

DUKE ENERGY CAROLINAS, LLC

NORTH CAROLINA ELECTRIC MEMBERSHIP CORPORATION

DOCKET NO. 50-413

CATAWBA NUCLEAR STATION, UNIT 1

RENEWED FACILITY OPERATING LICENSE

Renewed License No. NPF-35

1. The U.S. Nuclear Regulatory Commission (Commission) having previously made the findings set forth in License No. NPF-35 issued on January 17, 1985, has now found that:
  - A. The application for renewed operating license filed by the Duke Energy Corporation\* acting for itself and North Carolina Electric Membership Corporation (the licensees) complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I, and all required notifications to other agencies or bodies have been duly made;
  - B. Actions have been identified and have been or will be taken with respect to (1) managing the effects of aging during the period of extended operation on the functionality of structures and components that have been identified to require review under 10 CFR 54.21(a)(1), and (2) time-limited aging analyses that have been identified to require review under 10 CFR 54.21(c), such that there is reasonable assurance that the activities authorized by this renewed operating license will continue to be conducted in accordance with the current licensing basis, as defined in 10 CFR 54.3, for Catawba Nuclear Station, Unit 1 (facility or plant), and that any changes made to the plant's current licensing basis in order to comply with 10 CFR 54.29(a) are in accord with the Act and the Commission's regulations;
  - C. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission (except as exempted from compliance in Section 2.D. below);
  - D. There is reasonable assurance: (i) that the activities authorized by this renewed operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I; (except as exempted from compliance in Section 2.D. below);

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\* Duke Energy Corporation converted to Duke Power Company LLC on April 3, 2006 and was re-named Duke Energy Carolinas, LLC as of October 1, 2006. References to "Duke" are to Duke Energy Carolinas, LLC, which is an owner and the operator of Catawba Nuclear Station, Unit 1, and one of the "licensees."

- E. Duke Energy Carolinas, LLC\* is technically qualified to engage in the activities authorized by this renewed operating license in accordance with the Commission's regulations set forth in 10 CFR Chapter 1;
  - F. The licensees have satisfied the applicable provisions of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements", of the Commission's regulations;
  - G. The issuance of this renewed operating license will not be inimical to the common defense and security or to the health and safety of the public;
  - H. After weighing the environmental, economic, technical, and other benefits of the facility against environmental and other costs and considering available alternatives, the issuance of this Renewed Facility Operating License No. NPF-35 is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied, and;
  - I. The receipt, possession, and use of source, byproduct and special nuclear material as authorized by this renewed operating license will be in accordance with the Commission's regulations in 10 CFR Parts 30, 40 and 70.
2. Based on the foregoing findings and the Partial Initial Decisions issued by the Atomic Safety and Licensing Boards dated June 22, September 18, and November 27, 1984, regarding this facility and satisfaction of conditions therein imposed, except as hereinafter set forth, and the Commission's vote on January 17, 1985, Facility Operating License No. NPF-31 issued on December 6, 1984, superseded by Facility Operating License No. NPF-35 issued on January 17, 1985, is superseded by Renewed Facility Operating License No. NPF-35, hereby issued to Duke Energy Carolinas, LLC, and the North Carolina Electric Membership Corporation to read as follows:
- A. This renewed operating license applies to the Catawba Nuclear Station, Unit 1, a pressurized water reactor and associated equipment (the facility) owned by Duke Energy Carolinas, LLC and the North Carolina Electric Membership Corporation. The facility is located on the licensees' site in York County, South Carolina, on the shore of Lake Wylie approximately 6 miles north of Rock Hill, South Carolina, and is described in the Updated Final Safety Analysis Report, as supplemented and amended, and in the Environmental Report, as supplemented and amended.
  - B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses:

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\*Duke Energy Carolinas, LLC is authorized to act as agent for the North Carolina Electric Membership Corporation and has exclusive responsibility and control over the physical construction, operation and maintenance of the facility.

- (1) Duke Energy Carolinas, LLC, pursuant to Section 103 of the Act and 10 CFR Part 50, to possess, use, and operate the facility at the designated location in York County, South Carolina, in accordance with the procedures and limitations set forth in this renewed operating license;
  - (2) North Carolina Electric Membership Corporation to possess the facility at the designated location in York County, South Carolina, in accordance with the procedures and limitations set forth in this renewed operating license;
  - (3) Duke Energy Carolinas, LLC, pursuant to the Act and 10 CFR Part 70 to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Updated Final Safety Analysis Report, as supplemented and amended;
  - (4) Duke Energy Carolinas, LLC, pursuant to the Act and 10 CFR Parts 30, 40 and 70 to receive, possess and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
  - (5) Duke Energy Carolinas, 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;
  - (6) Duke Energy Carolinas, 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 authorized herein, and;
  - (7) Duke Energy Carolinas, 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 McGuire Nuclear Station, Units 1 and 2, and Oconee Nuclear Station, Units 1, 2 and 3.
- C. This renewed operating 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

Duke Energy Carolinas, LLC is authorized to operate the facility at reactor core full steady state power level of 3469 megawatts thermal (100%) in accordance with the conditions specified herein.

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 319, which are attached hereto, are hereby incorporated into this renewed operating license. Duke Energy Carolinas, LLC shall operate the facility in accordance with the Technical Specifications.

(3) Updated Final Safety Analysis Report

The Updated Final Safety Analysis Report supplement submitted pursuant to 10 CFR 54.21(d), as revised on December 16, 2002, describes certain future activities to be completed before the period of extended operation. Duke shall complete these activities no later than December 6, 2024, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.

The Updated Final Safety Analysis Report supplement as revised on December 16, 2002, described above, shall be included in the next scheduled update to the Updated Final Safety Analysis Report required by 10 CFR 50.71 (e)(4), following issuance of this renewed operating license. Until that update is complete, Duke may make changes to the programs described in such supplement without prior Commission approval, provided that Duke evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

(4) Antitrust Conditions

Duke Energy Carolinas, LLC shall comply with the antitrust conditions delineated in Appendix C to this renewed operating license.

(5) Fire Protection Program

Duke Energy Carolinas, LLC shall implement and maintain in effect all provisions of the approved fire protection program that complies with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the licensee amendment request dated September 25, 2013; as supplemented by letters dated January 13, 2015; January 28, 2015; February 27, 2015; March 30, 2015; April 28, 2015; July 15, 2015; August 14, 2015; September 3, 2015; December 11, 2015; January 7, 2016; March 23, 2016; June 15, 2016; August 2, 2016; September 7, 2016; and, January 26, 2017, as approved in the SE dated February 8, 2017. Except where NRC approval for changes or deviations is required by 10 CFR 50.48(c), and provided no other regulation, technical specification, license condition or requirement would require prior NRC approval, the licensee may make changes to the fire protection program without prior approval of the Commission if those changes satisfy the provisions set forth in 10 CFR 50.48(a) and 10 CFR 50.48(c), the change does not require a change to a technical specification or a license condition, and the criteria listed below are satisfied.

(a) Risk-Informed Changes that May be Made Without Prior NRC Approval

A risk assessment of the change must demonstrate that the acceptance criteria below are met. The risk assessment approach, methods, and data shall be acceptable to the NRC and shall be appropriate for the nature and scope of the change being evaluated; be based on the as-built, as-operated, and maintained plant; and reflect the operating experience at CNS. Acceptable methods to assess the risk of the change may include methods that have been used in the peer-reviewed fire PRA model, methods that have been approved by NRC through a plant-specific license amendment or NRC approval of generic methods specifically for use in NFPA 805 risk assessments, or methods that have been demonstrated to bound the risk impact.

- 1) Prior NRC review and approval is not required for changes that clearly result in a decrease in risk. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. The change may be implemented following completion of the plant change evaluation; and
- 2) Prior NRC review and approval is not required for individual changes that result in a risk increase less than  $1 \times 10^{-7}$ /year (yr) for CDF and less than  $1 \times 10^{-8}$ /yr for LERF. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. The change may be implemented following completion of the plant change evaluation.

(b) Other Changes that May be Made Without Prior NRC Approval

- 1) Changes to NFPA 805, Chapter 3, Fundamental Fire Protection Program

Prior NRC review and approval is not required for changes to the NFPA 805, Chapter 3, fundamental fire protection program elements and design requirements for which an engineering evaluation demonstrates that the alternative to the Chapter 3 element is functionally equivalent or adequate for the hazard. The licensee may use an engineering evaluation to demonstrate that a change to an NFPA 805, Chapter 3, element is functionally equivalent to the corresponding technical requirement. A qualified fire protection engineer shall perform the engineering evaluation and conclude that the change has not affected the functionality of the component, system, procedure, or physical arrangement, using a relevant technical requirement or standard.

The licensee may use an engineering evaluation to demonstrate that changes to certain NFPA 805, Chapter 3, elements are acceptable because the alternative is "adequate for the hazard." Prior NRC review and approval would not be required for alternatives to four specific sections of NFPA 805, Chapter 3, for which an engineering evaluation demonstrates that the

alternative to the Chapter 3 element is adequate for the hazard. A qualified fire protection engineer shall perform the engineering evaluation and conclude that the change has not affected the functionality of the component, system, procedure, or physical arrangement, using a relevant technical requirement or standard.

The four specific sections of NFPA 805, Chapter 3, are as follows:

- “Fire Alarm and Detection Systems” (Section 3.8),
- “Automatic and Manual Water-Based Fire Suppression Systems” (Section 3.9),
- “Gaseous Fire Suppression Systems” (Section 3.10), and
- “Passive Fire Protection Features” (Section 3.11).

This License Condition does not apply to any demonstration of equivalency under Section 1.7 of NFPA 805.

- 1) Fire Protection Program Changes that Have No More than Minimal Risk Impact

Prior NRC review and approval is not required for changes to the licensee’s fire protection program that have been demonstrated to have no more than a minimal risk impact. The licensee may use its screening process as approved in the NRC SE dated February 8, 2017, to determine that certain fire protection program changes meet the minimal criterion. The licensee shall ensure that fire protection defense-in-depth and safety margins are maintained when changes are made to the fire protection program.

(c) Transition License Conditions

- 1) Before achieving full compliance with 10 CFR 50.48(c), as specified by 2) and 3), below, risk-informed changes to the Duke Energy Carolinas, LLC fire protection program may not be made without prior NRC review and approval unless the change has been demonstrated to have no more than a minimal risk impact, as described in 2) above.
- 2) The licensee shall implement the modifications to its facility, as described in Table S-2, “Plant Modifications Committed,” Attachment S, of the Duke Energy Carolinas, LLC letter CNS-17-004, dated January 26, 2017, to complete the transition to full compliance with 10 CFR 50.48(c) by December 31, 2017. The licensee shall maintain appropriate compensatory measures in accordance with its procedures until completion of these modifications.
- 3) The licensee shall complete the implementation items as listed in Table S-3, “Implementation Items,” Attachment S, of the Duke Energy Carolinas, LLC letter CNS-17-004, dated January 26, 2017, within 180 days after

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issuance of the Safety Evaluation unless that falls within a scheduled outage window, then the completion of implementation items will occur 60 days after startup from the scheduled outage. Implementation Item 13 is associated with modifications and will be completed 180 days after modifications are complete.

(6) Mitigation Strategies

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

(7) Additional Conditions

The Additional Conditions contained in Appendix B, as revised through Amendment No. 304 are hereby incorporated into this renewed operating license. Duke Energy Carolinas, LLC shall operate the facility in accordance with the Additional Conditions.

- D. The facility requires exemptions from certain requirements of Appendix J to 10 CFR Part 50, as delineated below and pursuant to evaluations contained in the referenced SER and SSERs. These include, (a) partial exemption from the requirement of paragraph III.D.2(b)(i) of Appendix J, the testing of containment airlocks at times when the containment integrity is not required (Section 6.2.6 of the SER and SSERs #3 and #4), (b) exemption from the requirement of paragraph III.A.(d) of Appendix J, insofar as it requires the venting and draining of lines for type A tests (Section 6.2.6 of SSER #3), and (c) partial exemption from the requirements of paragraph III.B of Appendix J, as it relates to bellows testing (Section 6.2.6 of the SER and SSER #3). These exemptions are authorized by law, will not present an undue risk to the public health and safety, are consistent with the common defense and security, and are consistent with certain special circumstances as discussed in the reference SER and SSERs. These exemptions are, therefore, hereby granted pursuant to 10 CFR 50.12. With the granting of these exemptions, the facility will operate, to the extent authorized herein, in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission.



E. Physical Protection

Duke Energy Carolinas, LLC shall fully implement and maintain in effect all provisions of the Commission-approved physical security, 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 combined set of plans, which contains safeguards information protected under 10 CFR 73.21, is entitled: "Duke Energy Physical Security Plan," Revision 8 submitted by letter dated May 17, 2007.

Duke Energy Carolinas, LLC shall fully implement and maintain in effect all provisions of the Commission-approved cyber security plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The Duke Energy Carolinas, LLC CSP was approved by License Amendment No. 266, as supplemented by a change approved by License Amendment No. 276.

F. Reporting to the Commission Deleted by Amendment No. 230

G. The licensees 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.

3. This renewed license is effective as of the date of issuance and shall expire at midnight on December 5, 2043.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed By: J. E. Dyer

J. E. Dyer, Director  
Office of Nuclear Reactor Regulation

Attachments:

1. Appendix A – Technical Specifications
2. Appendix B – Additional Conditions
3. Appendix C – Antitrust Conditions

Date of Issuance: December 5, 2003

**50-413/414**

**IMPROVED  
TECHNICAL  
SPECIFICATIONS**

**Catawba Nuclear Station,  
Units No. 1 and 2**

**(Volume I)**

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## 1.0 USE AND APPLICATION

### 1.1 Definitions

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-----NOTE-----

The defined terms of this section appear in capitalized type and are applicable throughout these Technical Specifications and Bases.

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<u>Term</u>	<u>Definition</u>
ACTIONS	ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.
ACTUATION LOGIC TEST	An ACTUATION LOGIC TEST shall be the application of various simulated or actual input combinations in conjunction with each possible interlock logic state and the verification of the required logic output. The ACTUATION LOGIC TEST, as a minimum, shall include a continuity check of output devices.
AXIAL FLUX DIFFERENCE (AFD)	AFD shall be the difference in normalized flux signals between the top and bottom halves of a two section excore neutron detector.
CHANNEL CALIBRATION	A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel so that it responds within the required range and accuracy to known input. The CHANNEL CALIBRATION shall encompass the entire channel, including the required sensor, alarm, interlock, display, and trip functions. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an in-place qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. Whenever a sensing element is replaced, the next required CHANNEL CALIBRATION shall include an in-place cross calibration that compares the other sensing elements with the recently installed sensing element. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping calibrations or total channel steps so that the entire channel is calibrated.

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(continued)

1.1 Definitions (continued)

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CHANNEL CHECK	A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter.
CHANNEL OPERATIONAL TEST (COT)	A COT shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify the OPERABILITY of required alarm, interlock, and trip functions. The COT shall include adjustments, as necessary, of the required alarm, interlock, and trip setpoints so that the setpoints are within the required range and accuracy.
CORE ALTERATION	CORE ALTERATION shall be the movement of any fuel, sources, or reactivity control components, within the reactor vessel with the vessel head removed and fuel in the vessel. Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.
CORE OPERATING LIMITS REPORT (COLR)	The COLR is the unit specific document that provides cycle specific parameter limits for the current reload cycle. These cycle specific parameter limits shall be determined for each reload cycle in accordance with Specification 5.6.5. Unit operation within these limits is addressed in individual Specifications.
DOSE EQUIVALENT I-131	DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcuries per gram) that alone would produce the same dose when inhaled as the combined activities of iodine isotopes I-131, I-132, I-133, I-134, and I-135 actually present. The determination of DOSE EQUIVALENT I-131 shall be performed using Committed Dose Equivalent (CDE) or Committed Effective Dose Equivalent (CEDE) dose conversion factors from Table 2.1 of the Environmental Protection Agency (EPA) Federal Guidance Report No. 11.

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(continued)



1.1 Definitions (continued)

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DOSE EQUIVALENT Xe-133	DOSE EQUIVALENT Xe-133 shall be that concentration of Xe-133 (microcuries per gram) that alone would produce the same acute dose to the whole body as the combined activities of noble gas nuclides Kr-85m, Kr-85, Kr-87, Kr-88, Xe-131m, Xe-133m, Xe-133, Xe-135m, Xe-135, and Xe-138 actually present. If a specific noble gas nuclide is not detected, it should be assumed to be present at the minimum detectable activity. The determination of DOSE EQUIVALENT Xe-133 shall be performed using effective dose conversion factors for air submersion listed in Table III.1 of EPA Federal Guidance Report No. 12, 1993, "External Exposure to Radionuclides in Air, Water, and Soil."
ENGINEERED SAFETY FEATURE (ESF) RESPONSE TIME	The ESF RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. 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. In lieu of measurement, response time may be verified for selected components provided that the components and the methodology for verification have been previously reviewed and approved by the NRC, or the components have been evaluated in accordance with an NRC approved methodology.
INSERVICE TESTING PROGRAM	The INSERVICE TESTING PROGRAM is the licensee program that fulfills the requirements of 10 CFR 50.55a(f).

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(continued)

1.1 Definitions (continued)

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LEAKAGE

LEAKAGE shall be:

a. Identified LEAKAGE

1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) seal water injection or leakoff), that is captured and conducted to collection systems or a sump or collecting tank;
2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known to not interfere with the operation of leakage detection systems; or
3. Reactor Coolant System (RCS) LEAKAGE through a steam generator to the Secondary System (primary to secondary LEAKAGE);

b. Unidentified LEAKAGE

All LEAKAGE (except RCP seal water injection or leakoff) that is not identified LEAKAGE; and

c. Pressure Boundary LEAKAGE

LEAKAGE (except primary to secondary LEAKAGE) through a fault in an RCS component body, pipe wall, or vessel wall. LEAKAGE past seals, packing, and gaskets is not pressure boundary LEAKAGE.

MASTER RELAY TEST

A MASTER RELAY TEST shall consist of energizing each master relay and verifying the OPERABILITY of each relay. The MASTER RELAY TEST shall include a continuity check of each associated slave relay.

MODE

A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.

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(continued)

1.1 Definitions (continued)

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NOMINAL TRIP SETPOINT	The NOMINAL TRIP SETPOINT shall be the design value of a setpoint. The trip setpoint implemented in plant hardware may be less or more conservative than the NOMINAL TRIP SETPOINT by a calibration tolerance. Unless otherwise specified, if plant conditions warrant, the trip setpoint implemented in plant hardware may be set outside the NOMINAL TRIP SETPOINT calibration tolerance band as long as the trip setpoint is conservative with respect to the NOMINAL TRIP SETPOINT.
OPERABLE — OPERABILITY	A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).
PHYSICS TESTS	PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation. These tests are:  a. Described in Chapter 14 of the UFSAR;  b. Authorized under the provisions of 10 CFR 50.59; or  c. Otherwise approved by the Nuclear Regulatory Commission.
QUADRANT POWER TILT RATIO (QPTR)	QPTR shall be the ratio of the maximum upper excore detector calibrated output to the average of the upper excore detector calibrated outputs, or the ratio of the maximum lower excore detector calibrated output to the average of the lower excore detector calibrated outputs, whichever is greater.
RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 3469 MWt (Unit 1) and 3411 MWt (Unit 2).

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(continued)

1.1 Definitions (continued)

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REACTOR TRIP  
SYSTEM (RTS) RESPONSE  
TIME

The RTS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RTS trip setpoint at the channel sensor until loss of stationary gripper coil voltage. 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. In lieu of measurement, response time may be verified for selected components provided that the components and the methodology for verification have been previously reviewed and approved by the NRC, or the components have been evaluated in accordance with an NRC approved methodology.

SHUTDOWN MARGIN (SDM)

SDM shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming:

- a. All rod cluster control assemblies (RCCAs) are fully inserted except for the single RCCA of highest reactivity worth, which is assumed to be fully withdrawn. However, with all RCCAs verified fully inserted by two independent means, it is not necessary to account for a stuck RCCA in the SDM calculation. With any RCCA not capable of being fully inserted, the reactivity worth of the RCCA must be accounted for in the determination of SDM; and
- b. In MODES 1 and 2, the fuel and moderator temperatures are changed to the nominal zero power design level.

SLAVE RELAY TEST

A SLAVE RELAY TEST shall consist of energizing each slave relay and verifying the OPERABILITY of each slave relay. The SLAVE RELAY TEST shall include, as a minimum, a continuity check of associated testable actuation devices.

THERMAL POWER

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

TRIP ACTUATING DEVICE  
OPERATIONAL TEST  
(TADOT)

A TADOT shall consist of operating the trip actuating device and verifying the OPERABILITY of required alarm, interlock, and trip functions. The TADOT shall include adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the required accuracy.

Table 1.1-1 (page 1 of 1)  
MODES

MODE	TITLE	REACTIVITY CONDITION ( $k_{eff}$ )	% RATED THERMAL POWER(a)	AVERAGE REACTOR COOLANT TEMPERATURE (°F)
1	Power Operation	$\geq 0.99$	$> 5$	NA
2	Startup	$\geq 0.99$	$\leq 5$	NA
3	Hot Standby	$< 0.99$	NA	$\geq 350$
4	Hot Shutdown(b)	$< 0.99$	NA	$350 > T_{avg} > 200$
5	Cold Shutdown(b)	$< 0.99$	NA	$\leq 200$
6	Refueling(c)	NA	NA	NA

(a) Excluding decay heat.

(b) All reactor vessel head closure bolts fully tensioned.

(c) One or more reactor vessel head closure bolts less than fully tensioned.

## 1.0 USE AND APPLICATION

### 1.2 Logical Connectors

---

**PURPOSE**                    The purpose of this section is to explain the meaning of logical connectors.

Logical connectors are used in Technical Specifications (TS) to discriminate between, and yet connect, discrete Conditions, Required Actions, Completion Times, Surveillances, and Frequencies. The only logical connectors that appear in TS are AND and OR. The physical arrangement of these connectors constitutes logical conventions with specific meanings.

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**BACKGROUND**                Several levels of logic may be used to state Required Actions. These levels are identified by the placement (or nesting) of the logical connectors and by the number assigned to each Required Action. The first level of logic is identified by the first digit of the number assigned to a Required Action and the placement of the logical connector in the first level of nesting (i.e., left justified with the number of the Required Action). The successive levels of logic are identified by additional digits of the Required Action number and by successive indentations of the logical connectors.

When logical connectors are used to state a Condition, Completion Time, Surveillance, or Frequency, only the first level of logic is used, and the logical connector is left justified with the statement of the Condition, Completion Time, Surveillance, or Frequency.

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**EXAMPLES**                    The following examples illustrate the use of logical connectors.

(continued)

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1.2 Logical Connectors

EXAMPLES  
(continued)

EXAMPLE 1.2-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met.	A.1 Verify . . .  <u>AND</u>  A.2 Restore . . .	

In this example the logical connector AND is used to indicate that when in Condition A, both Required Actions A.1 and A.2 must be completed.

(continued)

1.2 Logical Connectors

EXAMPLES  
(continued)

EXAMPLE 1.2-2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met.	A.1 Trip . . . <u>OR</u> A.2.1 Verify . . . <u>AND</u> A.2.2.1 Reduce . . . <u>OR</u> A.2.2.2 Perform . . . <u>OR</u> A.3 Align . . .	

This example represents a more complicated use of logical connectors. Required Actions A.1, A.2, and A.3 are alternative choices, only one of which must be performed as indicated by the use of the logical connector OR and the left justified placement. Any one of these three Actions may be chosen. If A.2 is chosen, then both A.2.1 and A.2.2 must be performed as indicated by the logical connector AND. Required Action A.2.2 is met by performing A.2.2.1 or A.2.2.2. The indented position of the logical connector OR indicates that A.2.2.1 and A.2.2.2 are alternative choices, only one of which must be performed.



## 1.0 USE AND APPLICATION

### 1.3 Completion Times

---

PURPOSE	The purpose of this section is to establish the Completion Time convention and to provide guidance for its use.
BACKGROUND	Limiting Conditions for Operation (LCOs) specify minimum requirements for ensuring safe operation of the unit. The ACTIONS associated with an LCO state Conditions that typically describe the ways in which the requirements of the LCO can fail to be met. Specified with each stated Condition are Required Action(s) and Completion Time(s).
DESCRIPTION	<p>The Completion Time is the amount of time allowed for completing a Required Action. It is referenced to the discovery of a situation (e.g., inoperable equipment or variable not within limits) that requires entering an ACTIONS Condition unless otherwise specified, providing the unit is in a MODE or specified condition stated in the Applicability of the LCO.</p> <p>Unless otherwise specified, the Completion Time begins when a senior licensed operator on the operating shift crew with responsibility for plant operations makes the determination that an LCO is not met and an ACTIONS Condition is entered. The “otherwise specified” exceptions are varied, such as a Required Action Note or Surveillance Requirement Note that provides an alternative time to perform specific tasks, such as testing, without starting the Completion Time. While utilizing the Note, should a Condition be applicable for any reason not addressed by the Note, the Completion Time begins. Should the time allowance in the Note be exceeded, the Completion Time begins at that point. The exceptions may also be incorporated into the Completion Time. For example, LCO 3.8.1, “AC Sources – Operating,” Required Action B.2, requires declaring required feature(s) supported by an inoperable diesel generator, inoperable when the redundant required feature(s) are inoperable. The Completion Time states, “4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s).” In this case the Completion Time does not begin until the conditions in the Completion Time are satisfied.</p> <p>Required Actions must be completed prior to the expiration of the specified Completion Time. An ACTIONS Condition remains in effect and the Required Actions apply until the Condition no longer exists or the unit is not within the LCO Applicability.</p>

(continued)

1.3 Completion Times (continued)

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DESCRIPTION  
(continued)

If situations are discovered that require entry into more than one Condition at a time within a single LCO (multiple Conditions), the Required Actions for each Condition must be performed within the associated Completion Time. When in multiple Conditions, separate Completion Times are tracked for each Condition starting from the discovery of the situation that required entry into the Condition, unless otherwise specified.

Once a Condition has been entered, subsequent trains, subsystems, components, or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition, unless specifically stated. The Required Actions of the Condition continue to apply to each additional failure, with Completion Times based on initial entry into the Condition, unless otherwise specified.

However, when a subsequent train, subsystem, component, or variable expressed in the Condition is discovered to be inoperable or not within limits, the Completion Time(s) may be extended. To apply this Completion Time extension, two criteria must first be met. The subsequent inoperability:

- a. Must exist concurrent with the first inoperability; and
- b. Must remain inoperable or not within limits after the first inoperability is resolved.

The total Completion Time allowed for completing a Required Action to address the subsequent inoperability shall be limited to the more restrictive of either:

- a. The stated Completion Time, as measured from the initial entry into the Condition, plus an additional 24 hours; or
- b. The stated Completion Time as measured from discovery of the subsequent inoperability.

(continued)

1.3 Completion Times (continued)

---

DESCRIPTION  
(continued)

The above Completion Time extensions do not apply to those Specifications that have exceptions that allow completely separate re-entry into the Condition (for each train, subsystem, component, or variable expressed in the Condition) and separate tracking of Completion Times based on this re-entry. These exceptions are stated in individual Specifications.

The above Completion Time extension does not apply to a Completion Time with a modified "time zero." This modified "time zero" may be expressed as a repetitive time (i.e., "once per 8 hours," where the Completion Time is referenced from a previous completion of the Required Action versus the time of Condition entry) or as a time modified by the phrase "from discovery . . ."

(continued)

1.3 Completion Times (continued)

**EXAMPLES** The following examples illustrate the use of Completion Times with different types of Conditions and changing Conditions.

EXAMPLE 1.3-1

ACTIONS

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

Condition B has two Required Actions. Each Required Action has its own separate Completion Time. Each Completion Time is referenced to the time that Condition B is entered.

The Required Actions of Condition B are to be in MODE 3 within 6 hours AND in MODE 5 within 36 hours. A total of 6 hours is allowed for reaching MODE 3 and a total of 36 hours (not 42 hours) is allowed for reaching MODE 5 from the time that Condition B was entered. If MODE 3 is reached within 3 hours, the time allowed for reaching MODE 5 is the next 33 hours because the total time allowed for reaching MODE 5 is 36 hours.

If Condition B is entered while in MODE 3, the time allowed for reaching MODE 5 is the next 36 hours.

(continued)

1.3 Completion Times

EXAMPLES  
(continued)

EXAMPLE 1.3-2

ACTIONS

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

When a pump is declared inoperable, Condition A is entered. If the pump is not restored to OPERABLE status within 7 days, Condition B is also entered and the Completion Time clocks for Required Actions B.1 and B.2 start. If the inoperable pump is restored to OPERABLE status after Condition B is entered, Condition A and B are exited, and therefore, the Required Actions of Condition B may be terminated.

When a second pump is declared inoperable while the first pump is still inoperable, Condition A is not re-entered for the second pump. LCO 3.0.3 is entered, since the ACTIONS do not include a Condition for more than one inoperable pump. The Completion Time clock for Condition A does not stop after LCO 3.0.3 is entered, but continues to be tracked from the time Condition A was initially entered.

While in LCO 3.0.3, if one of the inoperable pumps is restored to OPERABLE status and the Completion Time for Condition A has not expired, LCO 3.0.3 may be exited and operation continued in accordance with Condition A.

While in LCO 3.0.3, if one of the inoperable pumps is restored to OPERABLE status and the Completion Time for Condition A has expired,

(continued)

1.3 Completion Times

---

EXAMPLES

EXAMPLE 1.3-2 (continued)

LCO 3.0.3 may be exited and operation continued in accordance with Condition B. The Completion Time for Condition B is tracked from the time the Condition A Completion Time expired.

On restoring one of the pumps to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first pump was declared inoperable. This Completion Time may be extended if the pump restored to OPERABLE status was the first inoperable pump. A 24 hour extension to the stated 7 days is allowed, provided this does not result in the second pump being inoperable for > 7 days.

(continued)

1.3 Completion Times

EXAMPLES  
(continued)

EXAMPLE 1.3-3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Function X train inoperable.	A.1 Restore Function X train to OPERABLE status.	7 days
B. One Function Y train inoperable.	B.1 Restore Function Y train to OPERABLE status.	72 hours
C. One Function X train inoperable.  <u>AND</u>  One Function Y train inoperable.	C.1 Restore Function X train to OPERABLE status.  <u>OR</u>  C.2 Restore Function Y train to OPERABLE status.	72 hours    72 hours

(continued)

1.3 Completion Times

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EXAMPLES

EXAMPLE 1.3-3 (continued)

When one Function X train and one Function Y train are inoperable, Condition A and Condition B are concurrently applicable. The Completion Times for Condition A and Condition B are tracked separately for each train starting from the time each train was declared inoperable and the Condition was entered. A separate Completion Time is established for Condition C and tracked from the time the second train was declared inoperable (i.e., the time the situation described in Condition C was discovered).

If Required Action C.2 is completed within the specified Completion Time, Conditions B and C are exited. If the Completion Time for Required Action A.1 has not expired, operation may continue in accordance with Condition A. The remaining Completion Time in Condition A is measured from the time the affected train was declared inoperable (i.e., initial entry into Condition A).

