containment intended to fulfill the requirements of 10 CFR 50, Appendix J, Option B, will be performed in accordance with the requirements of and frequency specified by the ASME Section XI Code, Subsection IWE, except where relief has been authorized by the NRC.
- c. NEI 94-01-1995, Section 9.2.3: The first Type A test performed after the October 31, 1992 Type A test shall be performed no later than October 30, 2007.

The peak calculated containment internal pressure for the design basis loss of coolant accident, Pa, is 48.6 psig.

The maximum allowable primary containment leakage rate, La, at Pa, shall be 1% of the primary containment air weight per day.

(continued)

5.6 Reporting Requirements (continued)

5.6.4 Not Used

5.6.5 CORE OPERATING LIMITS REPORT (COLR)

- a. Core operating limits shall be established prior to each reload cycle, or prior to any remaining portion of a reload cycle, and shall be documented in the COLR for the following:
1. The Average Planar Linear Heat Generation Rate for Specification 3.2.1;
 2. The Minimum Critical Power Ratio for Specification 3.2.2;
 3. The Linear Heat Generation Rate for Specification 3.2.3;
 4. The Shutdown Margin for Specification 3.1.1;
 5. Oscillation Power Range Monitor (OPRM) Trip setpoints, for Specification 3.3.1.1; and
 6. The Allowable Values and power range setpoints for Rod Block Monitor Upscale Functions for Specification 3.3.2.1, Table 3.3.2.1-1.
- b. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC.

(continued)

5.6 Reporting Requirements

5.6.5 COLR (continued)

The approved analytical methods are described in the following documents, the approved version(s) of which are specified in the COLR.

1. XN-NF-81-58(P)(A), "RODEX2 Fuel Rod Thermal-Mechanical Response Evaluation Model," Exxon Nuclear Company.
2. XN-NF-85-67(P)(A), "Generic Mechanical Design for Exxon Nuclear Jet pump BWR Reload Fuel," Exxon Nuclear Company.
3. EMF-85-74(P)(A), "RODEX2A (BWR) Fuel Rod Thermal-Mechanical Evaluation Model," Siemens Power Corporation.
4. ANF-89-98(P)(A), "Generic Mechanical Design Criteria for BWR Fuel Designs," Advanced Nuclear Fuels Corporation.
5. XN-NF-80-19(P)(A), "Exxon Nuclear Methodology for Boiling Water Reactors," Exxon Nuclear Company.
6. EMF-2158(P)(A), "Siemens Power Corporation Methodology for Boiling Water Reactors: Evaluation and Validation of CASMO-4/MICROBURN-B2," Siemens Power Corporation.
7. EMF-2361(P)(A), "EXEM BWR-2000 ECCS Evaluation Model," Framatome ANP.
8. EMF-2292(P)(A), "ATRIUM™-10: Appendix K Spray Heat Transfer Coefficients," Siemens Power Corporation.
9. XN-NF-84-105(P)(A), "XCOBRA-T: A Computer Code for BWR Transient Thermal-Hydraulic Core Analysis," Exxon Nuclear Company.

(continued)

5.6 Reporting Requirements

5.6.5 COLR (continued)

10. ANF-524(P)(A), "ANF Critical Power Methodology for Boiling Water Reactors," Advanced Nuclear Fuels Corporation.
 11. ANF-913(P)(A), "COTRANSA2: A Computer Program for Boiling Water Reactor Transient Analyses," Advanced Nuclear Fuels Corporation.
 12. ANF-1358(P)(A), "The Loss of Feedwater Heating Transient in Boiling Water Reactors," Advanced Nuclear Fuels Corporation.
 13. EMF-2209(P)(A), "SPCB Critical Power Correlation," Siemens Power Corporation.
 14. EMF-CC-074(P)(A), "BWR Stability Analysis - Assessment of STAIF with Input from MICROBURN-B2," Siemens Power Corporation.
 15. NE-092-001A, "Licensing Topical Report for Power Uprate with Increased Core Flow," Pennsylvania Power & Light Company.

 16. NEDO-32465-A, "BWROG Reactor Core Stability Detect and Suppress Solutions Licensing Basis Methodology for Reload Applications."
- c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems (ECCS) limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.
- d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

continued