It is possible to alternate between Conditions A, B, and C in such a manner that operation could continue indefinitely without ever restoring systems to meet the LCO. However, doing so would be inconsistent with the basis of the Completion Times. Therefore, there shall be administrative controls to limit the maximum time allowed for any combination of Conditions that result in a single contiguous occurrence of failing to meet the LCO. These administrative controls shall ensure that the Completion Times for those Conditions are not inappropriately extended.

(continued)



1.3 Completion Times

EXAMPLES  
(continued)

EXAMPLE 1.3-4

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more valves inoperable.	A.1 Restore valve(s) to OPERABLE status.	4 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 4.	12 hours

A single Completion Time is used for any number of valves inoperable at the same time. The Completion Time associated with Condition A is based on the initial entry into Condition A and is not tracked on a per valve basis. Declaring subsequent valves inoperable, while Condition A is still in effect, does not trigger the tracking of separate Completion Times.

Once one of the valves has been restored to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first valve was declared inoperable. The Completion Time may be extended if the valve restored to OPERABLE status was the first inoperable valve. The Condition A Completion Time may be extended for up to 4 hours provided this does not result in any subsequent valve being inoperable for > 4 hours.

If the Completion Time of 4 hours (including the extension) expires while one or more valves are still inoperable, Condition B is entered.

(continued)

1.3 Completion Times

EXAMPLES  
(continued)

EXAMPLE 1.3-5

ACTIONS

-----NOTE-----  
Separate Condition entry is allowed for each inoperable valve.  
-----

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more valves inoperable.	A.1 Restore valve to OPERABLE status.	4 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 4.	12 hours

The Note above the ACTIONS Table is a method of modifying how the Completion Time is tracked. If this method of modifying how the Completion Time is tracked was applicable only to a specific Condition, the Note would appear in that Condition rather than at the top of the ACTIONS Table.

The Note allows Condition A to be entered separately for each inoperable valve, and Completion Times tracked on a per valve basis. When a valve is declared inoperable, Condition A is entered and its Completion Time starts. If subsequent valves are declared inoperable, Condition A is entered for each valve and separate Completion Times start and are tracked for each valve.

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-5 (continued)

If the Completion Time associated with a valve in Condition A expires, Condition B is entered for that valve. If the Completion Times associated with subsequent valves in Condition A expire, Condition B is entered separately for each valve and separate Completion Times start and are tracked for each valve. If a valve that caused entry into Condition B is restored to OPERABLE status, Condition B is exited for that valve.

Since the Note in this example allows multiple Condition entry and tracking of separate Completion Times, Completion Time extensions do not apply.

EXAMPLE 1.3-6

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One channel inoperable.	A.1 Perform SR 3.x.x.x.	Once per 8 hours
	<u>OR</u> A.2 Reduce THERMAL POWER to $\leq 50\%$ RTP.	8 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours

(continued)

1.3 Completion Times

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EXAMPLES

EXAMPLE 1.3-6 (continued)

Entry into Condition A offers a choice between Required Action A.1 or A.2. Required Action A.1 has a "once per" Completion Time, which qualifies for the 25% extension, per SR 3.0.2, to each performance after the initial performance. The initial 8 hour interval of Required Action A.1 begins when Condition A is entered and the initial performance of Required Action A.1 must be complete within the first 8 hour interval. If Required Action A.1 is followed, and the Required Action is not met within the Completion Time (plus the extension allowed by SR 3.0.2), Condition B is entered. If Required Action A.2 is followed and the Completion Time of 8 hours is not met, Condition B is entered.

If after entry into Condition B, Required Action A.1 or A.2 is met, Condition B is exited and operation may then continue in Condition A.

(continued)

1.3 Completion Times

EXAMPLES  
(continued)

EXAMPLE 1.3-7

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One subsystem inoperable.	A.1 Verify affected subsystem isolated.	1 hour <u>AND</u> Once per 8 hours thereafter
	<u>AND</u> A.2 Restore subsystem to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	36 hours

Required Action A.1 has two Completion Times. The 1 hour Completion Time begins at the time the Condition is entered and each "Once per 8 hours thereafter" interval begins upon performance of Required Action A.1.

If after Condition A is entered, Required Action A.1 is not met within either the initial 1 hour or any subsequent 8 hour interval from the previous performance (plus the extension allowed by SR 3.0.2), Condition B is entered. The Completion Time clock for Condition A does not stop after Condition B is entered, but continues from the time

(continued)

1.3 Completion Times

---

EXAMPLES

EXAMPLE 1.3-7 (continued)

Condition A was initially entered. If Required Action A.1 is met after Condition B is entered, Condition B is exited and operation may continue in accordance with Condition A, provided the Completion Time for Required Action A.2 has not expired.

---

IMMEDIATE

COMPLETION TIME

When "Immediately" is used as a Completion Time, the Required Action should be pursued without delay and in a controlled manner.

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## 1.0 USE AND APPLICATION

### 1.4 Frequency

---

**PURPOSE**                    The purpose of this section is to define the proper use and application of Frequency requirements.

---

**DESCRIPTION**            Each Surveillance Requirement (SR) has a specified Frequency in which the Surveillance must be met in order to meet the associated LCO. An understanding of the correct application of the specified Frequency is necessary for compliance with the SR.

The "specified Frequency" is referred to throughout this section and each of the Specifications of Section 3.0, Surveillance Requirement (SR) Applicability. The "specified Frequency" consists of the requirements of the Frequency column of each SR as well as certain Notes in the Surveillance column that modify performance requirements.

Situations where a Surveillance could be required (i.e., its Frequency could expire), but where it is not possible or not desired that it be performed until sometime after the associated LCO is within its Applicability, represent potential SR 3.0.4 conflicts. To avoid these conflicts, the SR (i.e., the Surveillance or the Frequency) is stated such that it is only "required" when it can be and should be performed. With an SR satisfied, SR 3.0.4 imposes no restriction.

---

**EXAMPLES**                    The following examples illustrate the various ways that Frequencies are specified. In these examples, the Applicability of the LCO (LCO not shown) is MODES 1, 2, and 3.

(continued)

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1.4 Frequency

EXAMPLES  
(continued)

EXAMPLE 1.4-1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Perform CHANNEL CHECK.	12 hours

Example 1.4-1 contains the type of SR most often encountered in the Technical Specifications (TS). The Frequency specifies an interval (12 hours) during which the associated Surveillance must be performed at least one time. Performance of the Surveillance initiates the subsequent interval. Although the Frequency is stated as 12 hours, an extension of the time interval to 1.25 times the stated Frequency is allowed by SR 3.0.2 for operational flexibility. The measurement of this interval continues at all times, even when the SR is not required to be met per SR 3.0.1 (such as when the equipment is inoperable, a variable is outside specified limits, or the unit is outside the Applicability of the LCO). If the interval specified by SR 3.0.2 is exceeded while the unit is in a MODE or other specified condition in the Applicability of the LCO, and the performance of the Surveillance is not otherwise modified (refer to Example 1.4-3), then SR 3.0.3 becomes applicable.

If the interval as specified by SR 3.0.2 is exceeded while the unit is not in a MODE or other specified condition in the Applicability of the LCO for which performance of the SR is required, the Surveillance must be performed within the Frequency requirements of SR 3.0.2 prior to entry into the MODE or other specified condition. Failure to do so would result in a violation of SR 3.0.4.

(continued)



1.4 Frequency

EXAMPLES  
(continued)

EXAMPLE 1.4-2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Verify flow is within limits.	Once within 12 hours after ≥ 25% RTP  <u>AND</u>  24 hours thereafter

Example 1.4-2 has two Frequencies. The first is a one time performance Frequency, and the second is of the type shown in Example 1.4-1. The logical connector "AND" indicates that both Frequency requirements must be met. Each time reactor power is increased from a power level < 25% RTP to ≥ 25% RTP, the Surveillance must be performed within 12 hours.

The use of "once" indicates a single performance will satisfy the specified Frequency (assuming no other Frequencies are connected by "AND"). This type of Frequency does not qualify for the 25% extension allowed by SR 3.0.2. "Thereafter" indicates future performances must be established per SR 3.0.2, but only after a specified condition is first met (i.e., the "once" performance in this example). If reactor power decreases to < 25% RTP, the measurement of both intervals stops. New intervals start upon reactor power reaching 25% RTP.

(continued)

1.4 Frequency

EXAMPLES  
(continued)

EXAMPLE 1.4-3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>-----NOTE----- Not required to be performed until 12 hours after ≥ 25% RTP. -----</p>	
<p>Perform channel adjustment.</p>	<p>7 days</p>

The interval continues, whether or not the unit operation is < 25% RTP between performances.

As the Note modifies the required performance of the Surveillance, it is construed to be part of the "specified Frequency." Should the 7 day interval be exceeded while operation is < 25% RTP, this Note allows 12 hours after power reaches ≥ 25% RTP to perform the Surveillance. The Surveillance is still considered to be performed within the "specified Frequency." Therefore, if the Surveillance were not performed within the 7 day (plus the extension allowed by SR 3.0.2) interval, but operation was < 25% RTP, it would not constitute a failure of the SR or failure to meet the LCO. Also, no violation of SR 3.0.4 occurs when changing MODES, even with the 7 day Frequency not met, provided operation does not exceed 12 hours with power ≥ 25% RTP.

Once the unit reaches 25% RTP, 12 hours would be allowed for completing the Surveillance. If the Surveillance were not performed within this 12 hour interval, there would then be a failure to perform a Surveillance within the specified Frequency, and the provisions of SR 3.0.3 would apply.

## 2.0 SAFETY LIMITS (SLs)

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### 2.1 SLs

#### 2.1.1 Reactor Core SLs

In MODES 1 and 2, the combination of THERMAL POWER, Reactor Coolant System (RCS) highest loop average temperature, and pressurizer pressure shall not exceed the limits specified in the COLR for four loop operation; and the following SLs shall not be exceeded:

2.1.1.1 The departure from nucleate boiling ratio (DNBR) shall be maintained  $\geq 1.14$  for the WRB-2M CHF correlation.

2.1.1.2 The peak fuel centerline temperature shall be maintained  $< 5080$  degrees F, decreasing 58 degrees F for every 10,000 MWd/mtU of fuel burnup.

#### 2.1.2 RCS Pressure SL

In MODES 1, 2, 3, 4, and 5, the RCS pressure shall be maintained  $\leq 2735$  psig.

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### 2.2 SL Violations

2.2.1 If SL 2.1.1 is violated, restore compliance and be in MODE 3 within 1 hour.

2.2.2 If SL 2.1.2 is violated:

2.2.2.1 In MODE 1 or 2, restore compliance and be in MODE 3 within 1 hour.

2.2.2.2 In MODE 3, 4, or 5, restore compliance within 5 minutes.

---

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

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LCO 3.0.1 LCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2, 3.0.7, 3.0.8, and 3.0.10.

---

LCO 3.0.2 Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5 and LCO 3.0.6.

If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required unless otherwise stated.

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LCO 3.0.3 When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in:

- a. MODE 3 within 7 hours;
- b. MODE 4 within 13 hours; and
- c. MODE 5 within 37 hours.

Exceptions to this Specification are stated in the individual Specifications.

Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the actions required by LCO 3.0.3 is not required.

LCO 3.0.3 is only applicable in MODES 1, 2, 3, and 4.

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(continued)

3.0 LCO APPLICABILITY (continued)

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- LCO 3.0.4            When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made:
- a.    When the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time; or
  - b.    After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate (exceptions to this Specification are stated in the individual Specifications); or
  - c.    When an allowance is stated in the individual value, parameter, or other Specification.

This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

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- LCO 3.0.5            Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.2 for the system returned to service under administrative control to perform the required testing to demonstrate OPERABILITY.
- 

- LCO 3.0.6            When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered. Only the support system LCO ACTIONS are required to be entered. This is an exception to LCO 3.0.2 for the supported system. In this event, additional evaluations and limitations may be required in accordance with Specification 5.5.15, "Safety Function Determination Program (SFDP)." 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 support system's Required Action directs a supported system to be declared inoperable or directs entry into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with LCO 3.0.2.

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(continued)

3.0 LCO APPLICABILITY (continued)

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LCO 3.0.7 Test Exception LCOs 3.1.8 and 3.4.17 allow specified Technical Specification (TS) requirements to be changed to permit performance of special tests and operations. Unless otherwise specified, all other TS requirements remain unchanged. Compliance with Test Exception LCOs is optional. When a Test Exception LCO is desired to be met but is not met, the ACTIONS of the Test Exception LCO shall be met. When a Test Exception LCO is not desired to be met, entry into a MODE or other specified condition in the Applicability shall be made in accordance with the other applicable Specifications.

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LCO 3.0.8 When one or more required snubbers are unable to perform their associated support function(s), any affected supported LCO(s) are not required to be declared not met solely for this reason if risk is assessed and managed, and:

- a. the snubbers not able to perform their associated support function(s) are associated with only one train or subsystem of a multiple train or subsystem supported system or are associated with a single train or subsystem supported system and are able to perform their associated support function within 72 hours; or
- b. the snubbers not able to perform their associated support function(s) are associated with more than one train or subsystem of a multiple train or subsystem supported system and are able to perform their associated support function within 12 hours.

At the end of the specified period the required snubbers must be able to perform their associated support function(s), or the affected supported system LCO(s) shall be declared not met.

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(continued)

3.0 LCO APPLICABILITY (continued)

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- LCO 3.0.9                    LCOs including the associated ACTIONS shall apply to each unit individually unless otherwise indicated as follows:
- a. Whenever the LCO refers to systems or components which are shared by both units, the ACTIONS will apply to both units simultaneously;
  - b. Whenever the LCO applies to only one unit, this will be identified in the Applicability section of the Specification; and
  - c. Whenever certain portions of a Specification contain operating parameters, setpoints etc., which are different for each unit, this will be identified in parentheses or footnotes. (For example, "...flow rate of 54,000 cfm (Unit 1) or 43,000 cfm (Unit 2)...").
- 

LCO 3.0.10                    When one or more required barriers are unable to perform their related support function(s), any supported system LCO(s) are not required to be declared not met solely for this reason for up to 30 days provided that at least one train or subsystem of the supported system is OPERABLE and supported by barriers capable of providing their related support function(s), and risk is assessed and managed. This specification may be concurrently applied to more than one train or subsystem of a multiple train or subsystem supported system provided at least one train or subsystem of the supported system is OPERABLE and the barriers supporting each of these trains or subsystems provide their related support function(s) for different categories of initiating events.

If the required OPERABLE train or subsystem becomes inoperable while this specification is in use, it must be restored to OPERABLE status within 24 hours or the provisions of this specification cannot be applied to the trains or subsystems supported by the barriers that cannot perform their related support function(s).

At the end of the specified period, the required barriers must be able to perform their related support function(s) or the supported system LCO(s) shall be declared not met.

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### 3.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

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SR 3.0.1 SRs shall be met during the MODES or other specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR. Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LCO except as provided in SR 3.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.

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SR 3.0.2 The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.

For Frequencies specified as "once," the above interval extension does not apply.

If a Completion Time requires periodic performance on a "once per . . ." basis, the above Frequency extension applies to each performance after the initial performance.

Exceptions to this Specification are stated in the individual Specifications.

---

SR 3.0.3 If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater. This delay period is permitted to allow performance of the Surveillance. The delay period is only applicable when there is a reasonable expectation the surveillance will be met when performed. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours, and the risk impact shall be managed.

If the Surveillance is not performed within the delay period, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.

When the Surveillance is performed within the delay period and the Surveillance is not met, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.

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(continued)



3.0 SR APPLICABILITY (continued)

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SR 3.0.4            Entry into a MODE or other specified condition in the Applicability of an LCO shall only be made when the LCO's Surveillances have been met within their specified Frequency, except as provided by SR 3.0.3. When an LCO is not met due to Surveillances not having been met, entry into a MODE or other specified condition in the Applicability shall only be made in accordance with LCO 3.0.4

This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

---

SR 3.0.5            Surveillance Requirements shall apply to each unit individually unless otherwise indicated as stated in LCO 3.0.9 for individual Specifications or whenever certain portions of a Specification contain surveillance parameters different for each unit, which will be identified in parentheses or footnotes.

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3.1 REACTIVITY CONTROL SYSTEMS

3.1.1 SHUTDOWN MARGIN (SDM)

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

APPLICABILITY: MODE 2 with  $k_{eff} < 1.0$ ,  
MODES 3, 4, and 5.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

3.1 REACTIVITY CONTROL SYSTEMS

3.1.2 Core Reactivity

LCO 3.1.2            The measured core reactivity shall be within  $\pm 1\% \Delta k/k$  of predicted values.

APPLICABILITY:    MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A.    Measured core reactivity not within limit.</p>	<p>A.1    Re-evaluate core design and safety analysis, and determine that the reactor core is acceptable for continued operation.</p>	<p>7 days</p>
	<p><u>AND</u></p> <p>A.2    Establish appropriate operating restrictions and SRs.</p>	<p>7 days</p>
<p>B.    Required Action and associated Completion Time not met.</p>	<p>B.1    Be in MODE 3.</p>	<p>6 hours</p>

SURVEILLANCE REQUIREMENTS

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

3.1 REACTIVITY CONTROL SYSTEMS

3.1.3 Moderator Temperature Coefficient (MTC)

LCO 3.1.3 The MTC shall be maintained within the limits specified in the COLR. The maximum upper limit shall be that specified in Figure 3.1.3-1.

APPLICABILITY: MODE 1 and MODE 2 with  $k_{eff} \geq 1.0$  for the upper MTC limit, MODES 1, 2, and 3 for the lower MTC limit.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. MTC not within upper limit.	A.1 Establish administrative withdrawal limits for control banks to maintain MTC within limit.	24 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 2 with $k_{eff} < 1.0$ .	6 hours
C. MTC not within lower limit.	C.1 Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.1.3.1    Verify MTC is within upper limit.</p>	<p>Once prior to entering MODE 1 after each refueling</p>
<p>SR 3.1.3.2    -----NOTES-----</p> <ol style="list-style-type: none"> <li>1.    Not required to be performed until 7 effective full power days (EFPD) after reaching the equivalent of an equilibrium RTP all rods out (ARO) boron concentration of 300 ppm. Measurement of the MTC may be suspended provided the benchmark criteria specified in DPC-NE-1007-PA, and the Revised MTC Prediction specified in the COLR are satisfied.</li>   <li>2.    If the MTC is more negative than the 300 ppm Surveillance limit (not LCO limit) specified in the COLR, SR 3.1.3.2 shall be repeated once per 14 EFPD during the remainder of the fuel cycle.</li>   <li>3.    SR 3.1.3.2 need not be repeated if the MTC measured at the equivalent of equilibrium RTP-ARO boron concentration of <math>\leq 60</math> ppm is less negative than the 60 ppm Surveillance limit specified in the COLR.</li> </ol> <p>-----</p> <p>Verify MTC is within lower limit.</p>	<p>Once each cycle</p>

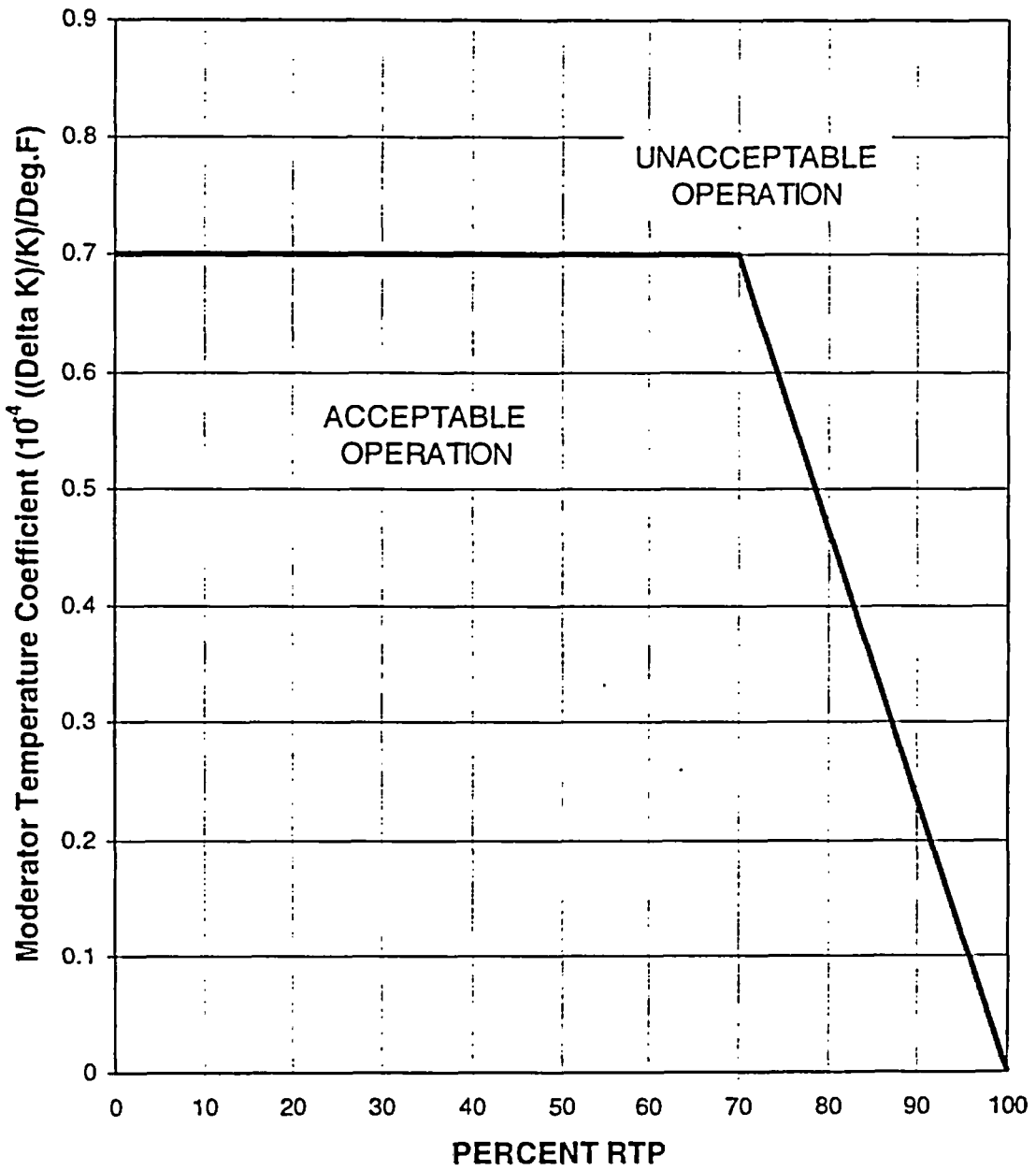


Figure 3.1.3-1 (page 1 of 1)  
Moderator Temperature Coefficient vs. Power Level

3.1 REACTIVITY CONTROL SYSTEMS

3.1.4 Rod Group Alignment Limits

LCO 3.1.4 All shutdown and control rods shall be OPERABLE, with all individual indicated rod positions within 12 steps of their group step counter demand position.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One or more rod(s) untrippable.</p>	<p>A.1.1 Verify SDM is within the limit specified in the COLR.</p>	<p>1 hour</p>
	<p><u>OR</u></p>	
	<p>A.1.2 Initiate boration to restore SDM to within limit.</p>	<p>1 hour</p>
	<p><u>AND</u></p>	
	<p>A.2 Be in MODE 3.</p>	<p>6 hours</p>

(continued)



ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. One rod not within alignment limits.</p>	<p>B.1 Restore rod to within alignment limits.</p> <p><u>OR</u></p>	<p>1 hour</p>
	<p>B.2.1.1 Verify SDM is within the limit specified in the COLR.</p> <p><u>OR</u></p>	<p>1 hour</p>
	<p>B.2.1.2 Initiate boration to restore SDM to within limit.</p> <p><u>AND</u></p>	<p>1 hour</p>
	<p>B.2.2 Reduce THERMAL POWER to <math>\leq</math> 75% RTP.</p> <p><u>AND</u></p>	<p>2 hours</p>
	<p>B.2.3 Verify SDM is within the limit specified in the COLR.</p> <p><u>AND</u></p>	<p>Once per 12 hours</p>
	<p>B.2.4 Perform SR 3.2.1.1.</p> <p><u>AND</u></p>	<p>72 hours</p>
	<p>B.2.5 Perform SR 3.2.2.1.</p> <p><u>AND</u></p>	<p>72 hours</p>
	<p>B.2.6 Re-evaluate safety analyses and confirm results remain valid for duration of operation under these conditions.</p>	<p>5 days</p>

(continued)

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

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

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.1.4.2 Verify rod freedom of movement (trippability) by moving each rod not fully inserted in the core $\geq 10$ steps in either direction.	In accordance with the Surveillance Frequency Control Program
SR 3.1.4.3 Verify rod drop time of each rod, from the fully withdrawn position, is $\leq 2.2$ seconds from the beginning of decay of stationary gripper coil voltage to dashpot entry, with: <ul style="list-style-type: none"> <li>a. <math>T_{avg} \geq 551^{\circ}\text{F}</math>; and</li> <li>b. All reactor coolant pumps operating.</li> </ul>	Prior to reactor criticality after each removal of the reactor head

3.1 REACTIVITY CONTROL SYSTEMS

3.1.5 Shutdown Bank Insertion Limits

LCO 3.1.5            Each shutdown bank shall be within insertion limits specified in the COLR.

APPLICABILITY:    MODE 1,  
                          MODE 2 with any control bank not fully inserted.

-----NOTE-----  
This LCO is not applicable while performing SR 3.1.4.2.  
-----

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A.    One or more shutdown banks not within limits.	A.1.1    Verify SDM is within the limit specified in the COLR.	1 hour
	<u>OR</u>	
	A.1.2    Initiate boration to restore SDM to within limit.	1 hour
	<u>AND</u>	
	A.2      Restore shutdown banks to within limits.	2 hours
B.    Required Action and associated Completion Time not met.	B.1      Be in MODE 3.	6 hours

**SURVEILLANCE REQUIREMENTS**

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

3.1 REACTIVITY CONTROL SYSTEMS

3.1.6 Control Bank Insertion Limits

LCO 3.1.6 Control banks shall be within the insertion, sequence, and overlap limits specified in the COLR.

APPLICABILITY: MODE 1,  
MODE 2 with  $k_{eff} \geq 1.0$ .

-----NOTE-----  
This LCO is not applicable while performing SR 3.1.4.2.  
-----

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Control bank insertion limits not met.	A.1.1 Verify SDM is within the limit specified in the COLR.	1 hour
	<u>OR</u>	
	A.1.2 Initiate boration to restore SDM to within limit.	1 hour
	<u>AND</u>	
	A.2 Restore control bank(s) to within limits.	2 hours

(continued)

**ACTIONS (continued)**

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Control bank sequence or overlap limits not met.	B.1.1 Verify SDM is within the limit specified in the COLR.	1 hour
	<u>OR</u>	
	B.1.2 Initiate boration to restore SDM to within limit.	1 hour
	<u>AND</u>	
	B.2 Restore control bank sequence and overlap to within limits.	2 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	6 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.1.6.1 Verify estimated critical control bank position is within the limits specified in the COLR.	Within 4 hours prior to achieving criticality

(continued)

SURVEILLANCE REQUIREMENTS (continued)

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



3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Rod Position Indication

LCO 3.1.7 The Digital Rod Position Indication (DRPI) System and the Demand Position Indication System shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

-----NOTE-----  
Separate Condition entry is allowed for each inoperable rod position indicator per group and each demand position indicator per bank.  
-----

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One DRPI per group inoperable for one or more groups.	A.1 Verify the position of the rods with inoperable position indicators by using movable incore detectors.	Once per 8 hours
	<u>OR</u> A.2 Reduce THERMAL POWER to $\leq$ 50% RTP.	8 hours
B. One or more rods with inoperable position indicators have been moved in excess of 24 steps in one direction since the last determination of the rod's position.	B.1 Verify the position of the rods with inoperable position indicators by using movable incore detectors.	4 hours
	<u>OR</u> B.2 Reduce THERMAL POWER to $\leq$ 50% RTP.	8 hours

(continued)

**ACTIONS (continued)**

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. One demand position indicator per bank inoperable for one or more banks.</p>	<p>C.1.1 Verify by administrative means all DRPIs for the affected banks are OPERABLE.</p> <p><u>AND</u></p> <p>C.1.2 Verify the most withdrawn rod and the least withdrawn rod of the affected banks are <math>\leq 12</math> steps apart.</p> <p><u>OR</u></p> <p>C.2 Reduce THERMAL POWER to <math>\leq 50\%</math> RTP.</p>	<p>Once per 8 hours</p> <p>Once per 8 hours</p> <p>8 hours</p>
<p>D. Required Action and associated Completion Time not met.</p>	<p>D.1 Be in MODE 3.</p>	<p>6 hours</p>

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
<p>SR 3.1.7.1 Verify each DRPI agrees within 12 steps of the group demand position for the full indicated range of rod travel.</p>	<p>Once prior to criticality after each removal of the reactor head</p>

3.1 REACTIVITY CONTROL SYSTEMS

3.1.8 PHYSICS TESTS Exceptions

LCO 3.1.8 During the performance of PHYSICS TESTS, the requirements of

LCO 3.1.3, "Moderator Temperature Coefficient (MTC)";  
LCO 3.1.4, "Rod Group Alignment Limits";  
LCO 3.1.5, "Shutdown Bank Insertion Limits";  
LCO 3.1.6, "Control Bank Insertion Limits"; and  
LCO 3.4.2, "RCS Minimum Temperature for Criticality"

may be suspended, and the number of required channels for LCO 3.3.1, "RTS Instrumentation," Functions 2, 3, 6, and 16.e, may be reduced to "3" required channels, provided:

- a. RCS lowest loop average temperature is  $\geq 541^{\circ}\text{F}$ ; and
- b. SDM is within the limit specified in the COLR.

APPLICABILITY: MODE 2 during PHYSICS TESTS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SDM not within limit.	A.1 Initiate boration to restore SDM to within limit.	15 minutes
	<u>AND</u> A.2 Suspend PHYSICS TESTS exceptions.	1 hour
B. THERMAL POWER not within limit.	B.1 Open reactor trip breakers.	Immediately
C. RCS lowest loop average temperature not within limit.	C.1 Restore RCS lowest loop average temperature to within limit.	15 minutes

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3.	15 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.8.1 Perform a CHANNEL OPERATIONAL TEST on power range and intermediate range channels per SR 3.3.1.7, SR 3.3.1.8, and Table 3.3.1-1.	Prior to initiation of PHYSICS TESTS
SR 3.1.8.2 Verify the RCS lowest loop average temperature is $\geq 541^{\circ}\text{F}$ .	In accordance with the Surveillance Frequency Control Program
SR 3.1.8.3 Verify THERMAL POWER is $\leq 5\%$ RTP.	In accordance with the Surveillance Frequency Control Program
SR 3.1.8.4 Verify SDM is within the limit specified in the COLR.	In accordance with the Surveillance Frequency Control Program

3.2 POWER DISTRIBUTION LIMITS

3.2.1 Heat Flux Hot Channel Factor (F<sub>o</sub>(X,Y,Z))

LCO 3.2.1 F<sup>M</sup><sub>o</sub>(X,Y,Z) shall be within the limits specified in the COLR.

APPLICABILITY: MODE 1.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. F<sup>M</sup><sub>o</sub>(X,Y,Z) not within steady state limit.</p>	<p>A.1 Reduce THERMAL POWER <math>\geq</math> 1% RTP for each 1% F<sup>M</sup><sub>o</sub>(X,Y,Z) exceeds limit.</p>	<p>15 minutes</p>
	<p><u>AND</u></p>	
	<p>A.2 Reduce Power Range Neutron Flux — High trip setpoints <math>\geq</math> 1% for each 1% F<sup>M</sup><sub>o</sub>(X,Y,Z) exceeds limit.</p>	<p>72 hours</p>
	<p><u>AND</u></p>	
<p>A.3 Reduce Overpower <math>\Delta</math>T trip setpoints <math>\geq</math> 1% for each 1% F<sup>M</sup><sub>o</sub>(X,Y,Z) exceeds limit.</p>	<p>72 hours</p>	
<p><u>AND</u></p>		<p>Prior to increasing THERMAL POWER above the limit of Required Action A.1</p>
<p>A.4 Perform SR 3.2.1.1, SR 3.2.1.2, and SR 3.2.1.3.</p>		

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. <math>F_o^M(X,Y,Z) &gt; F_o^L(X,Y,Z)^{OP}</math>.</p>	<p>B.1 Reduce AFD limits <math>\geq 1\%</math> from COLR limits for each 1% <math>F_o^M(X,Y,Z)</math> exceeds limit.</p> <p><u>AND</u></p> <p>B.2 Adjust <math>F_o^L(X,Y,Z)^{OP}</math> by the percent reduction in AFD.</p>	<p>4 hours</p> <p>4 hours</p>
<p>C. <math>F_o^M(X,Y,Z) &gt; F_o^L(X,Y,Z)^{RPS}</math>.</p>	<p>C.1 Reduce the OTΔT Trip Setpoint from COLR limit by KSLOPE for each 1% <math>F_o^M(X,Y,Z)</math> exceeds limit.</p> <p><u>AND</u></p> <p>C.2 Adjust <math>F_o^L(X,Y,Z)^{RPS}</math> by the equivalent reduction in OTΔT trip setpoint.</p>	<p>72 hours</p> <p>72 hours</p>
<p>D. Required Action and associated Completion Time not met.</p>	<p>D.1 Be in MODE 2.</p>	<p>6 hours</p>

SURVEILLANCE REQUIREMENTS

-----NOTE-----

During power escalation at the beginning of each cycle, THERMAL POWER may be increased until an equilibrium power level has been achieved, at which a power distribution map is obtained.

-----

SURVEILLANCE	FREQUENCY
SR 3.2.1.1    Verify F <sub>q</sub> <sup>M</sup> (X,Y,Z) is within steady state limit.	<p>Once within 12 hours after achieving equilibrium conditions after exceeding, by <math>\geq 10\%</math> RTP, the THERMAL POWER at which F<sub>q</sub><sup>M</sup>(X,Y,Z) was last verified</p> <p><u>AND</u></p> <p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.2.1.2 -----NOTE-----</p> <p>1. Extrapolate <math>F_q^M(X,Y,Z)</math> using at least two measurements to 31 EFPD beyond the most recent measurement. If <math>F_q^M(X,Y,Z)</math> is within limits and the 31 EFPD extrapolation indicates:</p> $F_q^M(X,Y,Z)_{\text{EXTRAPOLATED}} \geq F_q^L(X,Y,Z)_{\text{OP EXTRAPOLATED}},$ <p>and</p> $\frac{F_q^M(X,Y,Z)_{\text{EXTRAPOLATED}}}{F_q^L(X,Y,Z)_{\text{OP EXTRAPOLATED}}} > \frac{F_q^M(X,Y,Z)}{F_q^L(X,Y,Z)_{\text{OP}}}$ <p>then:</p> <p>a. Increase <math>F_q^M(X,Y,Z)</math> by the appropriate factor specified in the COLR and reverify <math>F_q^M(X,Y,Z) \leq F_q^L(X,Y,Z)_{\text{OP}}</math>; or</p> <p>b. Repeat SR 3.2.1.2 prior to the time at which <math>F_q^M(X,Y,Z) \leq F_q^L(X,Y,Z)_{\text{OP}}</math> is extrapolated to not be met.</p> <p>2. Extrapolation of <math>F_q^M(X,Y,Z)</math> is not required for the initial flux map taken after reaching equilibrium conditions.</p> <p>-----</p> <p>Verify <math>F_q^M(X,Y,Z) \leq F_q^L(X,Y,Z)_{\text{OP}}</math>.</p>	<p>Once within 12 hours after achieving equilibrium conditions after exceeding, by <math>\geq</math> 10% RTP, the THERMAL POWER at which <math>F_q^M(X,Y,Z)</math> was last verified</p> <p><u>AND</u></p> <p>In accordance with the Surveillance Frequency Control Program</p>

(continued)



SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.2.1.3</p> <p style="text-align: center;">-----NOTES-----</p> <p>1. Extrapolate F<sub>Q</sub><sup>M</sup>(X,Y,Z) using at least two measurements to 31 EFPD beyond the most recent measurement. If F<sub>Q</sub><sup>M</sup>(X,Y,Z) is within limits and the 31 EFPD extrapolation indicates:</p> $F_{Q(X,Y,Z)}^{M_{EXTRAPOLATED}} \geq F_{Q(X,Y,Z)}^{L_{EXTRAPOLATED} RPS}$ <p>and</p> $\frac{F_{Q(X,Y,Z)}^{M_{EXTRAPOLATED}}}{F_{Q(X,Y,Z)}^{L_{EXTRAPOLATED} RPS}} > \frac{F_{Q(X,Y,Z)}^M}{F_{Q(X,Y,Z)}^{L RPS}}$ <p>then:</p> <p>a. Increase F<sub>Q</sub><sup>M</sup>(X,Y,Z) by the appropriate factor specified in the COLR and reverify F<sub>Q</sub><sup>M</sup>(X,Y,Z) ≤ F<sub>Q</sub><sup>L</sup>(X,Y,Z)<sup>RPS</sup>; or</p> <p>b. Repeat SR 3.2.1.3 prior to the time at which F<sub>Q</sub><sup>M</sup>(X,Y,Z) ≤ F<sub>Q</sub><sup>L</sup>(X,Y,Z)<sup>RPS</sup> is extrapolated to not be met.</p> <p>2. Extrapolation of F<sub>Q</sub><sup>M</sup>(X,Y,Z) is not required for the initial flux map taken after reaching equilibrium conditions.</p> <p>-----</p> <p>Verify F<sub>Q</sub><sup>M</sup>(X,Y,Z) ≤ F<sub>Q</sub><sup>L</sup>(X,Y,Z)<sup>RPS</sup>.</p>	<p>Once within 12 hours after achieving equilibrium conditions after exceeding, by ≥ 10% RTP, the THERMAL POWER at which F<sub>Q</sub><sup>M</sup>(X,Y,Z) was last verified</p> <p><u>AND</u></p> <p>In accordance with the Surveillance Frequency Control Program</p>



ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. (continued)</p>	<p>A.3.2.2 Perform SR 3.2.2.1.</p> <p><u>AND</u></p> <p>A.4 -----NOTE----- THERMAL POWER does not have to be reduced to comply with this Required Action. -----</p> <p>Perform SR 3.2.2.1.</p>	<p>72 hours</p> <p>Prior to THERMAL POWER exceeding 50% RTP</p> <p><u>AND</u></p> <p>Prior to THERMAL POWER exceeding 75% RTP</p> <p><u>AND</u></p> <p>24 hours after THERMAL POWER reaching ≥ 95% RTP</p>
<p>B. Required Action and associated Completion Time not met.</p>	<p>B.1 Be in MODE 2.</p>	<p>6 hours</p>

SURVEILLANCE REQUIREMENTS

-----NOTE-----

During power escalation at the beginning of each cycle, THERMAL POWER may be increased until an equilibrium power level has been achieved, at which a power distribution map is obtained.

SURVEILLANCE	FREQUENCY
SR 3.2.2.1 Verify F <sup>M</sup> <sub>ΔH</sub> (X,Y) is within steady state limit.	Once within 12 hours after achieving equilibrium conditions after exceeding, by ≥ 10% RTP, the THERMAL POWER at which F <sup>M</sup> <sub>ΔH</sub> (X,Y) was last verified  <u>AND</u>  In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.2.2.2 -----NOTES-----</p> <p>1. Extrapolate <math>F_{\Delta H}^M(X,Y)</math> using at least two measurements to 31 EFPD beyond the most recent measurement. If <math>F_{\Delta H}^M(X,Y)</math> is within limits and the 31 EFPD extrapolation indicates:</p> $F_{\Delta H}^M(X,Y)_{\text{EXTRAPOLATED}} \geq F_{\Delta H}^L(X,Y)_{\text{EXTRAPOLATED}}^{\text{SURV}}$ <p>and</p> $\frac{F_{\Delta H}^M(X,Y)_{\text{EXTRAPOLATED}}}{F_{\Delta H}^L(X,Y)_{\text{EXTRAPOLATED}}^{\text{SURV}}} > \frac{F_{\Delta H}^M(X,Y)}{F_{\Delta H}^L(X,Y)^{\text{SURV}}}$ <p>then:</p> <p>a. Increase <math>F_{\Delta H}^M(X,Y)</math> by the appropriate factor specified in the COLR and reverify <math>F_{\Delta H}^M(X,Y) \leq F_{\Delta H}^L(X,Y)^{\text{SURV}}</math>; or</p> <p>b. Repeat SR 3.2.2.2 prior to the time at which <math>F_{\Delta H}^M(X,Y) \leq F_{\Delta H}^L(X,Y)^{\text{SURV}}</math> is extrapolated to not be met.</p> <p>2. Extrapolation of <math>F_{\Delta H}^M(X,Y)</math> is not required for the initial flux map taken after reaching equilibrium conditions.</p> <p>-----</p> <p>Verify <math>F_{\Delta H}^M(X,Y) \leq F_{\Delta H}^L(X,Y)^{\text{SURV}}</math>.</p>	<p>Once within 12 hours after achieving equilibrium conditions after exceeding, by <math>\geq 10\%</math> RTP, the THERMAL POWER at which <math>F_{\Delta H}^M(X,Y)</math> was last verified</p> <p><u>AND</u></p> <p>In accordance with the Surveillance Frequency Control Program</p>

3.2 POWER DISTRIBUTION LIMITS

3.2.3 AXIAL FLUX DIFFERENCE (AFD)

LCO 3.2.3 The AFD in % flux difference units shall be maintained within the limits specified in the COLR.

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

APPLICABILITY: MODE 1 with THERMAL POWER  $\geq$  50% RTP.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

3.2 POWER DISTRIBUTION LIMITS

3.2.4 QUADRANT POWER TILT RATIO (QPTR)

LCO 3.2.4            The QPTR shall be  $\leq 1.02$ .

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

-----NOTE-----  
Not applicable until calibration of the excore detectors is completed  
subsequent to refueling.  
-----

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A.    QPTR not within limit.</p>	<p>A.1    Reduce THERMAL POWER <math>\geq 3\%</math> from RTP for each 1% of QPTR &gt; 1.02.</p>	<p>2 hours</p>
	<p><u>AND</u></p>	
	<p>A.2    Perform SR 3.2.4.1 and reduce THERMAL POWER <math>\geq 3\%</math> from RTP for each 1% of QPTR &gt; 1.02.</p>	<p>Once per 12 hours</p>
	<p><u>AND</u></p>	
	<p>A.3    Perform SR 3.2.1.1 and SR 3.2.2.1.</p>	<p>24 hours</p>
	<p><u>AND</u></p>	<p><u>AND</u> Once per 7 days thereafter</p>
		<p>(continued)</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. (continued)</p>	<p>A.4 Reduce Power Range Neutron Flux - High Trip Setpoint <math>\geq 3\%</math> for each 1% of QPTR &gt; 1.02.</p> <p><u>AND</u></p> <p>A.5 Reevaluate safety analyses and confirm results remain valid for duration of operation under this condition.</p> <p><u>AND</u></p> <p>A.6 -----NOTE----- Perform Required Action A.6 only after Required Action A.5 is completed. -----</p> <p>Calibrate excore detectors to show zero QPT.</p> <p><u>AND</u></p>	<p>72 hours</p> <p>Prior to increasing THERMAL POWER above the more restrictive limit of Required Action A.1 or A.2</p> <p>Prior to increasing THERMAL POWER above the more restrictive limit of Required Action A.1 or A.2</p> <p>(continued)</p>



ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. (continued)</p>	<p>A.7 -----NOTE----- Required Action A.7 must be completed when Required Action A.6 is completed. -----  Perform SR 3.2.1.1 and SR 3.2.2.1.</p>	<p>Within 24 hours after reaching RTP  <u>OR</u>  Within 48 hours after increasing THERMAL POWER above the more restrictive limit of Required Action A.1 or A.2</p>
<p>B. Required Action and associated Completion Time not met.</p>	<p>B.1 Reduce THERMAL POWER to <math>\leq</math> 50% RTP.</p>	<p>4 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.2.4.1 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. With input from one Power Range Neutron Flux channel inoperable and THERMAL POWER &lt;75% RTP, the remaining three power range channels can be used for calculating QPTR.</li> <li>2. SR 3.2.4.2 may be performed in lieu of this Surveillance.</li> <li>3. This SR is not required to be performed until 12 hours after exceeding 50% RTP.</li> </ol> <p>-----</p> <p>Verify QPTR is within limit by calculation.</p>	<p>In accordance with the Surveillance Frequency Control Program</p> <p><u>AND</u></p> <p>Once within 12 hours and every 12 hours thereafter with the QPTR alarm inoperable</p>
<p>SR 3.2.4.2 -----NOTES-----</p> <p>Only required to be performed if input from one or more Power Range Neutron Flux channels are inoperable with THERMAL POWER <math>\geq</math> 75% RTP.</p> <p>-----</p> <p>Verify QPTR is within limit using the movable incore detectors.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

3.3 INSTRUMENTATION

3.3.1 Reactor Trip System (RTS) Instrumentation

LCO 3.3.1            The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE.

APPLICABILITY:    According to Table 3.3.1-1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A.    One or more Functions with one or more required channels inoperable.	A.1    Enter the Condition referenced in Table 3.3.1-1 for the channel(s).	Immediately
B.    One Manual Reactor Trip channel inoperable.	B.1    Restore channel to OPERABLE status.	48 hours
	<u>OR</u> B.2    Be in MODE 3.	54 hours
C.    One channel or train inoperable.	C.1    Restore channel or train to OPERABLE status.	48 hours
	<u>OR</u> C.2    Open reactor trip breakers (RTBs).	49 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. One channel inoperable.</p>	<p>-----NOTE----- The inoperable channel may be bypassed for up to 12 hours for surveillance testing and setpoint adjustment of other channels. -----</p> <p>D.1.1 -----NOTE----- Only required to be performed when the Power Range Neutron Flux input to QPTR is inoperable. -----</p> <p>Perform SR 3.2.4.2.</p> <p><u>AND</u></p> <p>D.1.2 Place channel in trip.</p> <p><u>OR</u></p> <p>D.2 Be in MODE 3.</p>	<p>12 hours from discovery of THERMAL POWER &gt; 75% RTP</p> <p><u>AND</u></p> <p>Once per 12 hours thereafter</p> <p>72 hours</p> <p>78 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>E. One channel inoperable.</p>	<p>-----NOTE----- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. -----</p> <p>E.1 Place channel in trip.  <u>OR</u> E.2 Be in MODE 3.</p>	<p>72 hours  78 hours</p>
<p>F. THERMAL POWER &gt; P-6 and &lt; P-10, one Intermediate Range Neutron Flux channel inoperable.</p>	<p>F.1 Reduce THERMAL POWER to &lt; P-6.  <u>OR</u> F.2 Increase THERMAL POWER to &gt; P-10.</p>	<p>24 hours  24 hours</p>
<p>G. THERMAL POWER &gt; P-6 and &lt; P-10, two Intermediate Range Neutron Flux channels inoperable.</p>	<p>G.1 -----NOTE----- Limited boron concentration changes associated with RCS inventory control or limited plant temperature changes are allowed. -----</p> <p>Suspend operations involving positive reactivity additions.</p> <p><u>AND</u></p> <p>G.2 Reduce THERMAL POWER to &lt; P-6.</p>	<p>Immediately  2 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>H. THERMAL POWER &lt; P-6, one or two Intermediate Range Neutron Flux channels inoperable.</p>	<p>H.1 Restore channel(s) to OPERABLE status.</p>	<p>Prior to increasing THERMAL POWER to &gt; P-6</p>
<p>I. One Source Range Neutron Flux channel inoperable.</p>	<p>I.1 -----NOTE-----                      Limited boron concentration changes associated with RCS inventory control or limited plant temperature changes are allowed.                      -----                      Suspend operations involving positive reactivity additions.</p>	<p>Immediately</p>
<p>J. Two Source Range Neutron Flux channels inoperable.</p>	<p>J.1 Open RTBs.</p>	<p>Immediately</p>
<p>K. One Source Range Neutron Flux channel inoperable.</p>	<p>K.1 Restore channel to OPERABLE status.  <u>OR</u>                      K.2 Open RTBs.</p>	<p>48 hours  49 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>L. One channel inoperable.</p>	<p>-----NOTE----- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. -----</p> <p>L.1 Place channel in trip.</p> <p><u>OR</u></p> <p>L.2 Reduce THERMAL POWER to &lt; P-7.</p>	<p>72 hours</p> <p>78 hours</p>
<p>M. One Reactor Coolant Flow - Low (Single Loop) channel inoperable.</p>	<p>-----NOTE----- The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. -----</p> <p>M.1 Place channel in trip.</p> <p><u>OR</u></p> <p>M.2 Reduce THERMAL POWER to &lt; P-8.</p>	<p>6 hours</p> <p>10 hours</p>
<p>N. One Turbine Trip - Stop Valve EH Pressure Low channel inoperable.</p>	<p>-----NOTE----- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. -----</p> <p>N.1 Place channel in trip.</p> <p><u>OR</u></p> <p>N.2 Reduce THERMAL POWER to &lt; P-9.</p>	<p>72 hours</p> <p>76 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>O. One or more Turbine Trip - Turbine Stop Valve Closure channels inoperable.</p>	<p>O.1 Place channel(s) in trip.</p>	<p>72 hours</p>
	<p><u>OR</u></p> <p>O.2 Reduce THERMAL POWER to &lt; P-9.</p>	<p>76 hours</p>
<p>P. One train inoperable.</p>	<p>-----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. -----</p>	
	<p>P.1 Restore train to OPERABLE status.</p>	<p>24 hours</p>
	<p><u>OR</u></p> <p>P.2 Be in MODE 3.</p>	<p>30 hours</p>

(continued)



ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>Q. One RTB train inoperable.</p>	<p>-----NOTE-----            One train may be bypassed for up to 4 hours for surveillance testing, provided the other train is OPERABLE.            -----</p> <p>Q.1 Restore train to OPERABLE status.</p> <p><u>OR</u></p> <p>Q.2 Be in MODE 3.</p>	<p>24 hours</p> <p>30 hours</p>
<p>R. One or more channel(s) inoperable.</p>	<p>R.1 Verify interlock is in required state for existing unit conditions.</p> <p><u>OR</u></p> <p>R.2 Be in MODE 3.</p>	<p>1 hour</p> <p>7 hours</p>

(continued)

ACTIONS (continued)

CONDITION		REQUIRED ACTION	COMPLETION TIME
S.	One or more channel(s) inoperable.	S.1 Verify interlock is in required state for existing unit conditions.	1 hour
		<u>OR</u>	
		S.2 Be in MODE 2.	7 hours
T.	One trip mechanism inoperable for one RTB.	T.1 Restore inoperable trip mechanism to OPERABLE status.	48 hours
		<u>OR</u>	
		T.2 Be in MODE 3.	54 hours
U.	Two RTS trains inoperable.	U.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

-----NOTE-----

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

-----

SURVEILLANCE	FREQUENCY
SR 3.3.1.1 Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.2 -----NOTES----- 1. Adjust NIS channel if absolute difference is > 2%.  2. Not required to be performed until 12 hours after THERMAL POWER is $\geq$ 15% RTP.  -----  Compare results of calorimetric heat balance calculation to Nuclear Instrumentation System (NIS) channel output.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.3 -----NOTES----- 1. Adjust NIS channel if absolute difference is $\geq$ 3%.  2. Not required to be performed until 24 hours after THERMAL POWER is $\geq$ 15% RTP.  -----  Compare results of the incore detector measurements to NIS AFD.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.3.1.4 -----NOTE----- This Surveillance must be performed on the reactor trip bypass breaker prior to placing the bypass breaker in service. ----- Perform TADOT.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.3.1.5 Perform ACTUATION LOGIC TEST.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.3.1.6 -----NOTE----- Not required to be performed until 24 hours after THERMAL POWER is <math>\geq</math> 75% RTP. ----- Calibrate excore channels to agree with incore detector measurements.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.3.1.7 -----NOTE----- Not required to be performed for source range instrumentation prior to entering MODE 3 from MODE 2 until 4 hours after entry into MODE 3. ----- Perform COT.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.3.1.8 -----NOTE-----            This Surveillance shall include verification that interlocks P-6 (for the Intermediate Range channels) and P-10 (for the Power Range channels) are in their required state for existing unit conditions.            -----            Perform COT.</p>	<p>-----NOTE-----            Only required when not performed within the Frequency specified in the Surveillance Frequency Control Program            -----            Prior to reactor startup    <u>AND</u>              Four hours after reducing power below P-10 for power and intermediate range instrumentation    <u>AND</u>              Four hours after reducing power below P-6 for source range instrumentation    <u>AND</u>              In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.3.1.9 -----NOTE----- Verification of setpoint is not required. -----  Perform TADOT.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.3.1.10 -----NOTE----- This Surveillance shall include verification that the time constants are adjusted to the prescribed values. -----  Perform CHANNEL CALIBRATION.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.3.1.11 -----NOTE----- 1. Neutron detectors are excluded from CHANNEL CALIBRATION.  2. Power Range Neutron Flux high voltage detector saturation curve verification is not required to be performed prior to entry into MODE 1 or 2. -----  Perform CHANNEL CALIBRATION.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.3.1.12 Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.13 Perform COT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.14 -----NOTE----- Verification of setpoint is not required. ----- Perform TADOT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.15 -----NOTE----- Verification of setpoint is not required. ----- Perform TADOT.	-----NOTE----- Only required when not performed within previous 31 days ----- Prior to reactor startup
SR 3.3.1.16 -----NOTE----- Neutron detectors are excluded from response time testing. ----- Verify RTS RESPONSE TIME is within limits.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.3.1.17 Verify RTS RESPONSE TIME for RTDs is within limits.	In accordance with the Surveillance Frequency Control Program



RTS Instrumentation  
3.3.1

Table 3.3.1-1 (page 1 of 8)  
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
1. Manual Reactor Trip	1,2	2	B	SR 3.3.1.14	NA	NA
	3(a), 4(a), 5(a)	2	C	SR 3.3.1.14	NA	NA
2. Power Range Neutron Flux						
a. High	1,2	4	D	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.7 SR 3.3.1.11 SR 3.3.1.16	≤ 110.9% RTP	109% RTP
b. Low	1 <sup>(b)</sup> ,2	4	E	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11 SR 3.3.1.16	≤ 27.1% RTP	25% RTP
3. Power Range Neutron Flux						
High Positive Rate	1,2	4	D	SR 3.3.1.7 SR 3.3.1.11	≤ 6.3% RTP with time constant ≥ 2 sec	5% RTP with time constant ≥ 2 sec

(continued)

- (a) With Reactor Trip Breakers (RTBs) closed and Rod Control System capable of rod withdrawal.
- (b) Below the P-10 (Power Range Neutron Flux) interlocks.

Table 3.3.1-1 (page 2 of 8)  
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
4. Intermediate Range Neutron Flux	1(b), 2(c)	2	F,G	SR 3.3.1.1 SR 3.3.1.8 <sup>(l)(m)</sup> SR 3.3.1.11 <sup>(l)(m)</sup>	≤ 38% RTP	25% RTP
	2(d)	2	H	SR 3.3.1.1 SR 3.3.1.8 <sup>(l)(m)</sup> SR 3.3.1.11 <sup>(l)(m)</sup>	≤ 38% RTP	25% RTP
5. Source Range Neutron Flux	2(d)	2	I,J	SR 3.3.1.1 SR 3.3.1.8 <sup>(l)(m)</sup> SR 3.3.1.11 <sup>(l)(m)</sup>	≤ 1.44 E5 cps	1.0 E5 cps
	3(a), 4(a), 5(a)	2	J,K	SR 3.3.1.1 SR 3.3.1.7 <sup>(l)(m)</sup> SR 3.3.1.11 <sup>(l)(m)</sup>	≤ 1.44 E5 cps	1.0 E5 cps
6. Overtemperature ΔT	1,2	4	E	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16 SR 3.3.1.17	Refer to Note 1 (Page 3.3.1-19)	Refer to Note 1 (Page 3.3.1-19)

(continued)

- (a) With Reactor Trip Breakers (RTBs) closed and Rod Control System capable of rod withdrawal.
- (b) Below the P-10 (Power Range Neutron Flux) interlocks.
- (c) Above the P-6 (Intermediate Range Neutron Flux) interlocks.
- (d) Below the P-6 (Intermediate Range Neutron Flux) interlocks.
- (l) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.
- (m) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the NOMINAL TRIP SETPOINT (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The methodologies used to determine the as-found and the as-left tolerances are specified in the UFSAR.

Table 3.3.1-1 (page 3 of 8)  
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
7. Overpower $\Delta T$	1,2	4	E	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16 SR 3.3.1.17	Refer to Note 2 (Page 3.3.1-20)	Refer to Note 2 (Page 3.3.1-20)
8. Pressurizer Pressure						
a. Low	1(e)	4	L	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	$\geq 1938^{(f)}$ psig	1945 <sup>(f)</sup> psig
b. High	1,2	4	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	$\leq 2399$ psig	2385 psig
9. Pressurizer Water Level - High	1(e)	3	L	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	$\leq 93.8\%$	92%
10. Reactor Coolant Flow - Low						
a. Single Loop	1(g)	3 per loop	M	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	$\geq 89.7\%$	91%
b. Two Loops	1(h)	3 per loop	L	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	$\geq 89.7\%$	91%

(continued)

- (e) Above the P-7 (Low Power Reactor Trips Block) interlock.
- (f) Time constants utilized in the lead-lag controller for Pressurizer Pressure - Low are 2 seconds for lead and 1 second for lag.
- (g) Above the P-8 (Power Range Neutron Flux) interlock.
- (h) Above the P-7 (Low Power Reactor Trips Block) interlock and below the P-8 (Power Range Neutron Flux) interlock.

Table 3.3.1-1 (page 4 of 8)  
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
11. Undervoltage RCPs	1(e)	1 per bus	L	SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.16	≥ 5016 V	5082 V
12. Underfrequency RCPs	1(e)	1 per bus	L	SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.16	≥ 55.9 Hz	56.4 Hz
13. Steam Generator (SG) Water Level - Low Low	1,2	4 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 9% (Unit 1) ≥ 35.1% (Unit 2) of narrow range span	10.7% (Unit 1) 36.8% (Unit 2) of narrow range span
14. Turbine Trip						
a. Stop Valve EH Pressure Low	1(i)	4	N	SR 3.3.1.10 SR 3.3.1.15	≥ 500 psig	550 psig
b. Turbine Stop Valve Closure	1(i)	4	O	SR 3.3.1.10 SR 3.3.1.15	≥ 1% open	NA
15. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)	1,2	2 trains	P	SR 3.3.1.5 SR 3.3.1.14	NA	NA

(continued)

(e) Above the P-7 (Low Power Reactor Trips Block) interlock.

(i) Not used.

(j) Above the P-9 (Power Range Neutron Flux) interlock.

Table 3.3.1-1 (page 5 of 8)  
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
16. Reactor Trip System Interlocks						
a. Intermediate Range Neutron Flux, P-6	2 <sup>(d)</sup>	2	R	SR 3.3.1.11 SR 3.3.1.13	≥ 6.6E-6% RTP	1E-5% RTP
b. Low Power Reactor Trips Block, P-7	1	1 per train	S	SR 3.3.1.5	NA	NA
c. Power Range Neutron Flux, P-8	1	4	S	SR 3.3.1.11 SR 3.3.1.13	≤ 50.2% RTP	48% RTP
d. Power Range Neutron Flux, P-9	1	4	S	SR 3.3.1.11 SR 3.3.1.13	≤ 70% RTP	69% RTP
e. Power Range Neutron Flux, P-10	1,2	4	R	SR 3.3.1.11 SR 3.3.1.13	≥ 7.8% RTP and ≤ 12.2% RTP	10% RTP
f. Turbine Impulse Pressure, P-13	1	2	S	SR 3.3.1.12 SR 3.3.1.13	≤ 12.2% RTP turbine impulse pressure equivalent	10% RTP turbine impulse pressure equivalent
17. Reactor Trip Breakers <sup>(k)</sup>						
	1,2	2 trains	Q,U	SR 3.3.1.4	NA	NA
	3 <sup>(a)</sup> , 4 <sup>(a)</sup> , 5 <sup>(a)</sup>	2 trains	C	SR 3.3.1.4	NA	NA
18. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms						
	1,2	1 each per RTB	T	SR 3.3.1.4	NA	NA
	3 <sup>(a)</sup> , 4 <sup>(a)</sup> , 5 <sup>(a)</sup>	1 each per RTB	C	SR 3.3.1.4	NA	NA
19. Automatic Trip Logic						
	1,2	2 trains	P,U	SR 3.3.1.5	NA	NA
	3 <sup>(a)</sup> , 4 <sup>(a)</sup> , 5 <sup>(a)</sup>	2 trains	C	SR 3.3.1.5	NA	NA

(continued)

(a) With RTBs closed and Rod Control System capable of rod withdrawal.

(d) Below the P-6 (Intermediate Range Neutron Flux) interlocks.

(k) Including any reactor trip bypass breakers that are racked in and closed for bypassing an RTB.

Table 3.3.1-1 (page 6 of 8)  
Reactor Trip System Instrumentation

Note 1: Overtemperature  $\Delta T$

The Overtemperature  $\Delta T$  Function Allowable Value shall not exceed the following NOMINAL TRIP SETPOINT by more than 4.3% (Unit 1) and 4.5% (Unit 2) of RTP.

$$\Delta T \frac{(1 + \tau_1 s)}{(1 + \tau_2 s)} \left( \frac{1}{1 + \tau_3 s} \right) \leq \Delta T_0 \left\{ K_1 - K_2 \frac{(1 + \tau_4 s)}{(1 + \tau_5 s)} \left[ T \frac{1}{(1 + \tau_6 s)} - T' \right] + K_3 (P - P') - f_1(\Delta I) \right\}$$

Where:  $\Delta T$  is the measured RCS  $\Delta T$  by loop narrow range RTDs, °F.

$\Delta T_0$  is the indicated  $\Delta T$  at RTP, °F.

$s$  is the Laplace transform operator,  $\text{sec}^{-1}$ .

$T$  is the measured RCS average temperature, °F.

$T'$  is the nominal  $T_{\text{avg}}$  at RTP (allowed by Safety Analysis),  $\leq$  the values specified in the COLR.

$P$  is the measured pressurizer pressure, psig

$P'$  is the nominal RCS operating pressure, = the value specified in the COLR

$K_1$  = Overtemperature  $\Delta T$  reactor NOMINAL TRIP SETPOINT, as presented in the COLR,

$K_2$  = Overtemperature  $\Delta T$  reactor trip heatup setpoint penalty coefficient, as presented in the COLR,

$K_3$  = Overtemperature  $\Delta T$  reactor trip depressurization setpoint penalty coefficient, as presented in the COLR,

$\tau_1, \tau_2$  = Time constants utilized in the lead-lag compensator for  $\Delta T$ , as presented in the COLR,

$\tau_3$  = Time constant utilized in the lag compensator for  $\Delta T$ , as presented in the COLR,

$\tau_4, \tau_5$  = Time constants utilized in the lead-lag compensator for  $T_{\text{avg}}$ , as presented in the COLR,

$\tau_6$  = Time constant utilized in the measured  $T_{\text{avg}}$  lag compensator, as presented in the COLR, and

$f_1(\Delta I)$  = a function of the indicated difference between top and bottom detectors of the power-range neutron ion chambers; with gains to be selected based on measured instrument response during plant startup tests such that:

- (i) for  $q_t - q_b$  between the "positive" and "negative"  $f_1(\Delta I)$  breakpoints as presented in the COLR;  $f_1(\Delta I) = 0$ , where  $q_t$  and  $q_b$  are percent RATED THERMAL POWER in the top and bottom halves of the core respectively, and  $q_t + q_b$  is total THERMAL POWER in percent of RATED THERMAL POWER;
- (ii) for each percent  $\Delta I$  that the magnitude of  $q_t - q_b$  is more negative than the  $f_1(\Delta I)$  "negative" breakpoint presented in the COLR, the  $\Delta T$  Trip Setpoint shall be automatically reduced by the  $f_1(\Delta I)$  "negative" slope presented in the COLR; and

(continued)

Table 3.3.1-1 (page 7 of 8)  
Reactor Trip System Instrumentation

- (iii) for each percent  $\Delta I$  that the magnitude of  $q_t - q_b$  is more positive than the  $f_1(\Delta I)$  "positive" breakpoint presented in the COLR, the  $\Delta T$  Trip Setpoint shall be automatically reduced by the  $f_1(\Delta I)$  "positive" slope presented in the COLR.

Note 2: Overpower  $\Delta T$

The Overpower  $\Delta T$  Function Allowable Value shall not exceed the following NOMINAL TRIP SETPOINT by more than 2.6% (Unit 1) and 3.1% (Unit 2) of RTP.

$$\Delta T \frac{(1 + \tau_1 s)}{(1 + \tau_2 s)} \left( \frac{1}{1 + \tau_3 s} \right) \leq \Delta T_0 \left\{ K_4 - K_5 \frac{\tau_7 s}{1 + \tau_7 s} \left( \frac{1}{1 + \tau_6 s} \right) T - K_6 \left[ T \frac{1}{1 + \tau_6 s} - T'' \right] - f_2(\Delta I) \right\}$$

Where:  $\Delta T$  is the measured RCS  $\Delta T$  by loop narrow range RTDs, °F.

$\Delta T_0$  is the indicated  $\Delta T$  at RTP, °F.

$s$  is the Laplace transform operator,  $\text{sec}^{-1}$ .

$T$  is the measured RCS average temperature, °F.

$T''$  is the nominal  $T_{\text{avg}}$  at RTP (calibration temperature for  $\Delta T$  instrumentation),

$\leq$  the values specified in the COLR.

$K_4$  = Overpower  $\Delta T$  reactor NOMINAL TRIP SETPOINT as presented in the COLR,

$K_5$  = the value specified in the COLR for increasing average temperature and the value specified in the COLR for decreasing average temperature,

$K_6$  = Overpower  $\Delta T$  reactor trip heatup setpoint penalty coefficient as presented in the COLR for  $T > T''$  and  $K_6$  = the value specified in the COLR for  $T \leq T''$ ,

$\tau_1, \tau_2$  = Time constants utilized in the lead-lag compensator for  $\Delta T$ , as presented in the COLR,

$\tau_3$  = Time constant utilized in the lag compensator for  $\Delta T$ , as presented in the COLR,

$\tau_6$  = Time constant utilized in the measured  $T_{\text{avg}}$  lag compensator, as presented in the COLR,

$\tau_7$  = Time constant utilized in the rate-lag controller for  $T_{\text{avg}}$ , as presented in the COLR, and

$f_2(\Delta I)$  = a function of the indicated difference between top and bottom detectors of the power-range neutron ion chambers; with gains to be selected based on measured instrument response during plant startup tests such that:

- (i) for  $q_t - q_b$  between the "positive" and "negative"  $f_2(\Delta I)$  breakpoints as presented in the COLR;  $f_2(\Delta I) = 0$ , where  $q_t$  and  $q_b$  are percent RATED THERMAL POWER in the top and bottom halves of the core respectively, and  $q_t + q_b$  is total THERMAL POWER in percent of RATED THERMAL POWER;

(continued)

Table 3.3.1-1 (page 8 of 8)  
Reactor Trip System Instrumentation

- (ii) for each percent  $\Delta I$  that the magnitude of  $q_t - q_b$  is more negative than the  $f_2(\Delta I)$  "negative" breakpoint presented in the COLR, the  $\Delta T$  Trip Setpoint shall be automatically reduced by the  $f_2(\Delta I)$  "negative" slope presented in the COLR; and
  - (iii) for each percent  $\Delta I$  that the magnitude of  $q_t - q_b$  is more positive than the  $f_2(\Delta I)$  "positive" breakpoint presented in the COLR, the  $\Delta T$  Trip Setpoint shall be automatically reduced by the  $f_2(\Delta I)$  "positive" slope presented in the COLR.
-



3.3 INSTRUMENTATION

3.3.2 Engineered Safety Feature Actuation System (ESFAS) Instrumentation

LCO 3.3.2            The ESFAS instrumentation for each Function in Table 3.3.2-1 shall be OPERABLE.

APPLICABILITY:    According to Table 3.3.2-1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A.    One or more Functions with one or more required channels or trains inoperable.	A.1    Enter the Condition referenced in Table 3.3.2-1 for the channel(s) or train(s).	Immediately
B.    One channel or train inoperable.	B.1    Restore channel or train to OPERABLE status.	48 hours
	<u>OR</u>	
	B.2.1    Be in MODE 3.	54 hours
	<u>AND</u>	
	B.2.2    Be in MODE 5.	84 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. One train inoperable.</p>	<p>C.1 -----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. -----  Restore train to OPERABLE status.  <u>OR</u>  C.2.1 Be in MODE 3.  <u>AND</u>  C.2.2 Be in MODE 5.</p>	<p>24 hours    30 hours   60 hours</p>
<p>D. * One channel inoperable.</p>	<p>D.1 -----NOTE----- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. -----  Place channel in trip.  <u>OR</u>  D.2.1 Be in MODE 3.  <u>AND</u>  D.2.2 Be in MODE 4.</p>	<p>72 hours   78 hours  84 hours</p>

\*[For the function Auxiliary Feedwater Loss of Offsite Power proposed changes to this Condition will be evaluated in a future amendment. *The existing Technical Specification requirements for Bypass test time of 4 hours and Required Action D:1 Place channel in trip time of 6 hours and Required Action D.2.1 Be in MODE 3 in 12 hours and Action D.2.2 Be in MODE 4 in 18 hours in remains in effect* ]

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>E. One Containment Pressure channel inoperable.</p>	<p>E.1 -----NOTE----- One additional channel may be bypassed for up to 12 hours for surveillance testing. -----  Place channel in bypass.  <u>OR</u> E.2.1 Be in MODE 3.  <u>AND</u> E.2.2 Be in MODE 4.</p>	<p>72 hours  78 hours  84 hours</p>
<p>F. One channel or train inoperable.</p>	<p>F.1 Restore channel or train to OPERABLE status.  <u>OR</u> F.2.1 Be in MODE 3.  <u>AND</u> F.2.2 Be in MODE 4.</p>	<p>48 hours  54 hours  60 hours</p>
<p>G. One Steam Line Isolation Manual Initiation - individual channel inoperable.</p>	<p>G.1 Restore channel to OPERABLE status.  <u>OR</u> G.2 Declare associated steam line isolation valve inoperable.</p>	<p>48 hours  48 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>H. One train inoperable.</p>	<p>H.1 -----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. -----  Restore train to OPERABLE status.</p> <p><u>OR</u></p> <p>H.2.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>H.2.2 Be in MODE 4.</p>	<p>24 hours</p> <p>30 hours</p> <p>36 hours</p>
<p>I. One train inoperable.</p>	<p>I.1 -----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. -----  Restore train to OPERABLE status.</p> <p><u>OR</u></p> <p>I.2 Be in MODE 3.</p>	<p>24 hours</p> <p>30 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>J. One channel inoperable.</p>	<p>J.1 -----NOTE----- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. -----</p> <p>Place channel in trip.</p> <p><u>OR</u></p> <p>J.2 Be in MODE 3.</p>	<p>72 hours</p> <p>78 hours</p>
	<p>K. One Main Feedwater Pumps trip channel inoperable.</p>	<p>K.1 Place channel in trip.</p> <p><u>OR</u></p> <p>K.2 Be in MODE 3.</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
L. One channel inoperable.	L.1 -----NOTE----- The inoperable channel may be bypassed for up to 2 hours for surveillance testing of other channels. ----- Place channel in trip.	6 hours
	<u>OR</u> L.2 Be in MODE 3.	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
M. One channel inoperable.	M.1 Place channel in trip.  <u>OR</u>  M.2.1 Be in MODE 3.  <u>AND</u>  M.2.2 Be in MODE 4.	1 hour    7 hours    13 hours
N. One channel inoperable.	N.1 -----NOTE----- One additional channel may be bypassed for up to 2 hours for surveillance testing. -----  Place channel in bypass.  <u>OR</u>  N.2.1 Be in MODE 3.  <u>AND</u>  N.2.2 Be in MODE 5.	6 hours     12 hours    42 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
O. One channel inoperable.	<p>O.1 Verify interlock is in required state for existing unit condition.</p> <p><u>OR</u></p> <p>O.2.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>O.2.2 Be in MODE 4.</p>	<p>1 hour</p> <p>7 hours</p> <p>13 hours</p>
P. One or more Containment Pressure Control System channel(s) inoperable.	<p>P.1 Declare affected supported system inoperable.</p>	<p>Immediately</p>
Q. One Nuclear Service Water Suction Transfer-Low Pit Level channel in one or more pits inoperable.	<p>Q.1 -----NOTE----- The inoperable channel may be bypassed for up to 2 hours for surveillance testing of other channels. ----- Place channel in trip.</p> <p><u>OR</u></p> <p>Q.2 Align the Nuclear Service Water System for Standby Nuclear Service Water Pond recirculation.</p> <p><u>OR</u></p> <p>Q.3.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>Q.3.2 Be in MODE 5.</p>	<p>4 hours</p> <p>4 hours</p> <p>10 hours</p> <p>40 hours</p>

(continued)



ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>R. Two or more Nuclear Service Water Suction Transfer-Low Pit Level channels in one or more pits inoperable.</p>	<p>R.1 Align the Nuclear Service Water System for Standby Nuclear Service Water Pond recirculation.</p>	<p>4 hours</p>
	<p><u>OR</u></p>	
	<p>R.2.1 Be in MODE 3.</p>	<p>10 hours</p>
	<p><u>AND</u> R.2.2 Be in MODE 5.</p>	<p>40 hours</p>

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE	FREQUENCY
SR 3.3.2.1 Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.2 Perform ACTUATION LOGIC TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.3 -----NOTE----- Final actuation of pumps or valves not required. ----- Perform TADOT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.4 Perform MASTER RELAY TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.5 Perform COT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.6 Perform SLAVE RELAY TEST.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.3.2.7 Perform COT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.8 -----NOTE----- Verification of setpoint not required for manual initiation functions. ----- Perform TADOT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.9 -----NOTE----- This Surveillance shall include verification that the time constants are adjusted to the prescribed values. ----- Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.10 -----NOTE----- Not required to be performed for the turbine driven AFW pump until 24 hours after SG pressure is $\geq$ 600 psig. ----- Verify ESFAS RESPONSE TIMES are within limit.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.3.2.11 Perform COT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.12 Perform ACTUATION LOGIC TEST.	In accordance with the Surveillance Frequency Control Program

Table 3.3.2-1 (page 1 of 6)  
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
1. Safety Injection <sup>(b)</sup>						
a. Manual initiation	1,2,3,4	2	B	SR 3.3.2.8	NA	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
c. Containment Pressure - High	1,2,3	3	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 1.4 psig	1.2 psig
d. Pressurizer Pressure - Low	1,2,3(a)	4	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 1839 psig	1845 psig
2. Deleted.						
3. Containment Isolation <sup>(b)</sup>						
a. Phase A Isolation						
(1) Manual Initiation	1,2,3,4	2	B	SR 3.3.2.8	NA	NA
(2) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
(3) Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					

(continued)

(a) Above the P-11 (Pressurizer Pressure) interlock.

(b) The requirements of this Function are not applicable to Containment Purge Ventilation System and Hydrogen Purge System components, since the system containment isolation valves are sealed closed in MODES 1, 2, 3, and 4.

Table 3.3.2-1 (page 2 of 6)  
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
3. Containment Isolation (continued)						
b. Phase B Isolation						
(1) Manual Initiation	1,2,3,4	1 per train, 2 trains	B	SR 3.3.2.8	NA	NA
(2) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
(3) Containment Pressure - High High	1,2,3	4	E	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 3.2 psig	3.0 psig
4. Steam Line Isolation						
a. Manual Initiation						
(1) System	1,2(b),3(b)	2 trains	F	SR 3.3.2.8	NA	NA
(2) Individual	1,2(b),3(b)	1 per line	G	SR 3.3.2.8	NA	NA
b. Automatic Actuation Logic and Actuation Relays	1,2(b),3(b)	2 trains	H	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
c. Containment Pressure - High High	1,2(b),3(b)	4	E	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 3.2 psig	3.0 psig
d. Steam Line Pressure						
(1) Low	1,2(b),3(a)(b)	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 744 psig	775 psig
(continued)						

(a) Above the P-11 (Pressurizer Pressure) interlock.

(b) Except when all MSIVs are closed and de-activated.

Table 3.3.2-1 (page 3 of 6)  
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
4. Steam Line Isolation (continued)						
(2) Negative Rate - High	3 <sup>(b)(c)</sup>	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 122.8 <sup>(d)</sup> psi	100 <sup>(d)</sup> psi
5. Turbine Trip and Feedwater Isolation						
a. Turbine Trip						
(1) Automatic Actuation Logic and Actuation Relays	1,2	2 trains	I	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
(2) SG Water Level-High-High (P-14)	1,2	4 per SG	J	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.5 SR 3.3.2.6 SR 3.3.2.9 SR 3.3.2.10	≤ 85.6% (Unit 1) ≤ 78.9% (Unit 2)	83.9% (Unit 1) 77.1% (Unit 2)
(3) Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements. See Item 5.a.(1) for Applicable MODES.					
b. Feedwater Isolation						
(1) Automatic Actuation Logic and Actuation Relays	1,2 <sup>(e)</sup> ,3 <sup>(e)</sup>	2 trains	H	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA

(continued)

(b) Except when all MSIVs are closed and de-activated.

(c) Trip function automatically blocked above P-11 (Pressurizer Pressure) interlock and may be blocked below P-11 when Steam Line Isolation Steam Line Pressure - Low is not blocked.

(d) Time constant utilized in the rate/lag controller is ≥ 50 seconds.

(e) Except when all MFIVs, MFCVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve.

Table 3.3.2-1 (page 4 of 6)  
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
(2) SG Water Level- High High (P-14)	1,2(e),3(e)	4 per SG	D	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.5 SR 3.3.2.6 SR 3.3.2.9 SR 3.3.2.10	≤ 85.6% (Unit 1) ≤ 78.9% (Unit 2)	83.9% (Unit 1) 77.1% (Unit 2)
(3) Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements. See Item 5.b.(1) for Applicable MODES.					
(4) Tavg-Low	1,2(e)	4	J	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9	≥ 561°F	564°F
coincident with Reactor Trip, P-4	Refer to Function 8.a (Reactor Trip, P-4) for all initiation functions and requirements.					
(5) Doghouse WaterLevel - High High	1,2(e)	3 per train per doghouse	L	SR 3.3.2.8 SR 3.3.2.9 SR 3.3.2.12	≤ 12 inches above 577 ft floor level	11 inches above 577 ft floor level

(continued)

(e) Except when all MFIVs, MFCVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve.



Table 3.3.2-1 (page 5 of 6)  
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
6. Auxiliary Feedwater						
a. Automatic Actuation Logic and Actuation Relays	1,2,3	2 trains	H	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
b. SG Water Level - Low Low	1,2,3	4 per SG	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 9% (Unit 1) ≥ 35.1% (Unit 2)	10.7% (Unit 1) 36.8% (Unit 2)
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
d. Loss of Offsite Power	1,2,3	3 per bus	D	SR 3.3.2.3 <sup>(f)(g)</sup> SR 3.3.2.9 <sup>(f)(g)</sup> SR 3.3.2.10	≥ 3396 V	3450 V
e. Trip of all Main Feedwater Pumps	1,2	3 per pump	K	SR 3.3.2.8 SR 3.3.2.10	NA	NA
f. Auxiliary Feedwater Pump Train A and Train B Suction Transfer on Suction Pressure - Low	1,2,3	3 per train	M	SR 3.3.2.8 SR 3.3.2.10	A) ≥ 9.5 psig  B) ≥ 5.2 psig (Unit 1) ≥ 5.0 psig (Unit 2)	A) 10.5 psig  B) 6.2 psig (Unit 1) 6.0 psig (Unit 2)

(continued)

- (f) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.
- (g) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The methodologies used to determine the as-found and the as-left tolerances are specified in the UFSAR.

Table 3.3.2-1 (page 6 of 6)  
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
7. Automatic Switchover to Containment Sump						
a. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
b. Refueling Water Storage Tank (RWST) Level – Low	1,2,3,4	4	N	SR 3.3.2.1 SR 3.3.2.7 <sup>(a)(b)</sup> SR 3.3.2.9 <sup>(a)(b)</sup> SR 3.3.2.10	≥ 91.9 inches	95 inches
Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
8. ESFAS Interlocks						
a. Reactor Trip, P-4	1,2,3 <sup>(h)</sup>	1 per train, 2 trains	F	SR 3.3.2.8	NA	NA
b. Pressurizer Pressure, P-11	1,2,3	3	O	SR 3.3.2.5 SR 3.3.2.9	≥ 1944 and ≤ 1966 psig	1955 psig
c. T <sub>avg</sub> - Low Low, P-12	1,2,3	1 per loop	O	SR 3.3.2.5 SR 3.3.2.9	≥ 550°F	553°F
9. Containment Pressure Control System						
a. Start Permissive	1,2,3,4	4 per train	P	SR 3.3.2.1 SR 3.3.2.7 SR 3.3.2.9	≤ 1.0 psid	0.9 psid
b. Termination	1,2,3,4	4 per train	P	SR 3.3.2.1 SR 3.3.2.7 SR 3.3.2.9	≥ 0.25 psid	0.35 psid
10. Nuclear Service Water Suction Transfer - Low Pit Level	1,2,3,4	3 per pit	Q,R	SR 3.3.2.1 SR 3.3.2.9 SR 3.3.2.11 SR 3.3.2.12	≥ El. 555.4 ft	El. 557.5 ft

- (a) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.
- (b) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The methodologies used to determine the as-found and the as-left tolerances are specified in the UFSAR.
- (h) The functions of the Reactor Trip, P-4 interlock required to meet the LCO are:
- Trip the main turbine – MODES 1 and 2
  - Isolate MFW with coincident low T<sub>avg</sub> – MODES 1, 2 and 3
  - Prevent reactivation of SI after a manual reset of SI – MODES 1, 2, and 3
  - Prevent opening of MFIVs if closed on SI or SG Water Level – High High – MODES 1, 2, and 3

3.3 INSTRUMENTATION

3.3.3 Post Accident Monitoring (PAM) Instrumentation

LCO 3.3.3 The PAM instrumentation for each Function in Table 3.3.3-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one or more required channels inoperable.	A.1 Enter the Condition referenced in Table 3.3.3-1 for the channel.	Immediately
B. One or more Functions with one required channel inoperable.	B.1 Restore required channel to OPERABLE status.	30 days
C. One or more Functions with one required channel inoperable.  <u>AND</u>  Diverse channel OPERABLE.	C.1 Restore required channel to OPERABLE status.	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition B or C not met.	D.1 Initiate action in accordance with Specification 5.6.7.	Immediately
E. One or more Functions with one required channel inoperable.  <u>AND</u>  Diverse channel inoperable.	E.1 Restore required channel to OPERABLE status.  <u>OR</u>  E.2 Restore diverse channel to OPERABLE status.	7 days    7 days
F. One or more Functions with two required channels inoperable.	F.1 Restore one channel to OPERABLE status.	7 days
G. Not Used	G.1 Not Used	
H. Required Action and associated Completion Time of Condition E or F not met.	H.1 Be in MODE 3.  <u>AND</u>  H.2 Be in MODE 4.	6 hours    12 hours

SURVEILLANCE REQUIREMENTS

-----NOTE-----  
 SR 3.3.3.1 and SR 3.3.3.3 apply to each PAM instrumentation Function in Table 3.3.3-1.  
 -----

SURVEILLANCE	FREQUENCY
SR 3.3.3.1 Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	In accordance with the Surveillance Frequency Control Program
SR 3.3.3.2 Not Used	
SR 3.3.3.3 -----NOTES----- 1. Neutron detectors are excluded from CHANNEL CALIBRATION.  2. CHANNEL CALIBRATION may consist of an electronic calibration of the Containment Area - High Range Radiation Monitor, not including the detector, for range decades above 10 R/h and a one point calibration check of the detector below 10 R/h with an installed or portable gamma source.  ----- Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program

Table 3.3.3-1 (page 1 of 1)  
Post Accident Monitoring Instrumentation

	FUNCTION	REQUIRED CHANNELS	CONDITIONS
1.	Reactor Coolant System (RCS) Hot Leg Temperature (Wide Range)	2	B,D,F,H
2.	RCS Cold Leg Temperature (Wide Range)	2	B,D,F,H
3.	RCS Pressure (Wide Range)	2	B,D,F,H
4.	Reactor Vessel Water Level	2	B,D,F,H
5.	Containment Sump Water Level (Wide Range)	2	B,D,F,H
6.	Containment Pressure (Wide Range)	2	B,D,F,H
7.	Containment Area Radiation (High Range)	1	B,D
8.	Not Used		
9.	Pressurizer Level	2	B,D,F,H
10.	Steam Generator Water Level (Narrow Range)	2 per steam generator	B,D,F,H
11.	Core Exit Temperature - Quadrant 1	2(a)	B,D,F,H
12.	Core Exit Temperature - Quadrant 2	2(a)	B,D,F,H
13.	Core Exit Temperature - Quadrant 3	2(a)	B,D,F,H
14.	Core Exit Temperature - Quadrant 4	2(a)	B,D,F,H
15.	Auxiliary Feedwater Flow	1 per steam generator	C,D,E,H
16.	RCS Radiation Level	1	B,D
17.	RCS Subcooling Margin Monitor	2	B,D,F,H
18.	Steam Line Pressure	2 per steam generator	B,D,F,H
19.	Refueling Water Storage Tank Level	2	B,D,F,H
20.	Neutron Flux (Wide Range)	2	B,D,F,H
21.	Steam Generator Water Level (Wide Range)	1 per steam generator	C,D,E,H

(a) A channel consists of two core exit thermocouples (CETs).

3.3 INSTRUMENTATION

3.3.4 Remote Shutdown System

LCO 3.3.4            The Remote Shutdown System Functions in Table 3.3.4-1 shall be OPERABLE.

APPLICABILITY:    MODES 1, 2, and 3.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A.    One or more required Functions inoperable.	A.1    Restore required Function to OPERABLE status.	30 days
B.    Required Action and associated Completion Time not met.	B.1    Be in MODE 3.	6 hours
	<u>AND</u> B.2    Be in MODE 4.	12 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.3.4.1 Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	In accordance with the Surveillance Frequency Control Program
SR 3.3.4.2 -----NOTE----- Not applicable to Reactor Trip Breaker Position. ----- Perform CHANNEL CALIBRATION for each required instrumentation channel.	In accordance with the Surveillance Frequency Control Program



Table 3.3.4-1 (page 1 of 1)  
Remote Shutdown System Instrumentation and Controls

FUNCTION/INSTRUMENT OR CONTROL PARAMETER	REQUIRED NUMBER OF FUNCTIONS
1. Reactivity Control	
a. Reactor Trip Breaker Position	1 per trip breaker
2. Reactor Coolant System (RCS) Pressure Control	
a. Pressurizer Pressure	1
3. Decay Heat Removal via Steam Generators (SGs)	
a. RCS Hot Leg Temperature - Loop A and B	1 per loop
b. RCS Cold Leg Temperature - Loop A* and B	1 per loop
c. SG Pressure	1 per SG
d. SG Level or AFW Flow	1 per SG
4. RCS Inventory Control	
a. Pressurizer Level	1

\* For Unit 2 only, Loop A of this Function is not required to be operable until such time that its associated resistance temperature detector (RTD) can be replaced either during the Cycle 20 Refueling Outage or another outage that facilitates replacement, whichever occurs first.

3.3 INSTRUMENTATION

3.3.5 Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation

LCO 3.3.5 Three channels per bus of the loss of voltage Function and three channels per bus of the degraded voltage Function shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4,  
When associated DG is required to be OPERABLE by LCO 3.8.2, "AC Sources — Shutdown."

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one channel per bus inoperable.	A.1 Place channel in trip.	6 hours
B. One or more Functions with two or more channels per bus inoperable.	B.1 Restore all but one channel to OPERABLE status.	1 hour
C. Required Action and associated Completion Time not met.	C.1 Enter applicable Condition(s) and Required Action(s) for the associated DG made inoperable by LOP DG start instrumentation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.3.5.1 -----NOTE----- Testing shall consist of voltage sensor relay testing excluding actuation of load shedding diesel start, and time delay times. ----- Perform TADOT.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.3.5.2 Perform CHANNEL CALIBRATION with NOMINAL TRIP SETPOINT and Allowable Value as follows:</p> <p>a. Loss of voltage Allowable Value <math>\geq</math> 3396 V. Loss of voltage NOMINAL TRIP SETPOINT = 3450 V.</p> <p>b. Degraded voltage Allowable Value <math>\geq</math> 3738 V. Degraded voltage NOMINAL TRIP SETPOINT = 3766 V.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

3.3 INSTRUMENTATION

3.3.6 Containment Air Release and Addition Isolation Instrumentation

LCO 3.3.6            The Containment Air Release and Addition Isolation instrumentation for each Function in Table 3.3.6-1 shall be OPERABLE.

APPLICABILITY:    MODES 1, 2, 3, and 4

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A.    One or more Functions with one or more manual or automatic actuation trains inoperable.	A.1    Enter applicable Conditions and Required Actions of LCO 3.6.3, "Containment Isolation Valves," for containment air release and addition isolation valves made inoperable by isolation instrumentation.	Immediately

SURVEILLANCE REQUIREMENTS

-----NOTE-----

Refer to Table 3.3.6-1 to determine which SRs apply for each Containment Air Release and Addition Isolation Function.

SURVEILLANCE	FREQUENCY
SR 3.3.6.1    Perform ACTUATION LOGIC TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.2    Perform MASTER RELAY TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.3    Perform SLAVE RELAY TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.4    -----NOTE----- Verification of setpoint is not required. -----  Perform TADOT.	In accordance with the Surveillance Frequency Control Program

Containment Air Release and Addition Isolation Instrumentation  
3.3.6

Table 3.3.6-1 (page 1 of 1)  
Containment Air Release and Addition Isolation Instrumentation

FUNCTION	REQUIRED TRAINS	SURVEILLANCE REQUIREMENTS	NOMINAL TRIP SETPOINT
1. Manual Initiation	2	SR 3.3.6.4	NA
2. Automatic Actuation Logic and Actuation Relays	2	SR 3.3.6.1 SR 3.3.6.2 SR 3.3.6.3	NA
3. Safety Injection	Refer to LCO 3.3.2, "ESFAS Instrumentation," Table 3.3.2-1, Function 1, for all initiation functions and requirements.		

3.3 INSTRUMENTATION

3.3.9 Boron Dilution Mitigation System (BDMS)

LCO 3.3.9 Two trains of the BDMS shall be OPERABLE.

APPLICABILITY: MODES 3, 4, and 5.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One train inoperable.</p>	<p>A.1 Restore train to OPERABLE status.</p>	<p>48 hours</p>
	<p><u>OR</u></p>	
	<p>A.2.1 -----NOTE----- Plant temperature changes are allowed provided that SDM is maintained and <math>k_{eff}</math> remains &lt; 0.99. -----</p>	
	<p>Suspend operations involving positive reactivity additions.</p>	<p>48 hours</p>
	<p><u>AND</u></p>	
	<p>A.2.2 Verify unborated water source isolation valve(s) are closed and secured.</p>	<p>49 hours</p>
	<p><u>OR</u></p>	
	<p>A.3.1 Verify two Source Range Neutron Flux Monitors are OPERABLE.</p>	<p>48 hours</p>
	<p><u>AND</u></p>	
	<p>(continued)</p>	

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3.2 Verify Reactor Makeup Water Pumps combined flow rates are within the limits specified in the COLR.	49 hours
B. Two trains inoperable.	B.1 Restore trains to OPERABLE status.	12 hours
	<u>OR</u>	
	B.2.1 -----NOTE----- Plant temperature changes are allowed provided that SDM is maintained and $k_{eff}$ remains < 0.99. -----	
	Suspend operations involving positive reactivity additions.	12 hours
	<u>AND</u>	
	B.2.2 Verify unborated water source isolation valve(s) are closed and secured.	13 hours
	<u>OR</u>	
	B.3.1 Verify two Source Range Neutron Flux Monitors are OPERABLE.	12 hours
	<u>AND</u>	
	B.3.2 Verify Reactor Makeup Water Pumps combined flow rates are within the limits specified in the COLR.	13 hours



SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.3.9.1 Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.9.2 Perform COT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.9.3 Verify each automatic valve moves to the correct position and Reactor Makeup Water pumps stop upon receipt of an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.3.9.4 -----NOTE----- Only required to be performed when used to satisfy Required Action A.3 or B.3. ----- Perform CHANNEL CHECK on the Source Range Neutron Flux Monitors.	In accordance with the Surveillance Frequency Control Program
SR 3.3.9.5 -----NOTE----- Only required to be performed when used to satisfy Required Action A.3 or B.3. ----- Verify combined flowrates from both Reactor Makeup Water Pumps are $\leq$ the value in the COLR.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.3.9.6 -----NOTE-----  Only required to be performed when used to satisfy  Required Action A.3 or B.3.</p> <hr/> <p>Perform COT on the Source Range Neutron Flux  Monitors.</p>	<p>In accordance with  the Surveillance  Frequency Control  Program</p>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.1 RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits

LCO 3.4.1 RCS DNB parameters for pressurizer pressure, RCS average temperature, and RCS total flow rate shall be within the limits specified in Table 3.4.1-1.

APPLICABILITY: MODE 1.

-----NOTE-----  
Pressurizer pressure limit does not apply during:

- a. THERMAL POWER ramp > 5% RTP per minute; or
- b. THERMAL POWER step > 10% RTP.

-----

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressurizer pressure or RCS average temperature DNB parameters not within limits.	A.1 Restore DNB parameter(s) to within limit.	2 hours
B. RCS total flow rate $\geq$ 99%, but < 100% of the limit specified in the COLR.	B.1 Reduce THERMAL POWER to $\leq$ 98% RTP.	2 hours
	<u>AND</u> B.2 Reduce the Power Range Neutron Flux – High Trip Setpoint below the nominal setpoint by 2% RTP.	6 hours

(continued)



**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.4.1.1 Verify pressurizer pressure is within limits.	In accordance with the Surveillance Frequency Control Program
SR 3.4.1.2 Verify RCS average temperature is within limits.	In accordance with the Surveillance Frequency Control Program
SR 3.4.1.3 Verify RCS total flow rate is within limits.	In accordance with the Surveillance Frequency Control Program
SR 3.4.1.4 Perform CHANNEL CALIBRATION for each RCS total flow indicator.	In accordance with the Surveillance Frequency Control Program

RCS Pressure, Temperature, and Flow DNB Limits  
3.4.1

Table 3.4.1-1 (page 1 of 1)  
RCS DNB Parameters

PARAMETER	INDICATION	No. OPERABLE CHANNELS	LIMITS	
1. Indicated RCS Average Temperature – Unit 1	meter	4	$\leq$ the value specified in the COLR	
	meter	3	$\leq$ the value specified in the COLR	
	computer	4	$\leq$ the value specified in the COLR	
	computer	3	$\leq$ the value specified in the COLR	
	Indicated RCS Average Temperature – Unit 2	meter	4	$\leq$ the value specified in the COLR
		meter	3	$\leq$ the value specified in the COLR
		computer	4	$\leq$ the value specified in the COLR
		computer	3	$\leq$ the value specified in the COLR
2. Indicated Pressurizer Pressure	meter	4	$\geq$ the value specified in the COLR	
	meter	3	$\geq$ the value specified in the COLR	
	computer	4	$\geq$ the value specified in the COLR	
	computer	3	$\geq$ the value specified in the COLR	
3. RCS Total Flow Rate			$\geq$ 384,000 gpm and $\geq$ the limit specified in the COLR (Unit 1);	
			$\geq$ 387,000 gpm and $\geq$ the limit specified in the COLR (Unit 2)	

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.2 RCS Minimum Temperature for Criticality

LCO 3.4.2 Each RCS loop average temperature ( $T_{avg}$ ) shall be  $\geq 551^\circ\text{F}$ .

APPLICABILITY: MODE 1,  
MODE 2 with  $k_{eff} \geq 1.0$ .

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. $T_{avg}$ in one or more RCS loops not within limit.	A.1 Be in MODE 2 with $K_{eff} < 1.0$ .	30 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.2.1 Verify RCS $T_{avg}$ in each loop $\geq 551^\circ\text{F}$ .	<p>-----NOTE----- Only required if <math>T_{avg} - T_{ref}</math> deviation alarm not reset and any RCS loop <math>T_{avg} &lt; 561^\circ\text{F}</math> -----</p> <p>30 minutes</p>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.3 RCS Pressure and Temperature (P/T) Limits

LCO 3.4.3 RCS pressure and RCS temperature shall be limited during RCS heatup and cooldown, criticality, and inservice leak and hydrostatic testing in accordance with:

- a. A maximum heatup rate as specified in Figure 3.4.3-1;
- b. A maximum cooldown rate as specified in Figure 3.4.3-2; and
- c. A maximum temperature change of  $\leq 10^\circ\text{F}$  in any 1 hour period during inservice leak and hydrostatic testing operations above the heatup and cooldown limit curves.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. -----NOTE----- Required Action A.2 shall be completed whenever this Condition is entered. ----- Requirements of LCO not met in MODE 1, 2, 3, or 4.</p>	<p>A.1 Restore parameter(s) to within limits.</p>	30 minutes
	<p><u>AND</u> A.2 Determine RCS is acceptable for continued operation.</p>	72 hours
<p>B. Required Action and associated Completion Time of Condition A not met.</p>	<p>B.1 Be in MODE 3.</p>	6 hours
	<p><u>AND</u> B.2 Be in MODE 5 with RCS pressure &lt; 500 psig.</p>	36 hours

(continued)

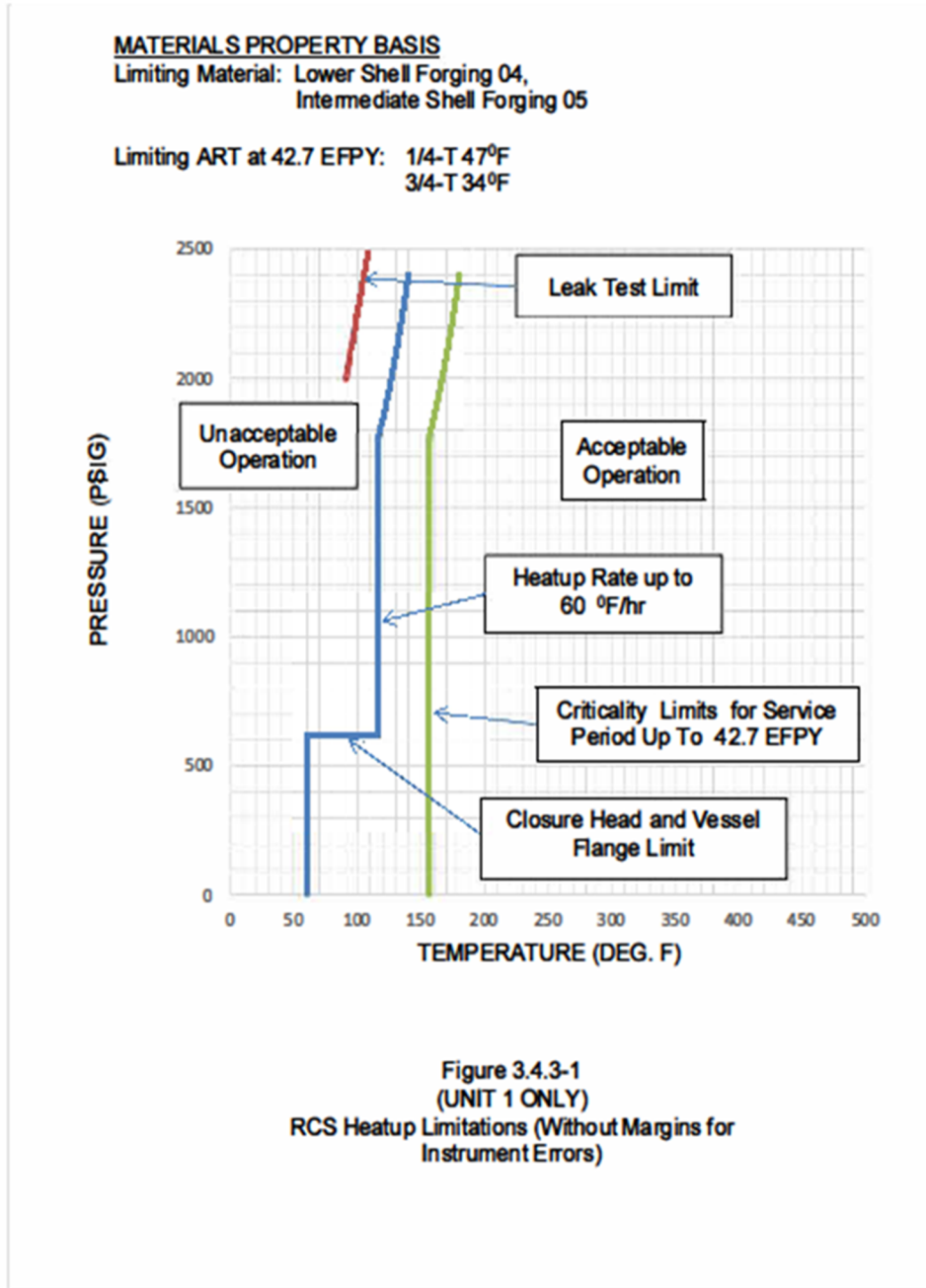


ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

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



MATERIALS PROPERTY BASIS

Limiting Material: Intermediate Shell, B8605-2

Limiting ART at 34 EFPY: 1/4-T, 121°F

3/4-T, 106°F

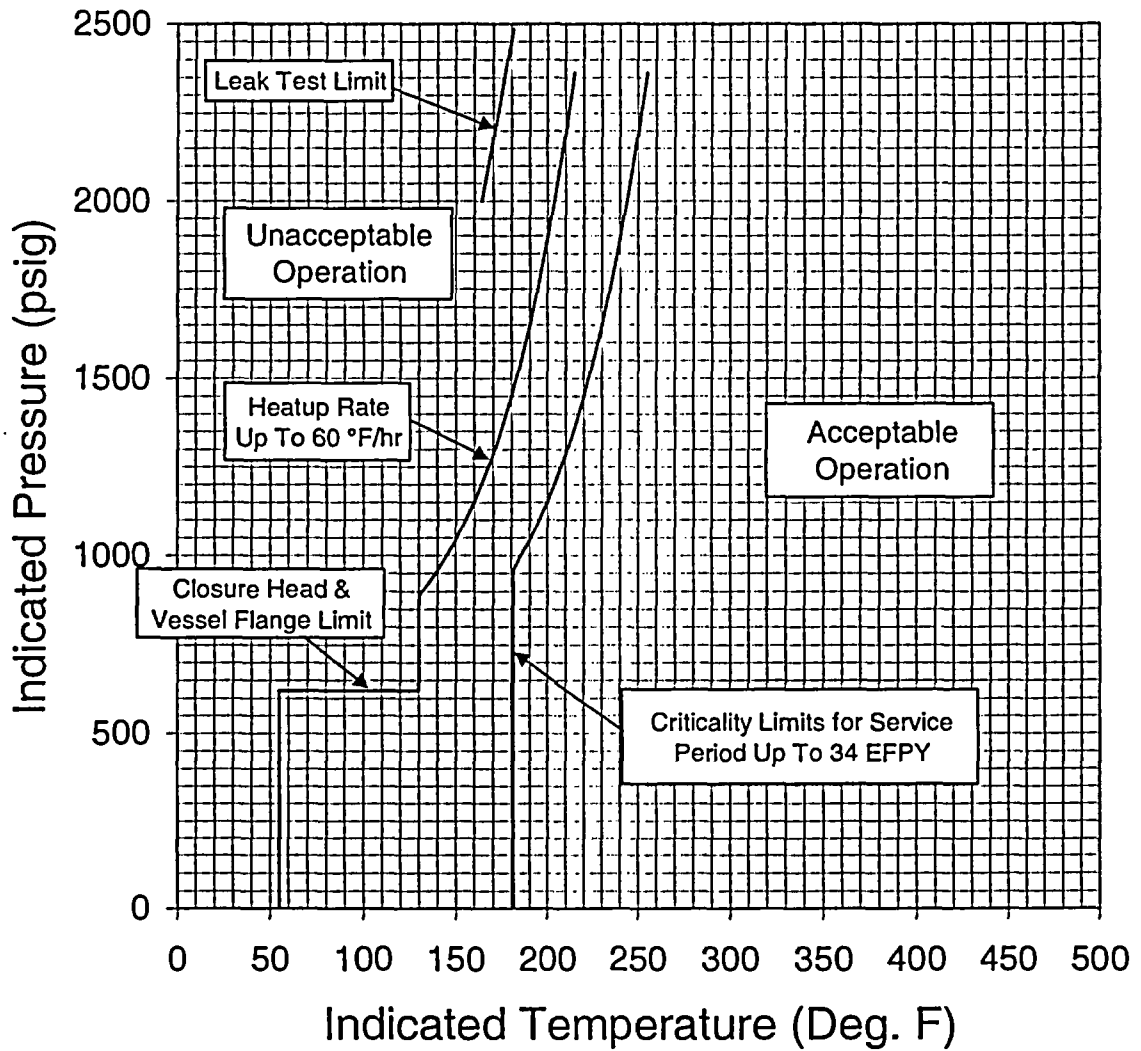


Figure 3.4.3-1  
(UNIT 2 ONLY)  
RCS Heatup Limitations

**MATERIALS PROPERTY BASIS**

Limiting Material: Lower Shell Forging 04,  
Intermediate Shell Forging 05

Limiting ART at 42.7 EFPY: 1/4-T 47°F  
3/4-T 34°F

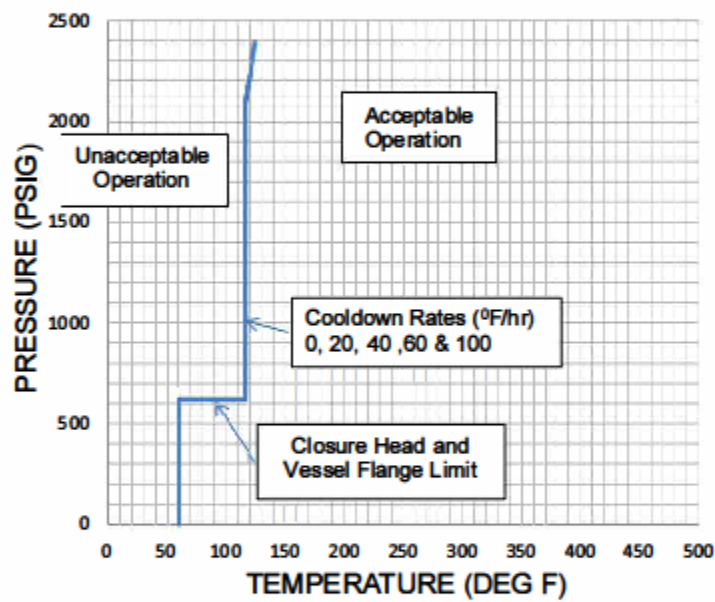


Figure 3.4.3-2  
(UNIT 1 ONLY)  
RCS Cooldown Limitations (Without Margins  
for Instrument Errors)

**MATERIALS PROPERTY BASIS**

Limiting Material: Intermediate Shell, B8605-2

Limiting ART at 34 EFPY: 1/4-T, 121°F

3/4-T, 106°F

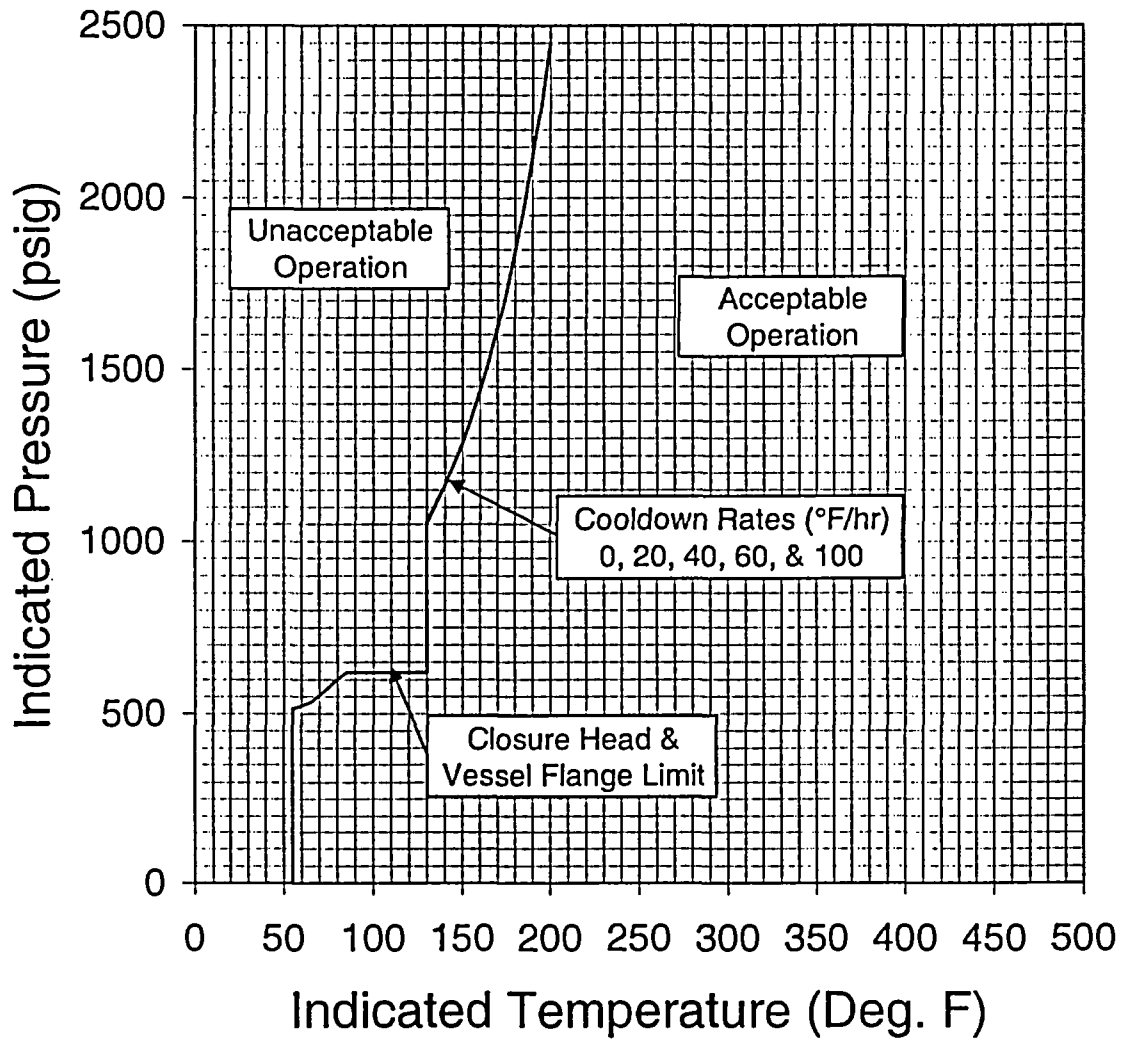


Figure 3.4.3-2  
(UNIT 2 ONLY)  
RCS Cooldown Limitations

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.4 RCS Loops — MODES 1 and 2

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

APPLICABILITY: MODES 1 and 2.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Loops — MODE 3

LCO 3.4.5 Three RCS loops shall be OPERABLE, and either:

- a. Three RCS loops shall be in operation when the Rod Control System is capable of rod withdrawal; or
- b. One RCS loop shall be in operation when the Rod Control System is not capable of rod withdrawal.

-----NOTE-----

All reactor coolant pumps may be de-energized for  $\leq 1$  hour per 8 hour period provided:

- a. No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1 and maintain  $k_{eff} < 0.99$ ; and
  - b. Core outlet temperature is maintained at least 10°F below saturation temperature.
- 

APPLICABILITY: MODE 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two required RCS loop(s) inoperable.	A.1 Restore required RCS loop(s) to OPERABLE status.	72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 4.	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. One or two required RCS loop(s) not in operation and Rod Control System capable of rod withdrawal.</p>	<p>C.1 Restore required RCS loop(s) to operation.</p> <p><u>OR</u></p> <p>C.2 De-energize all control rod drive mechanisms (CRDMs).</p>	<p>1 hour</p> <p>1 hour</p>
<p>D. Three required RCS loops inoperable.</p> <p><u>OR</u></p> <p>No RCS loop in operation.</p>	<p>D.1 De-energize all CRDMs.</p> <p><u>AND</u></p> <p>D.2 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.</p> <p><u>AND</u></p> <p>D.3 Initiate action to restore one RCS loop to OPERABLE status and operation.</p>	<p>Immediately</p> <p>Immediately</p> <p>Immediately</p>



**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.4.5.1 Verify required RCS loops are in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.5.2 Verify steam generator secondary side water levels are $\geq 12\%$ narrow range for required RCS loops.	In accordance with the Surveillance Frequency Control Program
SR 3.4.5.3 Verify correct breaker alignment and indicated power are available to the required pumps that are not in operation.	In accordance with the Surveillance Frequency Control Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Loops — MODE 4

LCO 3.4.6 Two loops consisting of any combination of RCS loops and residual heat removal (RHR) loops shall be OPERABLE, and one loop shall be in operation.

-----NOTES-----

1. All reactor coolant pumps (RCPs) and RHR pumps may be de-energized for  $\leq 1$  hour per 8 hour period provided:
  - a. No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1 and maintain  $k_{eff} < 0.99$ ; and
  - b. Core outlet temperature is maintained at least 10°F below saturation temperature.
2. No RCP shall be started with any RCS cold leg temperature  $\leq 210^\circ\text{F}$  unless the secondary side water temperature of each steam generator (SG) is  $\leq 50^\circ\text{F}$  above each of the RCS cold leg temperatures.

APPLICABILITY: MODE 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RCS loop OPERABLE.  <u>AND</u>  Two RHR loops inoperable.	A.1 Initiate action to restore a second loop to OPERABLE status.	Immediately

(continued)



SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.4.6.3 Verify correct breaker alignment and indicated power are available to the required pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.6.4 -----NOTE----- Not required to be performed until 12 hours after entering MODE 4. -----  Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 RCS Loops — MODE 5, Loops Filled

LCO 3.4.7 One residual heat removal (RHR) loop shall be OPERABLE and in operation, and either:

- a. One additional RHR loop shall be OPERABLE; or
- b. The secondary side water level of at least two steam generators (SGs) shall be  $\geq 12\%$  narrow range.

-----NOTES-----

- 1. The RHR pump of the loop in operation may be de-energized for  $\leq 1$  hour per 8 hour period provided:
  - a. No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1; and
  - b. Core outlet temperature is maintained at least 10°F below saturation temperature.
- 2. One required RHR loop may be inoperable for up to 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.
- 3. No reactor coolant pump shall be started with one or more RCS cold leg temperatures  $\leq 210^\circ\text{F}$  unless the secondary side water temperature of each SG is  $\leq 50^\circ\text{F}$  above each of the RCS cold leg temperatures.
- 4. All RHR loops may be removed from operation during planned heatup to MODE 4 when at least one RCS loop is in operation.

APPLICABILITY: MODE 5 with RCS loops filled.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One RHR loop inoperable.</p> <p><u>AND</u></p> <p>Required SGs secondary side water levels not within limits.</p>	<p>A.1 Initiate action to restore a second RHR loop to OPERABLE status.</p> <p><u>OR</u></p> <p>A.2 Initiate action to restore required SG secondary side water levels to within limits.</p>	<p>Immediately</p> <p>Immediately</p>
<p>B. Required RHR loops inoperable.</p> <p><u>OR</u></p> <p>No RHR loop in operation.</p>	<p>B.1 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.</p> <p><u>AND</u></p> <p>B.2 Initiate action to restore one RHR loop to OPERABLE status and operation.</p>	<p>Immediately</p> <p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.7.1 Verify one RHR loop is in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.2 Verify SG secondary side water level is $\geq$ 12% narrow range in required SGs.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.4.7.3    Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.4    Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 RCS Loops—MODE 5, Loops Not Filled

LCO 3.4.8 Two residual heat removal (RHR) loops shall be OPERABLE and one RHR loop shall be in operation.

-----NOTES-----

1. All RHR pumps may be de-energized for  $\leq 15$  minutes when switching from one loop to another provided:
  - a. The core outlet temperature is maintained at least 10°F below saturation temperature.
  - b. No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1; and
  - c. No draining operations to further reduce the RCS water volume are permitted.
2. One RHR loop may be inoperable for  $\leq 2$  hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

APPLICABILITY: MODE 5 with RCS loops not filled.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RHR loop inoperable.	A.1 Initiate action to restore RHR loop to OPERABLE status.	Immediately

(continued)



ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required RHR loops inoperable.  <u>OR</u>  No RHR loop in operation.	B.1 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.	Immediately
	<u>AND</u>  B.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.8.1 Verify one RHR loop is in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.8.2 Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.8.3 Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 Pressurizer

LCO 3.4.9 The pressurizer shall be OPERABLE with:

- a. Pressurizer water level  $\leq$  92% (1656 ft<sup>3</sup>); and
- b. Two groups of pressurizer heaters OPERABLE with the capacity of each group  $\geq$  150 kW and capable of being powered from an emergency power supply.

APPLICABILITY: MODES 1, 2, and 3.

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressurizer water level not within limit.	A.1 Be in MODE 3 with reactor trip breakers open.	6 hours
	<u>AND</u> A.2 Be in MODE 4.	12 hours
B. One required group of pressurizer heaters inoperable.	B.1 Restore required group of pressurizer heaters to OPERABLE status.	72 hours
C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 3.	6 hours
	<u>AND</u> C.2 Be in MODE 4.	12 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.4.9.1 Verify pressurizer water level is $\leq 92\%$ (1656 ft <sup>3</sup> ).	In accordance with the Surveillance Frequency Control Program
SR 3.4.9.2 Verify capacity of each required group of pressurizer heaters is $\geq 150$ kW.	In accordance with the Surveillance Frequency Control Program
SR 3.4.9.3 Verify required pressurizer heaters are capable of being powered from an emergency power supply.	In accordance with the Surveillance Frequency Control Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.10 Pressurizer Safety Valves

LCO 3.4.10 Three pressurizer safety valves shall be OPERABLE with lift settings  $\geq 2435$  psig and  $\leq 2559$  psig.

APPLICABILITY: MODES 1, 2, and 3,  
MODE 4 with all RCS cold leg temperatures  $> 210^\circ\text{F}$ .

-----NOTE-----  
The lift settings are not required to be within the LCO limits during MODES 3 and 4 for the purpose of setting the pressurizer safety valves under ambient (hot) conditions. This exception is allowed for 54 hours following entry into MODE 3 provided a preliminary cold setting was made prior to heatup.  
-----

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One pressurizer safety valve inoperable.	A.1 Restore valve to OPERABLE status.	15 minutes
B. Required Action and associated Completion Time not met.  <u>OR</u>  Two or more pressurizer safety valves inoperable.	B.1 Be in MODE 3.  <u>AND</u>  B.2 Be in MODE 4 with any RCS cold leg temperatures $\leq 210^\circ\text{F}$ .	6 hours   24 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.4.10.1    Verify each pressurizer safety valve is OPERABLE in accordance with the INSERVICE TESTING PROGRAM. Following testing, lift settings shall be $\geq$ 2460 psig and $\leq$ 2510 psig.	In accordance with the INSERVICE TESTING PROGRAM

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.11 Pressurizer Power Operated Relief Valves (PORVs)

LCO 3.4.11 Each PORV and associated block valve shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

-----NOTES-----

Separate Condition entry is allowed for each PORV.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more PORVs inoperable and capable of being manually cycled.	A.1 Close and maintain power to associated block valve.	1 hour
B. One or two PORVs inoperable and not capable of being manually cycled.	B.1 Close associated block valves.	1 hour
	<u>AND</u>	
	B.2 Remove power from associated block valves.	1 hour
	<u>AND</u>	
	B.3 Restore PORV(s) to OPERABLE status.	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. One block valve inoperable.</p>	<p>C.1 Place associated PORV in manual control.</p>	<p>1 hour</p>
	<p><u>AND</u></p> <p>C.2 Restore block valve to OPERABLE status.</p>	<p>72 hours</p>
<p>D. Required Action and associated Completion Time of Condition A, B, or C not met.</p>	<p>D.1 Be in MODE 3.</p>	<p>6 hours</p>
	<p><u>AND</u></p> <p>D.2 Be in MODE 4.</p>	<p>12 hours</p>
<p>E. Three PORVs inoperable and not capable of being manually cycled.</p>	<p>E.1 Close associated block valves.</p>	<p>1 hour</p>
	<p><u>AND</u></p> <p>E.2 Remove power from associated block valves.</p>	<p>1 hour</p>
	<p><u>AND</u></p> <p>E.3 Be in MODE 3.</p>	<p>6 hours</p>
	<p><u>AND</u></p> <p>E.4 Be in MODE 4.</p>	<p>12 hours</p>
<p>F. More than one block valve inoperable.</p>	<p>F.1 Place associated PORVs in manual control.</p> <p><u>AND</u></p>	<p>1 hour</p> <p>(continued)</p>

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

(continued)



SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.4.11.2 -----NOTE----- Required to be performed in MODE 3 or MODE 4 when the temperature of all RCS cold legs is &gt; 200°F.</p> <p>-----</p> <p>Perform a complete cycle of each PORV.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.4.11.3 -----NOTE----- This SR is not applicable to valve NC-36B.</p> <p>-----</p> <p>Verify the nitrogen supply for each PORV is OPERABLE by:</p> <ul style="list-style-type: none"> <li>a. Manually transferring motive power from the air supply to the nitrogen supply,</li> <li>b. Isolating and venting the air supply, and</li> <li>c. Operating the PORV through one complete cycle.</li> </ul>	<p>In accordance with the Surveillance Frequency Control Program</p>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.12 Low Temperature Overpressure Protection (LTOP) System

LCO 3.4.12 An LTOP System shall be OPERABLE with a maximum of two pumps (charging pumps, safety injection pumps, or charging and safety injection pumps) capable of injecting into the RCS, the accumulators isolated, reactor coolant pump operation limited as specified in Table 3.4.12-1 and either a, b, or c below:

- a. Two power operated relief valves (PORVs) with nominal lift setting = 400 psig (as left calibrated), allowable value  $\leq$  425 psig (as found), with RCS cold leg temperature  $\geq$  70°F; or
- b. Two residual heat removal (RHR) suction relief valves with lift settings  $\geq$  417 psig and  $\leq$  509 psig with an indicated RCS cold leg temperature  $\geq$  70°F; or
- c. A combination of any one PORV and one RHR suction relief valve, each with lift settings as described above.

APPLICABILITY: MODE 4 when any RCS cold leg temperature is  $\leq$  210°F,  
MODE 5,  
MODE 6 when the reactor vessel head is on.

-----NOTE-----  
Accumulator isolation is only required when accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in Specification 3.4.3.  
-----

ACTIONS

-----NOTE-----

LCO 3.0.4.b is not applicable when entering Mode 4.

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. More than two pumps (charging, safety injection, or charging and safety injection) capable of injecting into the RCS.</p>	<p>A.1 Initiate action to verify a maximum of two pumps are capable of injecting into the RCS.</p>	<p>Immediately</p>
<p>B. Reactor coolant pump operation not limited as specified in Table 3.4.12-1.</p>	<p>B.1 Initiate action to limit pump operation as specified in Table 3.4.12-1.</p>	<p>Immediately</p>
<p>C. An accumulator not isolated when the accumulator pressure is greater than or equal to the maximum RCS pressure for existing cold leg temperature allowed in Specification 3.4.3.</p>	<p>C.1 Isolate affected accumulator.</p>	<p>1 hour</p>

(continued)

*Correction letter of 5-25-2004*

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. Required Action and associated Completion Time of Condition C not met.</p>	<p>D.1 Increase RCS cold leg temperature to &gt; 210°F.</p> <p><u>OR</u></p> <p>D.2 Depressurize affected accumulator to less than the maximum RCS pressure for existing cold leg temperature allowed by Specification 3.4.3.</p>	<p>12 hours</p> <p>12 hours</p>
<p>E. One required RCS relief valve inoperable in MODE 4.</p>	<p>E.1 Restore required RCS relief valve to OPERABLE status.</p>	<p>7 days</p>
<p>F. One required RCS relief valve inoperable in MODE 5 or 6.</p>	<p>F.1 Restore required RCS relief valve to OPERABLE status.</p>	<p>24 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>G. Two required RCS relief valves inoperable.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition A, D, E, or F, not met.</p> <p><u>OR</u></p> <p>LTOP System inoperable for any reason other than Condition A, C, D, E, or F.</p>	<p>G.1 Initiate action to ensure a maximum of one charging pump or one safety injection pump is capable of injecting into the RCS.</p> <p><u>AND</u></p> <p>G.2 Depressurize RCS and establish RCS vent of <math>\geq 4.5</math> square inches.</p> <p><u>AND</u></p> <p>G.3 Verify RCS vent <math>\geq 4.5</math> square inches is open.</p>	<p>Immediately</p> <p>12 hours</p> <p>Once per 12 hours for unlocked vent valve(s)</p> <p><u>AND</u></p> <p>Once per 31 days for locked open vent valve(s)</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.12.1 Verify a maximum of two pumps (charging, safety injection, or charging and safety injection) are capable of injecting into the RCS.	In accordance with the Surveillance Frequency Control Program
SR 3.4.12.2 Verify each accumulator is isolated.	In accordance with the Surveillance Frequency Control Program
SR 3.4.12.3 Verify RHR suction isolation valves are open for each required RHR suction relief valve.	In accordance with the Surveillance Frequency Control Program
SR 3.4.12.4 Verify PORV block valve is open for each required PORV.	In accordance with the Surveillance Frequency Control Program
SR 3.4.12.5 -----NOTE----- Not required to be met until 12 hours after decreasing RCS cold leg temperature to $\leq 210^{\circ}\text{F}$ . -----  Perform a COT on each required PORV, excluding actuation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.12.6 Perform CHANNEL CALIBRATION for each required PORV actuation channel.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.4.12.7 Verify associated RHR suction isolation valves are open, with operator power removed and locked in removed position, for each required RHR suction relief valve.	In accordance with the Surveillance Frequency Control Program

Table 3.4.12-1 (Page 1 of 1)

(UNIT 1 ONLY)

Reactor Coolant Pump Operating Restrictions for Low  
Temperature Overpressure Protection

---

Reactor Coolant System Cold Leg Temperature	Maximum Number of Pumps Allowed in Operation
$\geq 70^{\circ}\text{F}$	2
$\geq 126^{\circ}\text{F}$	4

---



Table 3.4.12-1 (Page 1 of 1)

(UNIT 2 ONLY)

Reactor Coolant Pump Operating Restrictions for Low  
Temperature Overpressure Protection

Reactor Coolant System Cold Leg Temperature	Maximum Number of Pumps Allowed in Operation
$\geq 70^{\circ}\text{F}$	1
$\geq 140^{\circ}\text{F}$	4

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 RCS Operational LEAKAGE

LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

- a. No pressure boundary LEAKAGE;
- b. 1 gpm unidentified LEAKAGE;
- c. 10 gpm identified LEAKAGE; and
- d. 150 gallons per day (Unit 1) and 45 gallons per day (Unit 2) primary to secondary LEAKAGE through any one steam generator (SG).

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

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressure boundary LEAKAGE exists.	A.1 Isolate affected component, pipe, or vessel from the RCS by use of a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve.	4 hours
B. RCS operational LEAKAGE not within limits for reasons other than pressure boundary LEAKAGE or primary to secondary LEAKAGE.	B.1 Reduce LEAKAGE to within limits.	4 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. Required Action and associated Completion Time not met.</p> <p><u>OR</u></p> <p>Primary to secondary LEAKAGE not within limit.</p>	<p>C.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>C.2 Be in MODE 5.</p>	<p>6 hours</p> <p>36 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.4.13.1 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Not required to be performed until 12 hours after establishment of steady state operation.</li> <li>2. Not applicable to primary to secondary LEAKAGE.</li> </ol> <p>-----</p> <p>Verify RCS Operational LEAKAGE within limits by performance of RCS water inventory balance.</p>	<p>-----NOTE-----</p> <p>Only required to be performed during steady state operation</p> <p>-----</p> <p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.4.13.2 -----NOTE-----</p> <p>Not required to be performed until 12 hours after establishment of steady state operation.</p> <p>-----</p> <p>Verify primary to secondary LEAKAGE is <math>\leq</math> 150 gallons per day (Unit 1) and <math>\leq</math> 45 gallons per day (Unit 2) through any one SG.</p>	<p>-----NOTE-----</p> <p>Only required to be performed during steady state operation</p> <p>-----</p> <p>In accordance with the Surveillance Frequency Control Program</p>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.14 RCS Pressure Isolation Valve (PIV) Leakage

LCO 3.4.14 Leakage from each RCS PIV shall be within limit.

APPLICABILITY: MODES 1, 2, and 3,  
MODE 4, except valves in the residual heat removal (RHR) flow path when in, or during the transition to or from, the RHR mode of operation.

ACTIONS

-----NOTES-----

1. Separate Condition entry is allowed for each flow path.
  2. Enter applicable Conditions and Required Actions for systems made inoperable by an inoperable PIV.
- 

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One or more flow paths with leakage from one or more RCS PIVs not within limit.</p>	<p>-----NOTE----- Each valve used to satisfy Required Action A.1 must have been verified to meet SR 3.4.14.1 and be in the reactor coolant pressure boundary or the high pressure portion of the system.</p> <p>-----</p>	<p>(continued)</p>



SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.4.14.1 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Not required to be performed in MODES 3 and 4.</li> <li>2. Not required to be performed on the RCS PIVs located in the RHR flow path when in the shutdown cooling mode of operation.</li> <li>3. RCS PIVs actuated during the performance of this Surveillance are not required to be tested more than once if a repetitive testing loop cannot be avoided.</li> </ol> <p>-----</p> <p>Verify leakage from each RCS PIV is equivalent to <math>\leq 0.5</math> gpm per nominal inch of valve size up to a maximum of 5 gpm at an RCS pressure <math>\geq 2215</math> psig and <math>\leq 2255</math> psig.</p>	<p>In accordance with the INSERVICE TESTING PROGRAM</p>
<p>SR 3.4.14.2 Verify RHR system interlock prevents the valves from being opened with a simulated or actual RCS pressure signal <math>\geq 425</math> psig.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.15 RCS Leakage Detection Instrumentation

LCO 3.4.15 The following RCS leakage detection instrumentation shall be OPERABLE:

- a. The containment floor and equipment sump level monitors and the incore instrument sump level alarm;
- b. The containment atmosphere particulate radioactivity monitor; and
- c. The containment ventilation unit condensate drain tank level monitor.

APPLICABILITY: MODE 1 for all instrumentation, MODES 2, 3, and 4 for all instrumentation except the containment atmosphere particulate radioactivity monitor.

ACTIONS

-----NOTE-----  
Separate Condition entry is allowed for each leakage detection instrument.  
-----

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or both containment floor and equipment sump level monitor(s) inoperable.	A.1 -----NOTE----- Not required until 12 hours after establishment of steady state operation. -----  Perform SR 3.4.13.1.	Once per 24 hours
	<u>AND</u>  A.2 Restore inoperable containment floor and equipment sump level monitor(s) to OPERABLE status.	30 days

(continued)



ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. Containment atmosphere particulate radioactivity monitor inoperable.</p>	<p>B.1 -----NOTE----- Not required until 12 hours after establishment of steady state operation. -----</p> <p>Perform SR 3.4.13.1.</p> <p><u>OR</u></p> <p>B.2 Analyze grab samples of the containment atmosphere.</p>	<p>Once per 24 hours</p> <p>Once per 24 hours</p>
<p>C. Containment ventilation unit condensate drain tank level monitor inoperable.</p>	<p>C.1.1 -----NOTE----- Not required until 12 hours after establishment of steady state operation. -----</p> <p>Perform SR 3.4.13.1.</p> <p><u>OR</u></p> <p>C.1.2 Analyze grab samples of the containment atmosphere.</p> <p><u>OR</u></p> <p>C.1.3 Perform SR 3.4.15.1.</p> <p><u>AND</u></p> <p>C.2 During MODES 2, 3, and 4, restore inoperable containment ventilation unit condensate drain tank level monitor to OPERABLE status.</p>	<p>Once per 24 hours</p> <p>Once per 24 hours</p> <p>Once per 8 hours</p> <p>30 days</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. Containment atmosphere particulate radioactivity monitor inoperable in MODE 1.</p> <p><u>AND</u></p> <p>Containment ventilation unit condensate drain tank level monitor inoperable in MODE 1.</p>	<p>D.1 Restore containment atmosphere particulate radioactivity monitor to OPERABLE status.</p> <p><u>OR</u></p> <p>D.2 Restore containment ventilation unit condensate drain tank level monitor to OPERABLE status.</p>	<p>30 days</p> <p>30 days</p>
<p>E. Incore instrument sump level alarm inoperable.</p>	<p>E.1 -----NOTE----- Not required until 12 hours after establishment of steady state operation. -----</p> <p>Perform SR 3.4.13.1.</p>	<p>Once per 24 hours</p>
<p>F. Required Action and associated Completion Time not met.</p>	<p>F.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>F.2 Be in MODE 5.</p>	<p>6 hours</p> <p>36 hours</p>
<p>G. All required monitors inoperable.</p>	<p>G.1 Enter LCO 3.0.3.</p>	<p>Immediately</p>

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.4.15.1 Perform CHANNEL CHECK of the containment atmosphere particulate radioactivity monitor.	In accordance with the Surveillance Frequency Control Program
SR 3.4.15.2 Perform COT of the containment atmosphere particulate radioactivity monitor.	In accordance with the Surveillance Frequency Control Program
SR 3.4.15.3 Perform CHANNEL CALIBRATION of the containment floor and equipment sump level monitors.	In accordance with the Surveillance Frequency Control Program
SR 3.4.15.4 Perform CHANNEL CALIBRATION of the containment atmosphere particulate radioactivity monitor.	In accordance with the Surveillance Frequency Control Program
SR 3.4.15.5 Perform CHANNEL CALIBRATION of the containment ventilation unit condensate drain tank level monitor.	In accordance with the Surveillance Frequency Control Program
SR 3.4.15.6 Perform CHANNEL CALIBRATION of the incore instrument sump level alarm.	In accordance with the Surveillance Frequency Control Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.16 RCS Specific Activity

LCO 3.4.16 RCS DOSE EQUIVALENT I-131 and DOSE EQUIVALENT Xe-133 specific activity shall be within limits.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. DOSE EQUIVALENT I-131 not within limit.	-----Note----- LCO 3.0.4.c is applicable. -----	
	A.1 Verify DOSE EQUIVALENT I-131 $\leq 60 \mu\text{Ci/gm}$ .  <u>AND</u> A.2 Restore DOSE EQUIVALENT I-131 to within limit.	Once per 4 hours  48 hours
B. DOSE EQUIVALENT Xe-133 not within limit.	-----Note----- LCO 3.0.4.c is applicable. -----	
	B.1 Restore DOSE EQUIVALENT Xe-133 to within limit.	48 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met.  <u>OR</u>  DOSE EQUIVALENT I-131 > 60 µCi/gm.	C.1 Be in MODE 3.	6 hours
	<u>AND</u>  C.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.16.1 -----Note----- Only required to be performed in MODE 1, 2, and 3 with RCS average temperature $\geq 500^{\circ}\text{F}$ . ----- Verify reactor coolant DOSE EQUIVALENT Xe-133 specific activity $\leq 280 \mu\text{Ci/gm}$ .	In accordance with the Surveillance Frequency Control Program
SR 3.4.16.2 Verify reactor coolant DOSE EQUIVALENT I-131 specific activity $\leq 1.0 \mu\text{Ci/gm}$ .	In accordance with the Surveillance Frequency Control Program  <u>AND</u>  Between 2 and 6 hours after a THERMAL POWER change of $\geq 15\%$ RTP within a 1 hour period

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.17 RCS Loops — Test Exceptions

LCO 3.4.17 The requirements of LCO 3.4.4, "RCS Loops — MODES 1 and 2," may be suspended, with THERMAL POWER < P-7.

APPLICABILITY: MODES 1 and 2 during startup and PHYSICS TESTS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. THERMAL POWER $\geq$ P-7.	A.1 Open reactor trip breakers.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.17.1 Verify THERMAL POWER is < P-7.	In accordance with the Surveillance Frequency Control Program
SR 3.4.17.2 Perform a COT for each power range neutron flux-low and intermediate range neutron flux channel, P-10, and P-13.	Prior to initiation of startup and PHYSICS TESTS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.18 Steam Generator (SG) Tube Integrity

LCO 3.4.18 SG tube integrity shall be maintained.

AND

All SG tubes satisfying the tube plugging criteria shall be plugged in accordance with the Steam Generator Program.

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

ACTIONS

-----NOTE-----

Separate Condition entry is allowed for each SG tube.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more SG tubes satisfying the tube plugging criteria and not plugged in accordance with the Steam Generator Program.	A.1 Verify tube integrity of the affected tube(s) is maintained until the next inspection.	7 days
	<u>AND</u> A.2 Plug the affected tube(s) in accordance with the Steam Generator Program.	Prior to entering MODE 4 following the next refueling outage or SG tube inspection

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. Required Action and associated Completion Time of Condition A not met.</p> <p><u>OR</u></p> <p>SG tube integrity not maintained.</p>	<p>B.1 Be in MODE 3.</p> <p><u>AND</u></p>	6 hours
	<p>B.2 Be in MODE 5.</p>	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.18.1	Verify SG tube integrity in accordance with the Steam Generator Program.	In accordance with the Steam Generator Program
SR 3.4.18.2	Verify that each inspected SG tube that satisfies the tube plugging criteria is plugged in accordance with the Steam Generator Program.	Prior to entering MODE 4 following a SG tube inspection



3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.1 Accumulators

LCO 3.5.1 Four ECCS accumulators shall be OPERABLE.

APPLICABILITY: MODES 1 and 2,  
MODE 3 with RCS pressure > 1000 psig.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One accumulator inoperable due to boron concentration not within limits.	A.1 Restore boron concentration to within limits.	72 hours
B. One accumulator inoperable for reasons other than Condition A.	B.1 Restore accumulator to OPERABLE status.	24 hours
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3.	6 hours
	<u>AND</u> C.2 Reduce RCS pressure to $\leq$ 1000 psig.	12 hours
D. Two or more accumulators inoperable.	D.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.5.1.1 Verify each accumulator isolation valve is fully open.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.2 Verify borated water volume in each accumulator is $\geq 7630$ gallons and $\leq 8079$ gallons.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.3 Verify nitrogen cover pressure in each accumulator is $\geq 585$ psig and $\leq 678$ psig.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.4 Verify boron concentration in each accumulator is within the limits specified in the COLR.	<p>In accordance with the Surveillance Frequency Control Program</p> <p><u>AND</u></p> <p>-----NOTE----- Only required to be performed for affected accumulators -----</p> <p>Once within 6 hours after each solution volume increase of <math>\geq 75</math> gallons that is not the result of addition from the refueling water storage tank</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.5.1.5 Verify power is removed from each accumulator isolation valve operator when RCS pressure is > 1000 psig.	In accordance with the Surveillance Frequency Control Program

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS — Operating

LCO 3.5.2 Two ECCS trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

-----NOTE-----  
 In MODE 3, both safety injection (SI) pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 3.4.14.1.  
 -----

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more trains inoperable.  <u>AND</u>  At least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available.	A.1 Restore train(s) to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.  <u>AND</u>	6 hours
	B.2 Be in MODE 4.	12 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE			FREQUENCY
SR 3.5.2.1	Verify the following valves are in the listed position with power to the valve operator removed.		In accordance with the Surveillance Frequency Control Program
	<u>Number</u>	<u>Position</u>	
	NI162A	Open	
	NI121A	Closed	
	NI152B	Closed	
	NI183B	Closed	
	NI173A	Open	
	NI178B	Open	
	NI100B	Open	
	NI147B	Open	
			SI Cold Leg Injection
			SI Hot Leg Injection
			SI Hot Leg Injection
			RHR Hot Leg Injection
			RHR Cold Leg Injection
			RHR Cold Leg Injection
			SI Pump Suction from RWST
			SI Pump Mini-Flow
SR 3.5.2.2	<p>-----NOTE-----</p> <p>Not required to be met for system vent flow paths opened under administrative control.</p> <p>-----</p> <p>Verify each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>		In accordance with the Surveillance Frequency Control Program
SR 3.5.2.3	Verify ECCS locations susceptible to gas accumulation are sufficiently filled with water.		In accordance with the Surveillance Frequency Control Program
SR 3.5.2.4	Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.		In accordance with the INSERVICE TESTING PROGRAM

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY		
SR 3.5.2.5	Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program		
SR 3.5.2.6	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program		
SR 3.5.2.7	<p>Verify, for each ECCS throttle valve listed below, each position stop is in the correct position.</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>Centrifugal Charging Pump Injection Throttle <u>Valve Number</u></p> <p>NI14 NI16 NI18 NI20</p> </td> <td style="width: 50%; vertical-align: top;"> <p>Safety Injection Pump Throttle <u>Valve Number</u></p> <p>NI164 NI166 NI168 NI170</p> </td> </tr> </table>	<p>Centrifugal Charging Pump Injection Throttle <u>Valve Number</u></p> <p>NI14 NI16 NI18 NI20</p>	<p>Safety Injection Pump Throttle <u>Valve Number</u></p> <p>NI164 NI166 NI168 NI170</p>	In accordance with the Surveillance Frequency Control Program
<p>Centrifugal Charging Pump Injection Throttle <u>Valve Number</u></p> <p>NI14 NI16 NI18 NI20</p>	<p>Safety Injection Pump Throttle <u>Valve Number</u></p> <p>NI164 NI166 NI168 NI170</p>			
SR 3.5.2.8	Verify, by visual inspection, that the ECCS containment sump strainer assembly is not restricted by debris and shows no evidence of structural distress or abnormal corrosion.	In accordance with the Surveillance Frequency Control Program		

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.3 ECCS — Shutdown

LCO 3.5.3 One ECCS train shall be OPERABLE.

APPLICABILITY: MODE 4.

ACTIONS

-----NOTE-----  
LCO 3.0.4.b is not applicable to ECCS centrifugal charging subsystem.  
-----

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required ECCS residual heat removal (RHR) subsystem inoperable.	A.1 Initiate action to restore required ECCS RHR subsystem to OPERABLE status.	Immediately
B. Required ECCS centrifugal charging subsystem inoperable.	B.1 Restore required ECCS centrifugal charging subsystem to OPERABLE status.	1 hour
C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 5.	24 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY						
<p>SR 3.5.3.1 -----NOTE-----                      An RHR train may be considered OPERABLE during alignment and operation for decay heat removal, if capable of being manually realigned to the ECCS mode of operation.                      -----                      The following SRs are applicable for all equipment required to be OPERABLE:</p> <table> <tr> <td>SR 3.5.2.1</td> <td>SR 3.5.2.7</td> </tr> <tr> <td>SR 3.5.2.3</td> <td>SR 3.5.2.8</td> </tr> <tr> <td>SR 3.5.2.4</td> <td></td> </tr> </table>	SR 3.5.2.1	SR 3.5.2.7	SR 3.5.2.3	SR 3.5.2.8	SR 3.5.2.4		<p>In accordance with applicable SRs</p>
SR 3.5.2.1	SR 3.5.2.7						
SR 3.5.2.3	SR 3.5.2.8						
SR 3.5.2.4							



3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.4 Refueling Water Storage Tank (RWST)

LCO 3.5.4 The RWST shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. RWST boron concentration not within limits.</p> <p><u>OR</u></p> <p>RWST borated water temperature not within limits.</p>	<p>A.1 Restore RWST to OPERABLE status.</p>	<p>8 hours</p>
<p>B. RWST inoperable for reasons other than Condition A.</p>	<p>B.1 Restore RWST to OPERABLE status.</p>	<p>1 hour</p>
<p>C. Required Action and associated Completion Time not met.</p>	<p>C.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>C.2 Be in MODE 5.</p>	<p>6 hours</p> <p>36 hours</p>

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.5.4.1 Verify RWST borated water temperature is $\geq 70^{\circ}\text{F}$ and $\leq 100^{\circ}\text{F}$ .	In accordance with the Surveillance Frequency Control Program
SR 3.5.4.2 Verify RWST borated water volume is $\geq 377,537$ gallons.	In accordance with the Surveillance Frequency Control Program
SR 3.5.4.3 Verify RWST boron concentration is within the limits specified in the COLR.	In accordance with the Surveillance Frequency Control Program

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.5 Seal Injection Flow

LCO 3.5.5 Reactor coolant pump seal injection flow shall be  $\leq$  40 gpm with centrifugal charging pump operating and the charging flow control valve full open.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Seal injection flow not within limit.	A.1 Adjust manual seal injection throttle valves to give a flow within limit with centrifugal charging pump operating and the charging flow control valve full open.	4 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.3.5.1 -----NOTE----- Testing shall consist of voltage sensor relay testing excluding actuation of load shedding diesel start, and time delay times. ----- Perform TADOT.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.3.5.2 Perform CHANNEL CALIBRATION with NOMINAL TRIP SETPOINT and Allowable Value as follows:</p> <p>a. Loss of voltage Allowable Value <math>\geq</math> 3396 V. Loss of voltage NOMINAL TRIP SETPOINT = 3450 V.</p> <p>b. Degraded voltage Allowable Value <math>\geq</math> 3738 V. Degraded voltage NOMINAL TRIP SETPOINT = 3766 V.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

3.6 CONTAINMENT SYSTEMS

3.6.1 Containment

LCO 3.6.1            Containment shall be OPERABLE.

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

ACTIONS

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

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
<p>SR 3.6.1.1 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. The space between each dual-ply bellows assembly on penetrations between the Containment building and annulus shall be vented to the annulus during Type A tests.</li> <li>2. The space between each dual-ply bellows assembly shall be subjected to a low pressure test at 3 to 5 psig to verify no detectable leakage, or the assembly shall be subjected to a leak test with the pressure on the containment side of the assembly at P<sub>a</sub>.</li> </ol> <p>-----</p> <p>Perform required visual examinations and leakage rate testing except for containment air lock testing and valves with resilient seals, in accordance with the Containment Leakage Rate Testing Program.</p>	<p>In accordance with the Containment Leakage Rate Testing Program</p>

3.6 CONTAINMENT SYSTEMS

3.6.2 Containment Air Locks

LCO 3.6.2 Two containment air locks shall be OPERABLE.

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

ACTIONS

-----NOTES-----

1. Entry and exit is permissible to perform repairs on the affected air lock components.
  2. Separate Condition entry is allowed for each air lock.
  3. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when air lock leakage results in exceeding the overall containment leakage rate.
- 

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One or more containment air locks with one containment air lock door inoperable.</p>	<p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Required Actions A.1, A.2, and A.3 are not applicable if both doors in the same air lock are inoperable and Condition C is entered.</li> <li>2. Entry and exit is permissible for 7 days under administrative controls if both air locks are inoperable.</li> </ol> <p>-----</p>	<p>(continued)</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. (continued)</p>	<p>A.1 Verify the OPERABLE door is closed in the affected air lock.</p>	<p>1 hour</p>
	<p><u>AND</u></p>	
	<p>A.2 Lock the OPERABLE door closed in the affected air lock.</p>	<p>24 hours</p>
	<p><u>AND</u></p>	
	<p>A.3 -----NOTE----- Air lock doors in high radiation areas may be verified locked closed by administrative means. -----</p>	
	<p>Verify the OPERABLE door is locked closed in the affected air lock.</p>	<p>Once per 31 days</p>

(continued)



ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME	
<p>B. One or more containment air locks with containment air lock interlock mechanism inoperable.</p>	<p>-----NOTES-----</p> <p>1. Required Actions B.1, B.2, and B.3 are not applicable if both doors in the same air lock are inoperable and Condition C is entered.</p> <p>2. Entry and exit of containment is permissible under the control of a dedicated individual.</p> <p>-----</p>		
	<p>B.1 Verify an OPERABLE door is closed in the affected air lock.</p>		1 hour
	<p><u>AND</u></p> <p>B.2 Lock an OPERABLE door closed in the affected air lock.</p>		24 hours
	<p><u>AND</u></p> <p>B.3 -----NOTE----- Air lock doors in high radiation areas may be verified locked closed by administrative means. -----</p> <p>Verify an OPERABLE door is locked closed in the affected air lock.</p>		Once per 31 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. One or more containment air locks inoperable for reasons other than Condition A or B.</p>	<p>C.1 Initiate action to evaluate overall containment leakage rate per LCO 3.6.1.</p>	<p>Immediately</p>
	<p><u>AND</u></p>	
	<p>C.2 Verify a door is closed in the affected air lock.</p>	<p>1 hour</p>
	<p><u>AND</u></p>	
	<p>C.3 Restore air lock to OPERABLE status.</p>	<p>24 hours</p>
<p>D. Required Action and associated Completion Time not met.</p>	<p>D.1 Be in MODE 3.</p>	<p>6 hours</p>
	<p><u>AND</u></p>	
	<p>D.2 Be in MODE 5.</p>	<p>36 hours</p>

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
<p>SR 3.6.2.1 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test.</li> <li>2. Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1.</li> </ol> <p>-----</p> <p>Perform required air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program.</p>	<p>In accordance with the Containment Leakage Rate Testing Program</p>
<p>SR 3.6.2.2 Perform a pressure test on each inflatable air lock door seal and verify door seal leakage is &lt; 15 sccm.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.6.2.3 Verify only one door in the air lock can be opened at a time.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

3.6 CONTAINMENT SYSTEMS

3.6.3 Containment Isolation Valves

LCO 3.6.3 Each containment isolation valve shall be OPERABLE.

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

ACTIONS

-----NOTES-----

1. Penetration flow path(s) except for containment purge supply and exhaust isolation valves for the lower compartment, upper compartment, instrument room, and the Hydrogen Purge System flow paths may be unisolated intermittently under administrative controls.
2. Separate Condition entry is allowed for each penetration flow path.
3. Enter applicable Conditions and Required Actions for systems made inoperable by containment isolation valves.
4. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when isolation valve leakage results in exceeding the overall containment leakage rate acceptance criteria.

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. -----NOTE----- Only applicable to penetration flow paths with two containment isolation valves. ----- One or more penetration flow paths with one containment isolation valve inoperable except for purge valve or reactor building bypass leakage not within limit.</p>	<p>A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve inside containment with flow through the valve secured.</p> <p><u>AND</u></p>	<p>4 hours</p> <p style="text-align: right;">(continued)</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. (continued)</p>	<p>A.2 -----NOTES-----            1. Isolation devices in high radiation areas may be verified by use of administrative means.             2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means.            -----             Verify the affected penetration flow path is isolated.</p>	<p>Once per 31 days for isolation devices outside containment   <u>AND</u>             Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment</p>
<p>B. -----NOTE-----            Only applicable to penetration flow paths with two containment isolation valves.            -----             One or more penetration flow paths with two containment isolation valves inoperable except for purge valve or reactor building bypass leakage not within limit.</p>	<p>B.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.</p>	<p>1 hour</p>

(continued)





**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
<p>SR 3.6.3.1 Verify each containment purge supply and exhaust isolation valves for the lower compartment and the upper compartment, instrument room, and the Hydrogen Purge System is sealed closed, except for one purge valve in a penetration flow path while in Condition E of this LCO.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.6.3.2 Verify each Containment Air Release and Addition System isolation valve is closed, except when the valves are open for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.6.3.3 -----NOTE----- Valves and blind flanges in high radiation areas may be verified by use of administrative controls. -----  Verify each containment isolation manual valve and blind flange that is located outside containment or annulus and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)



SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.6.3.4 -----NOTE----- Valves and blind flanges in high radiation areas may be verified by use of administrative means. ----- Verify each containment isolation manual valve and blind flange that is located inside containment or annulus and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.</p>	<p>Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days</p>
<p>SR 3.6.3.5 Verify the isolation time of automatic power operated containment isolation valve is within limits.</p>	<p>In accordance with the INSERVICE TESTING PROGRAM</p>
<p>SR 3.6.3.6 Perform leakage rate testing for Containment Purge System, Hydrogen Purge System, and Containment Air Release and Addition System valves with resilient seals.</p>	<p>In accordance with the Containment Leakage Rate Testing Program</p>
<p>SR 3.6.3.7 Verify each automatic containment isolation valve that is not locked, sealed or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.6.3.8 Verify the combined leakage rate for all reactor building bypass leakage paths is $\leq 0.07 L_a$ when pressurized to $\geq 14.68$ psig.	In accordance with the Containment Leakage Rate Testing Program

3.6 CONTAINMENT SYSTEMS

3.6.4 Containment Pressure

LCO 3.6.4 Containment pressure shall be  $\geq -0.1$  psig and  $\leq +0.3$  psig.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

3.6 CONTAINMENT SYSTEMS

3.6.5 Containment Air Temperature

LCO 3.6.5 Containment average air temperature shall be:

- a.  $\geq 75^{\circ}\text{F}$  and  $\leq 100^{\circ}\text{F}$  for the containment upper compartment, and
- b.  $\geq 100^{\circ}\text{F}$  and  $\leq 120^{\circ}\text{F}$  for the containment lower compartment.

-----NOTE-----  
The minimum containment average air temperature in MODES 2, 3, and 4 may be reduced to 60°F.  
-----

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

ACTIONS

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

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.6.5.1 Verify containment upper compartment average air temperature is within limits.	In accordance with the Surveillance Frequency Control Program
SR 3.6.5.2 Verify containment lower compartment average air temperature is within limits.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.6 Containment Spray System

LCO 3.6.6 Two containment spray trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One containment spray train inoperable.	A.1 Restore containment spray train to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	84 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.6.6.1 -----NOTE----- Not required to be met for system vent flow paths opened under administrative control.</p> <p>-----</p> <p>Verify each containment spray manual and power operated valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.6.6.2 Verify each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the INSERVICE TESTING PROGRAM
SR 3.6.6.3 Deleted.	
SR 3.6.6.4 Deleted.	
SR 3.6.6.5 Verify that each spray pump is de-energized and prevented from starting upon receipt of a terminate signal and is allowed to manually start upon receipt of a start permissive from the Containment Pressure Control System (CPCS).	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.6 Verify that each spray pump discharge valve closes or is prevented from opening upon receipt of a terminate signal and is allowed to manually open upon receipt of a start permissive from the Containment Pressure Control System (CPCS).	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.7 Verify each spray nozzle is unobstructed.	Following activities which could result in nozzle blockage
SR 3.6.6.8 Verify containment spray locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.8 Hydrogen Skimmer System (HSS)

LCO 3.6.8 Two HSS trains shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One HSS train inoperable.	A.1 Restore HSS train to OPERABLE status	30 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours



**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.6.8.1 Operate each HSS train for $\geq 15$ minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.6.8.2 Verify the fan motor current is $\leq 69$ amps when the fan speed is $\geq 3560$ rpm and $\leq 3600$ rpm with the hydrogen skimmer fan operating and the motor operated suction valve closed.	In accordance with the Surveillance Frequency Control Program
SR 3.6.8.3 Verify the motor operated suction valve opens automatically and the fans receive a start permissive signal.	In accordance with the Surveillance Frequency Control Program
SR 3.6.8.4 Verify each HSS train starts on an actual or simulated actuation signal after a delay of $\geq 8$ minutes and $\leq 10$ minutes.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.9 Hydrogen Ignition System (HIS)

LCO 3.6.9 Two HIS trains shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One HIS train inoperable.	A.1 Restore HIS train to OPERABLE status.	7 days
	<u>OR</u> A.2 Perform SR 3.6.9.1 on the OPERABLE train.	Once per 7 days
B. One containment region with no OPERABLE hydrogen ignitor.	B.1 Restore one hydrogen ignitor in the affected containment region to OPERABLE status.	7 days
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	6 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.6.9.1 Energize each HIS train power supply breaker and verify $\geq 34$ ignitors are energized in each train.	In accordance with the Surveillance Frequency Control Program
SR 3.6.9.2 Verify at least one hydrogen ignitor is OPERABLE in each containment region.	In accordance with the Surveillance Frequency Control Program
SR 3.6.9.3 Energize each hydrogen ignitor and verify temperature is $\geq 1700^{\circ}\text{F}$ .	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.10 Annulus Ventilation System (AVS)

LCO 3.6.10 Two AVS trains shall be OPERABLE.

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

ACTIONS

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

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.6.10.1 Operate each AVS train for $\geq 15$ continuous minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.6.10.2 Perform required AVS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.6.10.3 Verify each AVS train actuates on an actual or simulated actuation signal, except for dampers and valves that are locked, sealed, or otherwise secured in the actuated position.	In accordance with the Surveillance Frequency Control Program
SR 3.6.10.4 Verify each AVS filter cooling bypass valve can be opened, except for valves that are locked, sealed, or otherwise secured in the open position.	In accordance with the Surveillance Frequency Control Program
SR 3.6.10.5 Verify each AVS train flow rate is $\geq 8100$ cfm and $\leq 9900$ cfm.	In accordance with the Surveillance Frequency Control Program
SR 3.6.10.6 Verify each AVS train produces a pressure equal to or more negative than -0.88 inch water gauge when corrected to elevation 564 feet.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.11 Air Return System (ARS)

LCO 3.6.11 Two ARS trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ARS train inoperable.	A.1 Restore ARS train to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.11.1 Verify each ARS fan starts on an actual or simulated actuation signal, after a delay of $\geq 8.0$ minutes and $\leq 10.0$ minutes, and operates for $\geq 15$ minutes.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.6.11.2 Verify, with the ARS air return fan damper closed and with the bypass dampers open, each ARS fan motor current is <math>\leq 59.0</math> amps when the fan speed is <math>\geq 1174</math> rpm and <math>\leq 1200</math> rpm.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.6.11.3 Verify, with the ARS fan not operating, each ARS motor operated damper opens automatically on an actual or simulated actuation signal after a delay of <math>\geq 9</math> seconds and <math>\leq 11</math> seconds.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.6.11.4 Verify the check damper is open with the ARS fan operating.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.6.11.5 Verify the check damper is closed with the ARS fan not operating.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.6.11.6 Verify that each ARS fan is de-energized or is prevented from starting upon receipt of a terminate signal from the Containment Pressure Control System (CPCS) and is allowed to start upon receipt of a start permissive from the CPCS.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.6.11.7 Verify that each ARS fan motor-operated damper is prevented from opening in the absence of a start permissive from the Containment Pressure Control System (CPCS) and is allowed to open upon receipt of a start permissive from the CPCS.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

3.6 CONTAINMENT SYSTEMS

3.6.12 Ice Bed

LCO 3.6.12 The ice bed shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Ice bed inoperable.	A.1 Restore ice bed to OPERABLE status.	48 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.12.1 Verify maximum ice bed temperature is $\leq 27^{\circ}\text{F}$ .	In accordance with the Surveillance Frequency Control Program

(continued)



SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.6.12.2 -----NOTE----- The chemical analysis may be performed on either the liquid solution or on the resulting ice. -----</p> <p>Verify, by chemical analysis, that ice added to the ice condenser meets the boron concentration and pH requirements of SR 3.6.12.7.</p>	<p>Each ice addition</p>
<p>SR 3.6.12.3 Verify, by visual inspection, accumulation of ice on structural members comprising flow channels through the ice bed is <math>\leq</math> 15 percent blockage of the total flow area for each safety analysis section.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.6.12.4 Verify total mass of stored ice is <math>\geq</math> 2,132,000 lbs by calculating the mass of stored ice, at a 95 percent confidence, in each of three Radial Zones as defined below, by selecting a random sample of <math>\geq</math> 30 ice baskets in each Radial Zone, and</p> <p>Verify:</p> <ol style="list-style-type: none"> <li>1. Zone A (radial rows 8, 9), has a total mass of <math>\geq</math> 324,000 lbs</li> <li>2. Zone B (radial rows 4, 5, 6, 7), has a total mass of <math>\geq</math> 1,033,100 lbs</li> <li>3. Zone C (radial rows 1, 2, 3), has a total mass of <math>\geq</math> 774,900 lbs</li> </ol>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.6.12.5 Verify that the ice mass of each basket sampled in SR 3.6.12.4 is <math>\geq</math> 600 lbs.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.6.12.6 Visually inspect, for detrimental structural wear, cracks, corrosion, or other damage, two ice baskets from each group of bays as defined below:</p> <ul style="list-style-type: none"> <li>a. Group 1 – bays 1 through 8;</li> <li>b. Group 2 – bays 9 through 16; and</li> <li>c. Group 3 – bays 17 through 24.</li> </ul>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.6.12.7 ----- NOTE -----            The requirements of this SR are satisfied if the boron concentration and pH values obtained from averaging the individual sample results are within the limits specified below.</p> <hr/> <p>Verify, by chemical analysis of the stored ice in at least one randomly selected ice basket from each ice condenser bay, that ice bed:</p> <ul style="list-style-type: none"> <li>a. Boron concentration is <math>\geq 1800</math> ppm and <math>\leq 2330</math> ppm; and</li> <li>b. pH is <math>\geq 9.0</math> and <math>\leq 9.5</math>.</li> </ul>	<p>In accordance with the Surveillance Frequency Control Program</p>

3.6 CONTAINMENT SYSTEMS

3.6.13 Ice Condenser Doors

LCO 3.6.13 The ice condenser lower inlet doors, intermediate deck doors, and top deck doors shall be OPERABLE and closed.

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

ACTIONS

-----NOTES-----

1. Separate Condition entry is allowed for each ice condenser door.
  2. Entry into Condition B is not required due to personnel standing on or opening an intermediate deck or top deck door for short durations to perform required surveillances, minor maintenance such as ice removal, or routine tasks such as system walkdowns.
- 

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more ice condenser lower inlet doors inoperable due to being physically restrained from opening.	A.1 Restore lower inlet door to OPERABLE status.	1 hour
B. One or more ice condenser doors inoperable for reasons other than Condition A or not closed.	B.1 Verify maximum ice bed temperature is $\leq 27^{\circ}\text{F}$ .	Once per 4 hours
	<u>AND</u> B.2 Restore ice condenser door to OPERABLE status and closed position.	14 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition B not met.	C.1 Restore ice condenser door to OPERABLE status and closed positions.	48 hours
D. Required Action and associated Completion Time of Condition A or C not met.	D.1 Be in MODE 3.	6 hours
	<u>AND</u> D.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.13.1 Verify all lower inlet doors indicate closed by the Inlet Door Position Monitoring System.	In accordance with the Surveillance Frequency Control Program
SR 3.6.13.2 Verify, by visual inspection, each intermediate deck door is closed and not impaired by ice, frost, or debris.	In accordance with the Surveillance Frequency Control Program
SR 3.6.13.3 Verify, by visual inspection, each top deck door: <ul style="list-style-type: none"> <li>a. Is in place; and</li> <li>b. Has no condensation, frost, or ice formed on the door that would restrict its opening.</li> </ul>	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.6.13.4 Verify, by visual inspection, each lower inlet door is not impaired by ice, frost, or debris.	In accordance with the Surveillance Frequency Control Program
SR 3.6.13.5 Verify torque required to cause each lower inlet door to begin to open is $\leq 675$ in-lb and verify free movement of the door.	In accordance with the Surveillance Frequency Control Program
SR 3.6.13.6 Deleted.	
SR 3.6.13.7 Verify for each intermediate deck door: <ul style="list-style-type: none"> <li>a. No visual evidence of structural deterioration;</li> <li>b. Free movement of the vent assemblies; and</li> <li>c. Free movement of the door.</li> </ul>	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.14 Divider Barrier Integrity

LCO 3.6.14 Divider barrier integrity shall be maintained.

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

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. -----NOTE----- For this action, separate Condition entry is allowed for each personnel access door or equipment hatch. -----</p> <p>One or more personnel access doors or equipment hatches other than the pressurizer enclosure hatch open or inoperable, other than for personnel transit entry.</p>	<p>A.1 Restore personnel access doors and equipment hatches to OPERABLE status and closed positions.</p>	<p>1 hour</p>
<p>B. Pressurizer enclosure hatch open or inoperable.</p>	<p>B.1 Restore pressurizer enclosure hatch to OPERABLE status and closed position.</p>	<p>6 hours</p>
<p>C. Divider barrier seal inoperable.</p>	<p>C.1 Restore seal to OPERABLE status.</p>	<p>1 hour</p>

(continued)

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.14.1 Verify, by visual inspection, all personnel access doors and equipment hatches between upper and lower containment compartments are closed.	Prior to entering MODE 4 from MODE 5
SR 3.6.14.2 Verify, by visual inspection, that the seals and sealing surfaces of each personnel access door and equipment hatch have:  a. No detrimental misalignments;  b. No cracks or defects in the sealing surfaces; and  c. No apparent deterioration of the seal material.	Prior to final closure after each opening  <u>AND</u>  -----NOTE----- Only required for seals made of resilient materials -----  In accordance with the Surveillance Frequency Control Program
SR 3.6.14.3 Verify, by visual inspection, each personnel access door or equipment hatch that has been opened for personnel transit entry is closed.	After each opening

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.6.14.4 Remove two divider barrier seal test coupons and verify both test coupons' tensile strength is $\geq 39.7$ lbs.	In accordance with the Surveillance Frequency Control Program
SR 3.6.14.5 Visually inspect $\geq 95\%$ of the divider barrier seal length, and verify: <ul style="list-style-type: none"> <li>a. Seal and seal mounting bolts are properly installed; and</li> <li>b. Seal material shows no evidence of deterioration due to holes, ruptures, chemical attack, abrasion, radiation damage, or changes in physical appearance.</li> </ul>	In accordance with the Surveillance Frequency Control Program



3.6 CONTAINMENT SYSTEMS

3.6.15 Containment Recirculation Drains

LCO 3.6.15      The ice condenser floor drains and the refueling canal drains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A.    One ice condenser floor drain inoperable.	A.1    Restore ice condenser floor drain to OPERABLE status.	1 hour
B.    One refueling canal drain inoperable.	B.1    Restore refueling canal drain to OPERABLE status.	1 hour
C.    Required Action and associated Completion Time not met.	C.1    Be in MODE 3.	6 hours
	<u>AND</u> C.2    Be in MODE 5.	36 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE REQUIREMENTS	FREQUENCY
<p>SR 3.6.15.1 Verify, by visual inspection, that:</p> <ul style="list-style-type: none"> <li>a. Each refueling canal drain valve is locked open; and</li> <li>b. Each refueling canal drain is not obstructed by debris.</li> </ul>	<p>Prior to entering MODE 4 from MODE 5 after each partial or complete fill of the canal</p>
<p>SR 3.6.15.2 Verify, by visual inspection that no debris is present in the upper compartment or refueling canal that could obstruct the refueling canal drain.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.6.15.3 Verify for each ice condenser floor drain that the:</p> <ul style="list-style-type: none"> <li>a. Valve opening is not impaired by ice, frost, or debris;</li> <li>b. Valve seat shows no evidence of damage;</li> <li>c. Valve opening force is <math>\leq 66</math> lb; and</li> <li>d. Drain line from the ice condenser floor to the lower compartment is unrestricted.</li> </ul>	<p>In accordance with the Surveillance Frequency Control Program</p>

3.6 CONTAINMENT SYSTEMS

3.6.16 Reactor Building

LCO 3.6.16 The reactor building shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Reactor building inoperable.	A.1 Restore reactor building to OPERABLE status.	24 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.16.1 Verify the door in each access opening is closed, except when the access opening is being used for normal transit entry and exit.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.6.16.2 Verify that during the annulus vacuum decay test, the vacuum decay time is $\geq 87$ seconds.	In accordance with the Surveillance Frequency Control Program
SR 3.6.16.3 Verify reactor building structural integrity by performing a visual inspection of the exposed interior and exterior surfaces of the reactor building.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.17 Containment Valve Injection Water System (CVIWS)

LCO 3.6.17 Two CVIWS trains shall be OPERABLE.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.17.1 Verify system surge tanks pressure is $\geq 36.4$ psig.	31 days
SR 3.6.17.2 Verify valve injection flow rate is $< 1.29$ gpm (Unit 1) $< 1.21$ gpm (Unit 2) for Train A and $< 1.16$ gpm for Train B with a surge tank pressure $\geq 36.4$ psig.	18 months
SR 3.6.17.3 Verify each automatic valve actuates to its correct position on an actual or simulated actuation signal, except for valves that are locked, sealed, or otherwise secured in the actuated position.	18 months

3.7 PLANT SYSTEMS

3.7.1 Main Steam Safety Valves (MSSVs)

LCO 3.7.1 The MSSVs shall be OPERABLE as specified in Table 3.7.1-1 and Table 3.7.1-2.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required MSSVs inoperable.	A.1 Reduce power to less than or equal to the applicable % RTP listed in Table 3.7.1-1.	4 hours
	<u>AND</u> A.2 Reduce the Power Range Neutron Flux High Trip Setpoints to the % RTP value listed in Table 3.7.1-1.	4 hours
B. Required Action and associated Completion Time not met.  <u>OR</u> One or more steam generators with less than two MSSVs OPERABLE.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 4.	12 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
<p>SR 3.7.1.1 -----NOTE-----            Only required to be performed prior to entry into            MODE 2.            -----            Verify each required MSSV lift setpoint per Table 3.7.1-2            in accordance with the INSERVICE TESTING            PROGRAM. Following testing, lift setting shall be within            ±1%.</p>	<p>In accordance with            the INSERVICE            TESTING            PROGRAM</p>

Table 3.7.1-1 (page 1 of 1)  
OPERABLE Main Steam Safety Valves versus  
Maximum Allowable Power Range Neutron Flux High  
Setpoints in Percent of RATED THERMAL POWER

MINIMUM NUMBER OF MSSVs PER STEAM GENERATOR REQUIRED OPERABLE	MAXIMUM ALLOWABLE POWER RANGE NEUTRON FLUX HIGH SETPOINTS (% RTP)	
	<u>Unit 1</u> ≤ 57	<u>Unit 2</u> ≤ 58
4	≤ 40	≤ 41
3	≤ 24	≤ 24
2		

Table 3.7.1-2 (page 1 of 1)  
Main Steam Safety Valve Lift Settings

VALVE NUMBER				LIFT SETTING (psig ± 3%)
<u>STEAM GENERATOR</u>				
A	B	C	D	
SV-20	SV-14	SV-8	SV-2	1175
SV-21	SV-15	SV-9	SV-3	1190
SV-22	SV-16	SV-10	SV-4	1205
SV-23	SV-17	SV-11	SV-5	1220
SV-24	SV-18	SV-12	SV-6	1230



3.7 PLANT SYSTEMS

3.7.2 Main Steam Isolation Valves (MSIVs)

LCO 3.7.2 Four MSIVs shall be OPERABLE.

APPLICABILITY: MODE 1,  
MODES 2 and 3 except when MSIVs are closed and de-activated.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One MSIV inoperable in MODE 1.	A.1 Restore MSIV to OPERABLE status.	8 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 2.	6 hours
C. -----NOTE----- Separate Condition entry is allowed for each MSIV. -----  One or more MSIVs inoperable in MODE 2 or 3.	C.1 Close MSIV.  <u>AND</u>  C.2 Verify MSIV is closed.	8 hours   Once per 7 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3.	6 hours
	<u>AND</u> D.2 Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.2.1 -----NOTE----- Only required to be performed prior to entry into MODE 2. ----- Verify closure time of each MSIV is within limits on an actual or simulated actuation signal.	In accordance with the INSERVICE TESTING PROGRAM



MFIVs, MFCVs, Associated Bypass Valves and Tempering Valves  
3.7.3

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One or more MFIV or MFCV bypass valves inoperable.	C.1 Close or isolate bypass valve.	72 hours
	<u>AND</u> C.2 Verify bypass valve is closed or isolated.	Once per 7 days
D. Two valves in the same flow path or the tempering valve inoperable.	D.1 Isolate affected flow path.	8 hours
E. Required Action and associated Completion Time not met.	E.1 Be in MODE 3.	6 hours
	<u>AND</u> E.2 Be in MODE 4.	12 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.7.3.1 Verify the closure time of each MFIV, MFCV, their associated bypass valve, and the tempering valve is within limits on an actual or simulated actuation signal.	In accordance with the INSERVICE TESTING PROGRAM

3.7 PLANT SYSTEMS

3.7.4 Steam Generator Power Operated Relief Valves (SG PORVs)

LCO 3.7.4 Four SG PORV lines shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,  
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SG PORV line inoperable.	A.1 Restore SG PORV line to OPERABLE status.	7 days
B. Two or more SG PORV lines inoperable.	B.1 Restore all but one SG PORV line to OPERABLE status.	24 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	6 hours
	<u>AND</u> C.2 Be in MODE 4 without reliance upon steam generator for heat removal.	24 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.7.4.1 Verify one of the nitrogen bottles on each SG PORV is pressurized $\geq$ 2100 psig.	In accordance with the Surveillance Frequency Control Program
SR 3.7.4.2 Verify one complete cycle of each SG PORV.	In accordance with the Surveillance Frequency Control Program
SR 3.7.4.3 Verify one complete cycle of each SG PORV block valve.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.5 Auxiliary Feedwater (AFW) System

LCO 3.7.5 Three AFW trains shall be OPERABLE.

-----NOTE-----  
Only one AFW train, which includes a motor driven pump, is required to be OPERABLE in MODE 4.  
-----

APPLICABILITY: MODES 1, 2, and 3,  
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

-----NOTE-----  
LCO 3.0.4.b is not applicable when entering MODE 1.  
-----

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One steam supply to turbine driven AFW pump inoperable.</p> <p><u>OR</u></p> <p>-----NOTE----- Only applicable if Mode 2 has not been entered following refueling. -----</p> <p>One turbine driven AFW pump inoperable in MODE 3 following refueling.</p>	<p>A.1 Restore affected equipment to OPERABLE status.</p>	<p>7 days</p>
<p>B. One AFW train inoperable in MODE 1, 2 or 3 for reasons other than Condition A.</p>	<p>B.1 Restore AFW train to OPERABLE status.</p>	<p>72 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. Required Action and associated Completion Time for Condition A or B not met.</p> <p><u>OR</u></p> <p>Two AFW trains inoperable in MODE 1, 2, or 3.</p>	<p>C.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>C.2 Be in MODE 4.</p>	<p>6 hours</p> <p>12 hours</p>
<p>D. Three AFW trains inoperable in MODE 1, 2, or 3.</p>	<p>D.1 -----NOTE-----                      LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status.                      -----</p> <p>Initiate action to restore one AFW train to OPERABLE status.</p>	<p>Immediately</p>
<p>E. Required AFW train inoperable in MODE 4.</p>	<p>E.1 Initiate action to restore AFW train to OPERABLE status.</p>	<p>Immediately</p>



**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
<p>SR 3.7.5.1 -----NOTE----- Not applicable to automatic valves when THERMAL POWER is <math>\leq</math> 10% RTP. -----</p> <p>Verify each AFW manual, power operated, and automatic valve in each water flow path, and in both steam supply flow paths to the steam turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.7.5.2 -----NOTE----- Not required to be performed for the turbine driven AFW pump until 24 hours after <math>\geq</math> 600 psig in the steam generator. -----</p> <p>Verify the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head.</p>	<p>In accordance with the INSERVICE TESTING PROGRAM</p>
<p>SR 3.7.5.3 -----NOTE----- Not applicable in MODE 4 when steam generator is relied upon for heat removal. -----</p> <p>Verify each AFW automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.7.5.4 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Not required to be performed for the turbine driven AFW pump until 24 hours after <math>\geq</math> 600 psig in the steam generator.</li> <li>2. Not applicable in MODE 4 when steam generator is relied upon for heat removal.</li> </ol> <p>-----</p> <p>Verify each AFW pump starts automatically on an actual or simulated actuation signal.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.7.5.5 Verify proper alignment of the required AFW flow paths by verifying flow from the condensate storage system to each steam generator.</p>	<p>Prior to entering MODE 2, whenever unit has been in MODE 5 or 6 for &gt; 30 days</p>

3.7 PLANT SYSTEMS

3.7.6 Condensate Storage System (CSS)

LCO 3.7.6 The CSS inventory shall be  $\geq$  225,000 gal.

APPLICABILITY: MODES 1, 2, and 3,  
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. CSS inventory not within limit.</p>	<p>A.1 Verify by administrative means OPERABILITY of assured water supply.</p> <p><u>AND</u></p> <p>A.2 Restore CSS inventory to within limit.</p>	<p>4 hours</p> <p><u>AND</u></p> <p>Once per 12 hours thereafter</p> <p>7 days</p>
<p>B. Required Action and associated Completion Time not met.</p>	<p>B.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>B.2 Be in MODE 4, without reliance on steam generator for heat removal.</p>	<p>6 hours</p> <p>24 hours</p>

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.7.6.1 Verify the CSS inventory is $\geq$ 225,000 gal.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.7 Component Cooling Water (CCW) System

LCO 3.7.7 Two CCW trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One CCW train inoperable.</p>	<p>A.1 -----NOTE----- Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops—MODE 4," for residual heat removal loops made inoperable by CCW. ----- Restore CCW train to OPERABLE status.</p>	<p>72 hours</p>
<p>B. Required Action and associated Completion Time of Condition A not met.</p>	<p>B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 5.</p>	<p>6 hours  36 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.7.1 -----NOTE----- Isolation of CCW flow to individual components does not render the CCW System inoperable.</p> <p>Verify each CCW manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.7.7.2 Verify each CCW automatic valve in the flow path servicing safety related equipment that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.7.7.3 Verify each CCW pump starts automatically on an actual or simulated actuation signal.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

3.7 PLANT SYSTEMS

3.7.8 Nuclear Service Water System (NSWS)

LCO 3.7.8 Two NSWS trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. <del>NOTE</del> Not applicable while in Condition C of this LCO unless entry is directed by Note 2 of Condition C.</p> <hr/> <p>One NSWS train inoperable.</p>	<p>A.1 <del>NOTES</del></p> <ol style="list-style-type: none"> <li>1. Enter applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources—Operating," for emergency diesel generator made inoperable by NSWS.</li> <li>2. Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops—MODE 4," for residual heat removal loops made inoperable by NSWS.</li> </ol> <hr/> <p>Restore NSWS train to OPERABLE status.</p>	<p>72 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Entry into this Condition shall only be allowed for pre-planned activities as described in the Bases of this Specification.</li> <li>2. Immediately enter Condition A of this LCO if one or more NSWS components become inoperable while in this Condition and one NSWS train remains OPERABLE.</li> <li>3. Immediately enter LCO 3.0.3 if one or more NSWS components become inoperable while in this Condition and no NSWS train remains OPERABLE.</li> </ol> <p>-----</p> <p>One NSWS supply header inoperable due to NSWS being aligned for single supply header operation.</p>	<p>B.1 Restore NSWS supply header to OPERABLE status.</p>	<p>30 days</p>

(continued)



ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Entry into this Condition shall only be allowed for Unit 1 and for pre-planned activities as described in the Bases of this Specification. Entry into this Condition shall not be allowed while Unit 2 is in MODE 1, 2, 3, or 4.</li> <li>2. Immediately enter Condition A of this LCO if one or more Unit 1 required NSWS components become inoperable while in this Condition and one NSWS train remains OPERABLE.</li> <li>3. Immediately enter LCO 3.0.3 if one or more Unit 1 required NSWS components become inoperable while in this Condition and no NSWS train remains OPERABLE.</li> </ol> <p>-----</p> <p>One NSWS train inoperable due to NSWS being aligned for single Auxiliary Building discharge header operation.</p>	<p>C.1 Restore NSWS train to OPERABLE status.</p>	<p>14 days</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Entry into this Condition shall only be allowed for pre-planned activities.</li> <li>2. Immediately enter Condition A of this LCO if one or more NSWS components become inoperable while in this Condition and one NSWS train remains OPERABLE.</li> <li>3. Immediately enter LCO 3.0.3 if one or more NSWS components become inoperable while in this Condition and no NSWS train remains OPERABLE.</li> <li>4. Entry into this Condition shall only be allowed for 60 days per 12-month period.</li> </ol> <p>-----</p> <p>One NSWS Pond return header inoperable due to NSWS being aligned for single Pond return header operation.</p>	<p>D.1 Restore NSWS Pond return header to OPERABLE status.</p>	<p>30 days</p>

(continued)

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.8.1 -----NOTE----- Isolation of NSWS flow to individual components does not render the NSWS inoperable. -----</p> <p>Verify each NSWS manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	In accordance with the Surveillance Frequency Control Program
<p>SR 3.7.8.2 -----NOTE----- Not required to be met for valves that are maintained in position to support NSWS single supply header operation, single Auxiliary Building discharge header operation, or single Pond return header operation. -----</p> <p>Verify each NSWS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.</p>	In accordance with the Surveillance Frequency Control Program
<p>SR 3.7.8.3 Verify each NSWS pump starts automatically on an actual or simulated actuation signal.</p>	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.9 Standby Nuclear Service Water Pond (SNSWP)

LCO 3.7.9 The SNSWP shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SNSWP inoperable.	A.1 Be in MODE 3.	6 hours
	<u>AND</u> A.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.9.1 Verify water level of SNSWP is $\geq$ 571 ft mean sea level.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.7.9.2 -----NOTE-----  Only required to be performed during the months of July, August, and September.  -----  Verify average water temperature of SNSWP is <math>\leq</math> 95°F at an elevation of 568 ft. in SNSWP.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.7.9.3 Verify, by visual inspection, no abnormal degradation, erosion, or excessive seepage of the SNSWP dam.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

3.7 PLANT SYSTEMS

3.7.10 Control Room Area Ventilation System (CRAVS)

LCO 3.7.10 Two CRAVS trains shall be OPERABLE.

-----NOTE-----  
The control room envelope (CRE) boundary may be opened intermittently under administrative controls.  
-----

APPLICABILITY: MODES 1, 2, 3, 4, 5, and 6,  
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CRAVS train inoperable for reasons other than Condition B.	A.1 Restore CRAVS train to OPERABLE status.	7 days
B. One or more CRAVS trains inoperable due to inoperable CRE boundary in MODES 1, 2, 3, or 4.	B.1 Initiate action to implement mitigating actions.	Immediately
	<u>AND</u> B.2 Verify mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits.	24 hours
	<u>AND</u> B.3 Restore CRE boundary to OPERABLE status.	90 days

(continued)

REQUIRED ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4.</p>	<p>C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 5.</p>	<p>6 hours  36 hours</p>
<p>D. Required Action and associated Completion Time of Condition A not met in MODE 5 or 6 or during movement of irradiated fuel assemblies.</p>	<p>D.1 Place OPERABLE CRAVS train in operation. <u>OR</u> D.2 Suspend movement of irradiated fuel assemblies.</p>	<p>Immediately  Immediately</p>
<p>E. Two CRAVS trains inoperable in MODE 5 or 6, or during movement of irradiated fuel assemblies.  <u>OR</u>  One or more CRAVS trains inoperable due to an inoperable CRE boundary in MODE 5 or 6, or during movement of irradiated fuel assemblies.</p>	<p>E.1 Suspend movement of irradiated fuel assemblies.</p>	<p>Immediately</p>
<p>F. Two CRAVS trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.</p>	<p>F.1 Enter LCO 3.0.3.</p>	<p>Immediately</p>

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.7.10.1 Operate each CRAVS train for $\geq$ 15 continuous minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.7.10.2 Perform required CRAVS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with VFTP
SR 3.7.10.3 Verify each CRAVS train actuates on an actual or simulated actuation signal, except for dampers and valves that are locked, sealed, or otherwise secured in the actuated position.	In accordance with the Surveillance Frequency Control Program
SR 3.7.10.4 Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.	In accordance with the Control Room Envelope Habitability Program



3.7 PLANT SYSTEMS

3.7.11 Control Room Area Chilled Water System (CRACWS)

LCO 3.7.11 Two CRACWS trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, 4, 5, and 6,  
During movement of recently irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CRACWS train inoperable.	A.1 Restore CRACWS train to OPERABLE status.	30 days
B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, 3, or 4.	B.1 Be in MODE 3. <u>AND</u>	6 hours
	B.2 Be in MODE 5.	36 hours
C. Required Action and associated Completion Time of Condition A not met in MODE 5 or 6, or during movement of recently irradiated fuel assemblies.	C.1 Place OPERABLE CRACWS train in operation. <u>OR</u>	Immediately
	C.2 Suspend movement of recently irradiated fuel assemblies.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. Two CRACWS trains inoperable.</p>	<p>D.1 Implement mitigating actions.</p> <p><u>AND</u></p> <p>D.2 Verify control room temperature <math>\leq 80^{\circ}\text{F}</math>.</p> <p><u>AND</u></p> <p>D.3 Restore one CRACWS train to OPERABLE status.</p>	<p>Immediately</p> <p>Immediately and once per hour thereafter</p> <p>24 hours</p>
<p>E. Required Action and associated Completion Time of Condition D not met in MODE 1, 2, 3, or 4.</p>	<p>E.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>E.2 Be in MODE 5.</p>	<p>6 hours</p> <p>36 hours</p>
<p>F. Required Action and associated Completion Time of Condition D not met in MODE 5 or 6, or during movement of recently irradiated fuel assemblies.</p>	<p>F.1 Suspend movement of recently irradiated fuel assemblies.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.11.1 Verify the control room temperature is <math>\leq 90^{\circ}\text{F}</math>.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

3.7 PLANT SYSTEMS

3.7.12 Auxiliary Building Filtered Ventilation Exhaust System (ABFVES)

LCO 3.7.12 Two ABFVES trains shall be OPERABLE.

-----NOTE-----  
The ECCS pump rooms pressure boundary may be opened intermittently under administrative controls.  
-----

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

ACTIONS

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

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.7.12.1 Operate each ABFVES train for $\geq$ 15 continuous minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.7.12.2 Perform required ABFVES filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.12.3 Verify each ABFVES train actuates on an actual or simulated actuation signal, except for dampers and valves that are locked, sealed, or otherwise secured in the actuated position.	In accordance with the Surveillance Frequency Control Program
SR 3.7.12.4 Verify one ABFVES train can maintain the ECCS pump rooms at negative pressure relative to adjacent areas.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.13 Fuel Handling Ventilation Exhaust System (FHVES)

LCO 3.7.13 Two FHVES trains shall be OPERABLE and one train in operation.

APPLICABILITY: During movement of recently irradiated fuel assemblies in the fuel building.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One or more FHVES trains inoperable.</p>	<p>-----NOTE----- LCO 3.0.3 is not applicable.</p> <hr/> <p>A.1 Suspend movement of recently irradiated fuel assemblies in the fuel building.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.13.1 Verify required FHVES train in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.7.13.2 Operate each FHVES train for $\geq 15$ continuous minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.7.13.3 Perform required FHVES filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.13.4 Verify one FHVES train can maintain a pressure $\leq -0.25$ inches water gauge with respect to atmospheric pressure during operation at a flow rate $\leq 36,443$ cfm.	In accordance with the Surveillance Frequency Control Program
SR 3.7.13.5 Verify each FHVES filter bypass damper can be closed.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.14 Spent Fuel Pool Water Level

LCO 3.7.14        The spent fuel pool water level shall be  $\geq$  23 ft over the top of irradiated fuel assemblies seated in the storage racks.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.14.1    Verify the spent fuel pool water level is $\geq$ 23 ft above the top of the irradiated fuel assemblies seated in the storage racks.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.15 Spent Fuel Pool Boron Concentration

LCO 3.7.15            The spent fuel pool boron concentration shall be within the limit specified in the COLR.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A.    Spent fuel pool boron concentration not within limit.	-----NOTE----- LCO 3.0.3 is not applicable. -----	
	A.1    Suspend movement of fuel assemblies in the spent fuel pool.	Immediately
	<u>AND</u>	
	A.2    Initiate action to restore spent fuel pool boron concentration to within limit.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.15.1    Verify the spent fuel pool boron concentration is within limit.	In accordance with the Surveillance Frequency Control Program



3.7 PLANT SYSTEMS

3.7.16 Spent Fuel Assembly Storage

LCO 3.7.16      The combination of initial enrichment and burnup of each new or spent fuel assembly stored in the spent fuel pool storage racks shall be within the following configurations:

- a.    Unrestricted storage (new or irradiated low enriched uranium fuel enriched up to an initial nominal 5.0 wt% U-235); or
- b.    Restricted storage in accordance with Figure 3.7.16-1.

APPLICABILITY:    Whenever any fuel assembly is stored in the spent fuel pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A.    Requirements of the LCO not met.	<p>A.1    -----NOTE----- LCO 3.0.3 is not applicable. -----</p> <p>Initiate action to move the noncomplying fuel assembly to the correct location.</p>	Immediately

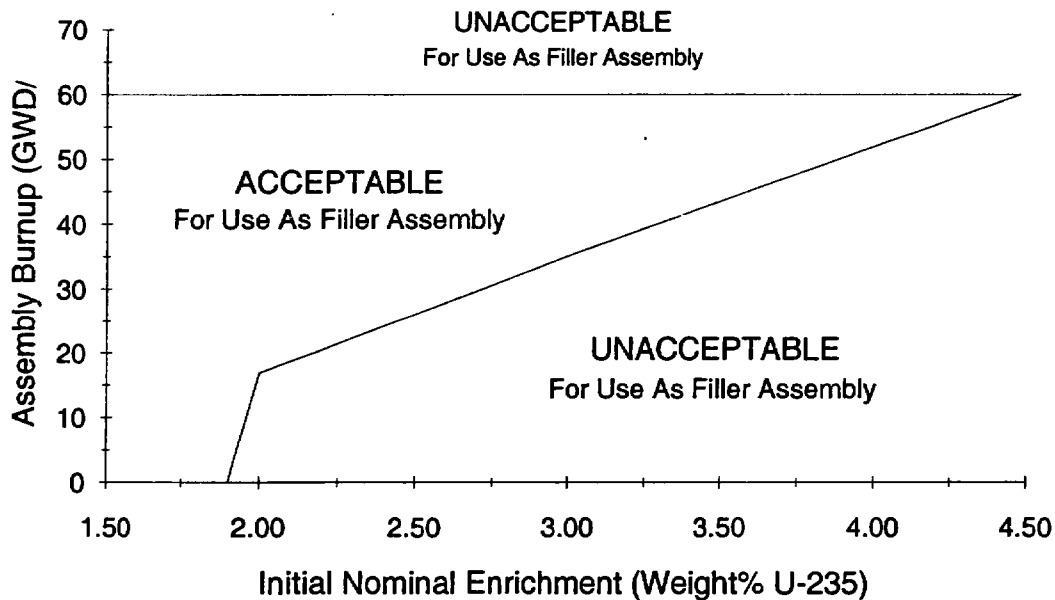
SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.16.1    Verify by administrative means the planned spent fuel pool location is acceptable for the fuel assembly being stored.	Prior to storing the fuel assembly in the spent fuel pool

Table 3.7.16-1

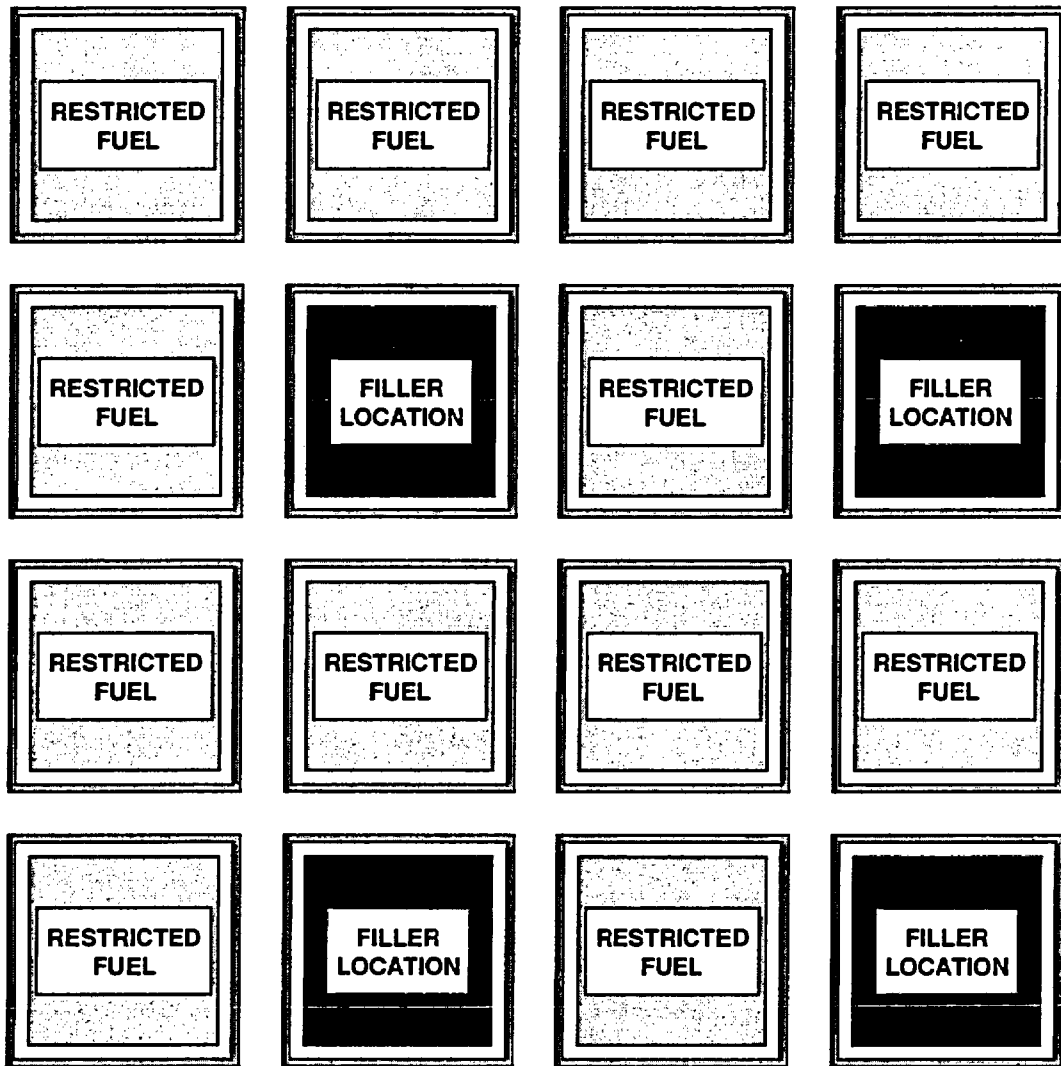
Minimum Qualifying Burnup Versus Initial Enrichment for Low Enriched Uranium Filler Assemblies

Initial Nominal Enrichment (Weight% U-235)	Assembly Burnup (GWD/MTU)
1.90 (or less)	0
2.00	16.83
2.50	26.05
3.00	35.11
3.50	43.48
4.00	51.99
4.48	60.00



NOTES:

Fuel which differs from those designs used to determine the requirements of Table 3.7.16-1 must be qualified for use as a Filler Assembly by means of an analysis using NRC approved methodology to assure that  $k_{eff}$  is less than or equal to 0.95.



**Restricted Fuel:**

Fuel which is a mixed oxide fuel assembly with a maximum nominal fissile plutonium concentration of 4.15 weight percent and a maximum nominal U-235 enrichment of 0.35 weight percent. (Fuel defined for Unrestricted Storage per LCO 3.7.16.a, or non-fuel components, or an empty cell may be used in Restricted Fuel locations as needed)

**Filler Location:**

Either low enriched uranium fuel which meets the minimum burnup requirements of Table 3.7.16-1, or an empty cell.

**Boundary Condition:**

Any row bounded by an Unrestricted Storage Area shall contain a combination of Restricted Fuel assemblies and filler locations arranged such that no Restricted Fuel assemblies are adjacent to each other. Example: In the figure above, row 1 or column 1 can not be adjacent to an Unrestricted Storage Area, but row 4 or column 4 can be.

Figure 3.7.16-1  
Required 3 out of 4 Loading Pattern for Restricted Storage

3.7 PLANT SYSTEMS

3.7.17 Secondary Specific Activity

LCO 3.7.17            The specific activity of the secondary coolant shall be  $\leq 0.10 \mu\text{Ci/gm}$   
DOSE EQUIVALENT I-131.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.17.1    Verify the specific activity of the secondary coolant is $\leq 0.10 \mu\text{Ci/gm}$ DOSE EQUIVALENT I-131.	In accordance with the Surveillance Frequency Control Program

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources—Operating

- LCO 3.8.1            The following AC electrical sources shall be OPERABLE:
- a.    Two qualified circuits between the offsite transmission network and the Onsite Essential Auxiliary Power System; and
  - b.    Two diesel generators (DGs) capable of supplying the Onsite Essential Auxiliary Power Systems; and
  - c.    The qualified circuit(s) between the offsite transmission network and the opposite unit's Onsite Essential Auxiliary Power System necessary to supply power to the shared systems and the Nuclear Service Water System (NSWS) pump(s); and
  - d.    The DG(s) from the opposite unit necessary to supply power to the shared systems and the NSWS pump(s);

AND

The automatic load sequencers for Train A and Train B shall be OPERABLE.

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

-----NOTE-----  
The opposite unit electrical power sources in LCO 3.8.1.c and LCO 3.8.1.d are not required to be OPERABLE when the associated shared systems and NSWS pump(s) are inoperable.

ACTIONS

-----NOTE-----

LCO 3.0.4.b is not applicable to DGs.

-----

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One LCO 3.8.1.a offsite circuit inoperable.</p>	<p>A.1 Perform SR 3.8.1.1 for required OPERABLE offsite circuit(s).</p>	<p>1 hour</p> <p><u>AND</u></p> <p>Once per 8 hours thereafter</p>
	<p><u>AND</u></p> <p>A.2 Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable.</p>	<p>24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s)</p>
	<p><u>AND</u></p> <p>A.3 Restore offsite circuit to OPERABLE status.</p>	<p>72 hours</p>

ACTIONS (continued)

AC Sources - Operating  
3.8.1

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. One LCO 3.8.1.b DG inoperable.</p>	<p>B.1 Verify LCO 3.8.1.d DG(s) OPERABLE</p>	<p>1 hour</p> <p><u>AND</u></p> <p>Once per 12 hours thereafter</p>
	<p><u>AND</u></p>	
	<p>B.2 Perform SR 3.8.1.1 for the required offsite circuit(s).</p>	<p>1 hour</p> <p><u>AND</u></p> <p>Once per 8 hours thereafter</p>
	<p><u>AND</u></p>	
	<p>B.3 Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.</p>	<p>4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)</p>
	<p><u>AND</u></p>	
	<p>B.4.1 Determine OPERABLE DG(s) is not inoperable due to common cause failure.</p>	<p>24 hours</p>
<p><u>OR</u></p>		
<p>B.4.2 Perform SR 3.8.1.2 for OPERABLE DG(s).</p>	<p>24 hours</p>	
<p><u>AND</u></p>	<p>(continued)</p>	

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. (continued)</p>	<p>B.5 Evaluate availability of Emergency Supplemental Power Source (ESPS).</p> <p><u>AND</u></p> <p>B.6 Restore DG to OPERABLE status.</p>	<p>1 hour</p> <p><u>AND</u></p> <p>Once per 12 hours thereafter</p> <p><u>AND</u></p> <p>72 hours from discovery of unavailable ESPS</p> <p><u>AND</u></p> <p>24 hours from discovery of Condition B entry ≥ 48 hours concurrent with unavailability of ESPS</p> <p><u>AND</u></p> <p>14 days</p>



CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. One LCO 3.8.1.c offsite circuit inoperable.</p>	<p>-----NOTE-----                      Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems—Operating," when Condition C is entered with no AC power source to a train.                      -----</p> <p>C.1 Perform SR 3.8.1.1 for the required offsite circuit(s).</p> <p><u>AND</u></p> <p>C.2 Declare NSW (including the NSW pump), CRAVS, CRACWS or ABFVES with no offsite power available inoperable when the redundant NSW (including the NSW pump), CRAVS, CRACWS or ABFVES is inoperable.</p> <p><u>AND</u></p> <p>C.3 Restore LCO 3.8.1.c offsite circuit to OPERABLE status.</p>	<p>1 hour</p> <p><u>AND</u></p> <p>Once per 8 hours thereafter</p> <p>24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s)</p> <p>72 hours</p>

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. One LCO 3.8.1.d DG inoperable.</p>	<p>-----NOTE-----                      Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems— Operating," when Condition D is entered with no AC power source to a train.                      -----</p> <p>D.1 Verify both LCO 3.8.1.b DGs OPERABLE and the opposite unit's DG OPERABLE.</p> <p><u>AND</u></p> <p>D.2 Perform SR 3.8.1.1 for the required offsite circuit(s).</p> <p><u>AND</u></p> <p>D.3 Declare NSWS (including the NSWS pump), CRAVS, CRACWS or ABFVES supported by the inoperable DG inoperable when the redundant NSWS (including the NSWS pump), CRAVS, CRACWS or ABFVES is inoperable.</p> <p><u>AND</u></p>	<p>1 hour</p> <p><u>AND</u></p> <p>Once per 12 hours thereafter</p> <p>1 hour</p> <p><u>AND</u></p> <p>Once per 8 hours thereafter</p> <p>4 hours from discovery of Condition D concurrent with inoperability of redundant required feature(s)</p> <p>(continued)</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. (continued)</p>	<p>D.4.1 Determine OPERABLE DG(s) is not inoperable due to common cause failures.</p> <p><u>OR</u></p> <p>D.4.2 Perform SR 3.8.1.2 for OPERABLE DG(s).</p> <p><u>AND</u></p> <p>D.5 Evaluate availability of ESPS.</p> <p><u>AND</u></p> <p>D.6 Restore LCO 3.8.1.d DG to OPERABLE status.</p>	<p>24 hours</p> <p>24 hours</p> <p>1 hour</p> <p><u>AND</u></p> <p>Once per 12 hours thereafter</p> <p>72 hours from discovery of unavailable ESPS</p> <p><u>AND</u></p> <p>24 hours from discovery of Condition D entry ≥ 48 hours concurrent with unavailability of ESPS</p> <p><u>AND</u></p> <p>14 days</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>E. Two LCO 3.8.1.a offsite circuits inoperable.</p> <p><u>OR</u></p> <p>One LCO 3.8.1.a offsite circuit that provides power to the shared systems inoperable and one LCO 3.8.1.c offsite circuit that provides power to the shared systems inoperable.</p> <p><u>OR</u></p> <p>Two LCO 3.8.1.c offsite circuits inoperable.</p>	<p>E.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable.</p> <p><u>AND</u></p> <p>E.2 Restore one offsite circuit to OPERABLE status.</p>	<p>12 hours from discovery of Condition E concurrent with inoperability of redundant required features</p> <p>24 hours</p>
<p>F. One LCO 3.8.1.a offsite circuit inoperable.</p> <p><u>AND</u></p> <p>One LCO 3.8.1.b DG inoperable.</p>	<p>-----NOTE----- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems—Operating," when Condition F is entered with no AC power source to any train. -----</p> <p>F.1 Restore offsite circuit to OPERABLE status.</p> <p><u>OR</u></p> <p>F.2 Restore DG to OPERABLE status.</p>	<p>12 hours</p> <p>12 hours</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>G. Two LCO 3.8.1.b DGs inoperable.</p> <p><u>OR</u></p> <p>One LCO 3.8.1.b DG that provides power to the shared systems inoperable and one LCO 3.8.1.d DG that provides power to the shared systems inoperable.</p> <p><u>OR</u></p> <p>Two LCO 3.8.1.d DGs inoperable.</p>	<p>G.1 Restore one DG to OPERABLE status.</p>	<p>2 hours</p>
<p>H. One automatic load sequencer inoperable.</p>	<p>H.1 Restore automatic load sequencer to OPERABLE status.</p>	<p>12 hours</p>



**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.1    Verify correct breaker alignment and indicated power availability for each offsite circuit.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.2    -----NOTES-----</p> <ol style="list-style-type: none"> <li>1.    Performance of SR 3.8.1.7 satisfies this SR.</li> <li>2.    All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading.</li> <li>3.    A modified DG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. When modified start procedures are not used, the time, voltage, and frequency tolerances of SR 3.8.1.7 must be met.</li> </ol> <p>-----</p> <p>Verify each DG starts from standby conditions and achieves steady state voltage <math>\geq 3950</math> V and <math>\leq 4320</math> V, and frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.3 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. DG loadings may include gradual loading as recommended by the manufacturer.</li> <li>2. Momentary transients outside the load range do not invalidate this test.</li> <li>3. This Surveillance shall be conducted on only one DG at a time.</li> <li>4. This SR shall be preceded by and immediately follow without shutdown a successful performance of SR 3.8.1.2 or SR 3.8.1.7.</li> </ol> <p>-----</p> <p>Verify each DG is synchronized and loaded and operates for <math>\geq 60</math> minutes at a load <math>\geq 5600</math> kW and <math>\leq 5750</math> kW.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.4 Verify each day tank contains <math>\geq 470</math> gal of fuel oil.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.5 Check for and remove accumulated water from each day tank.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.6 Verify the fuel oil transfer system operates to transfer fuel oil from storage system to the day tank.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)



**SURVEILLANCE REQUIREMENTS (continued)**

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.7 -----NOTE----- All DG starts may be preceded by an engine prelube period.</p> <hr/> <p>Verify each DG starts from standby condition and achieves in <math>\leq 11</math> seconds voltage of <math>\geq 3950</math> V and frequency of <math>\geq 57</math> Hz and maintains steady-state voltage <math>\geq 3950</math> V and <math>\leq 4320</math> V, and frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.8 Verify automatic and manual transfer of AC power sources from the normal offsite circuit to each alternate offsite circuit.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

SURVEILLANCE	FREQUENCY
<p><b>SR 3.8.1.9</b> <del>NOTE</del>                      If performed with the DG synchronized with offsite power, it shall be performed at a power factor <math>\leq 0.9</math>.</p> <hr/> <p>Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and:</p> <ul style="list-style-type: none"> <li>a. Following load rejection, the frequency is <math>\leq 63</math> Hz;</li> <li>b. Within 3 seconds following load rejection, the voltage is <math>\geq 3950</math> V and <math>\leq 4320</math> V; and</li> <li>c. Within 3 seconds following load rejection, the frequency is <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz.</li> </ul>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p><b>SR 3.8.1.10</b> Verify each DG does not trip and generator speed is maintained <math>\leq 500</math> rpm during and following a load rejection of <math>\geq 5600</math> kW and <math>\leq 5750</math> kW.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

SURVEILLANCE	FREQUENCY
<p><b>SR 3.8.1.11</b> -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. All DG starts may be preceded by an engine prelube period.</li> <li>2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.</li> </ol> <hr/> <p>Verify on an actual or simulated loss of offsite power signal:</p> <ol style="list-style-type: none"> <li>a. De-energization of emergency buses;</li> <li>b. Load shedding from emergency buses;</li> <li>c. DG auto-starts from standby condition and:               <ol style="list-style-type: none"> <li>1. energizes the emergency bus in <math>\leq 11</math> seconds,</li> <li>2. energizes auto-connected shutdown loads through automatic load sequencer,</li> <li>3. maintains steady state voltage <math>\geq 3950</math> V and <math>\leq 4320</math> V,</li> <li>4. maintains steady state frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz, and</li> <li>5. supplies auto-connected shutdown loads for <math>\geq 5</math> minutes.</li> </ol> </li> </ol>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.12 -----NOTE----- All DG starts may be preceded by prelube period.</p> <hr/> <p>Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and:</p> <ul style="list-style-type: none"> <li>a. In <math>\leq 11</math> seconds after auto-start and during tests, achieves voltage <math>\geq 3950</math> V and <math>\leq 4320</math> V;</li> <li>b. In <math>\leq 11</math> seconds after auto-start and during tests, achieves frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz;</li> <li>c. Operates for <math>\geq 5</math> minutes; and</li> <li>d. The emergency bus remains energized from the offsite power system.</li> </ul>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.8.1.13 Verify each DG's non-emergency automatic trips are bypassed on actual or simulated loss of voltage signal on the emergency bus concurrent with an actual or simulated ESF actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.14 -----NOTE----- Momentary transients outside the load and power factor ranges do not invalidate this test. ----- Verify each DG operating at a power factor $\leq 0.9$ operates for $\geq 24$ hours loaded $\geq 5600$ kW and $\leq 5750$ kW.	In accordance with the Surveillance Frequency Control Program

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.15 -----NOTES-----</p> <p>1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated <math>\geq 1</math> hour loaded <math>\geq 5600</math> kW and <math>\leq 5750</math> kW or until operating temperature is stabilized.</p> <p>Momentary transients outside of load range do not invalidate this test.</p> <p>2. All DG starts may be preceded by an engine prelube period.</p> <p>-----</p> <p>Verify each DG starts and achieves, in <math>\leq 11</math> seconds, voltage <math>\geq 3950</math> V, and frequency <math>\geq 57</math> Hz and maintains steady state voltage <math>\geq 3950</math> V and <math>\leq 4320</math> V and frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.16 -----NOTE-----</p> <p>This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.</p> <p>-----</p> <p>Verify each DG:</p> <p>a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power;</p> <p>b. Transfers loads to offsite power source; and</p> <p>c. Returns to standby operation.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.17 -----NOTE-----  This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.</p> <p>-----</p> <p>Verify, with a DG operating in test mode and connected to its bus, an actual or simulated ESF actuation signal overrides the test mode by:</p> <ul style="list-style-type: none"> <li>a. Returning DG to standby operation; and</li> <li>b. Automatically energizing the emergency load from offsite power.</li> </ul>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.18 Verify interval between each sequenced load block is within the design interval for each automatic load sequencer.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.19 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. All DG starts may be preceded by an engine prelube period.</li> <li>2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.</li> </ol> <hr/> <p>Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal:</p> <ol style="list-style-type: none"> <li>a. De-energization of emergency buses;</li> <li>b. Load shedding from emergency buses; and</li> <li>c. DG auto-starts from standby condition and:               <ol style="list-style-type: none"> <li>1. energizes the emergency bus in <math>\leq 11</math> seconds,</li> <li>2. energizes auto-connected emergency loads through load sequencer,</li> <li>3. achieves steady state voltage <math>\geq 3950</math> V and <math>\leq 4320</math> V,</li> <li>4. achieves steady state frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz, and</li> <li>5. supplies auto-connected emergency loads for <math>\geq 5</math> minutes.</li> </ol> </li> </ol>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)



**SURVEILLANCE REQUIREMENTS (continued)**

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.20 -----NOTE----- All DG starts may be preceded by an engine prelube period.</p> <hr/> <p>Verify when started simultaneously from standby condition, each DG achieves, in <math>\leq 11</math> seconds, voltage of <math>\geq 3950</math> V and frequency of <math>\geq 57</math> Hz and maintains steady state voltage <math>\geq 3950</math> V and <math>\leq 4320</math> V, and frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

3.8 ELECTRICAL POWER SYSTEMS

3.8.2 AC Sources—Shutdown

LCO 3.8.2 The following AC electrical power sources shall be OPERABLE:

- a. One qualified circuit between the offsite transmission network and the Onsite Essential Auxiliary Power distribution system required by LCO 3.8.10, "Distribution Systems—Shutdown"; and
- b. One diesel generator (DG) capable of supplying one train of the Onsite Essential Auxiliary Power distribution system required by LCO 3.8.10.

APPLICABILITY: MODES 5 and 6,  
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One required offsite circuit inoperable.</p>	<p>-----NOTE----- Enter applicable Conditions and Required Actions of LCO 3.8.10, with one required train de-energized as a result of Condition A. -----</p> <p>A.1 Declare affected required feature(s) with no offsite power available inoperable.</p> <p><u>OR</u></p> <p>A.2.1 Suspend CORE ALTERATIONS.</p> <p><u>AND</u></p>	<p>Immediately</p> <p>Immediately</p> <p>(continued)</p>

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. (continued)</p>	<p>A.2.2 Suspend movement of irradiated fuel assemblies.</p> <p><u>AND</u></p> <p>A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or required boron concentration.</p> <p><u>AND</u></p> <p>A.2.4 Initiate action to restore required offsite power circuit to OPERABLE status.</p>	<p>Immediately</p> <p>Immediately</p> <p>Immediately</p>
<p>B. One required DG inoperable.</p>	<p>B.1 Suspend CORE ALTERATIONS.</p> <p><u>AND</u></p> <p>B.2 Suspend movement of irradiated fuel assemblies.</p> <p><u>AND</u></p> <p>B.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or required boron concentration.</p> <p><u>AND</u></p> <p>B.4 Initiate action to restore required DG to OPERABLE status.</p>	<p>Immediately</p> <p>Immediately</p> <p>Immediately</p> <p>Immediately</p>

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY															
<p>SR 3.8.2.1 -----NOTE-----                      The following SRs are not required to be performed:                      SR 3.8.1.3, SR 3.8.1.9, SR 3.8.1.10, SR 3.8.1.11,                      SR 3.8.1.13, SR 3.8.1.14, SR 3.8.1.15, SR 3.8.1.16, and                      SR 3.8.1.18.</p> <p>-----</p> <p>For AC sources required to be OPERABLE, the following                      SRs are applicable:</p> <table> <tr> <td>SR 3.8.1.1</td> <td>SR 3.8.1.6</td> <td>SR 3.8.1.13</td> </tr> <tr> <td>SR 3.8.1.2</td> <td>SR 3.8.1.7</td> <td>SR 3.8.1.14</td> </tr> <tr> <td>SR 3.8.1.3</td> <td>SR 3.8.1.9</td> <td>SR 3.8.1.15</td> </tr> <tr> <td>SR 3.8.1.4</td> <td>SR 3.8.1.10</td> <td>SR 3.8.1.16</td> </tr> <tr> <td>SR 3.8.1.5</td> <td>SR 3.8.1.11</td> <td>SR 3.8.1.18</td> </tr> </table>	SR 3.8.1.1	SR 3.8.1.6	SR 3.8.1.13	SR 3.8.1.2	SR 3.8.1.7	SR 3.8.1.14	SR 3.8.1.3	SR 3.8.1.9	SR 3.8.1.15	SR 3.8.1.4	SR 3.8.1.10	SR 3.8.1.16	SR 3.8.1.5	SR 3.8.1.11	SR 3.8.1.18	<p>In accordance with                      applicable SRs</p>
SR 3.8.1.1	SR 3.8.1.6	SR 3.8.1.13														
SR 3.8.1.2	SR 3.8.1.7	SR 3.8.1.14														
SR 3.8.1.3	SR 3.8.1.9	SR 3.8.1.15														
SR 3.8.1.4	SR 3.8.1.10	SR 3.8.1.16														
SR 3.8.1.5	SR 3.8.1.11	SR 3.8.1.18														

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

LCO 3.8.3 The stored diesel fuel oil, lube oil, and starting air subsystem shall be within limits for each required diesel generator (DG).

APPLICABILITY: When associated DG is required to be OPERABLE.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more DGs with fuel oil inventory < 77,100 gal and > 66,100 gal.	A.1 Restore fuel oil level to within limits.	48 hours
B. One or more DGs with lube oil inventory < 400 gal and > 375 gal.	B.1 Restore lube oil inventory to within limits.	48 hours
C. One or more DGs with stored fuel oil total particulates not within limit.	C.1 Restore fuel oil total particulates within limit.	7 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One or more DGs with new fuel oil properties not within limits.	D.1 Restore stored fuel oil properties to within limits.	30 days
E. One or more DGs with starting air receiver pressure < 210 psig and ≥ 150 psig.	E.1 Restore starting air receiver pressure to ≥ 210 psig.	48 hours
F. Required Action and associated Completion Time not met.  <u>OR</u>  One or more DGs diesel fuel oil, lube oil, or starting air subsystem not within limits for reasons other than Condition A, B, C, D, or E.	F.1 Declare associated DG inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.3.1 Verify the fuel oil storage system contains ≥ 77,100 gal of fuel for each DG.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.8.3.2    Verify lubricating oil inventory is $\geq$ 400 gal.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.3    Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.4    Verify each DG air start receiver pressure is $\geq$ 210 psig.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.5    Check for and remove accumulated water from each fuel oil storage tank.	In accordance with the Surveillance Frequency Control Program

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources—Operating

LCO 3.8.4 Four channels of DC electrical power subsystems and the Train A and Train B Diesel Generator (DG) DC electrical power subsystems shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One channel of DC electrical power subsystem inoperable.	A.1 Verify associated bus tie breakers are closed between DC channels.	8 hours
	<u>AND</u> A.2 Restore channel of DC electrical power subsystem to OPERABLE status.	10 days
B. Required Action and Associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	36 hours
C. One or more DG DC electrical power subsystem(s) inoperable.	C.1 Enter applicable Condition(s) and Required Action(s) of LCO 3.8.1, "AC Sources - Operating", for the associated DG made inoperable.	Immediately

(continued)



ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. A and/or D channel of DC electrical power subsystem inoperable.</p> <p><u>AND</u></p> <p>Associated train of DG DC electrical power subsystem inoperable.</p>	<p>D.1 Enter applicable Condition(s) and Required Action(s) of LCO 3.8.9, "Distribution Systems-Operating", for the associated train of DC electrical power distribution subsystem made inoperable.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.8.4.1 Verify DC channel and DG battery terminal voltage is <math>\geq 125</math> V on float charge.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.4.2 Not used.</p>	
<p>SR 3.8.4.3 Verify no visible corrosion at the DC channel and DG battery terminals and connectors.</p> <p><u>OR</u></p> <p>Verify battery connection resistance of specific connection(s) meets Table 3.8.4-1 limit.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.4.4 Verify DC channel and DG battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration that could degrade battery performance.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.4.5 Remove visible terminal corrosion, verify DC channel and DG battery cell to cell and terminal connections are clean and tight, and are coated with anti-corrosion material.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.4.6 Verify all DC channel and DG battery connection resistance values meet Table 3.8.4-1 limits.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.4.7 Verify each DC channel battery charger supplies <math>\geq 200</math> amps and the DG battery charger supplies <math>\geq 75</math> amps with each charger at <math>\geq 125</math> V for <math>\geq 8</math> hours.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.4.8 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. The modified performance discharge test in SR 3.8.4.9 may be performed in lieu of the service test in SR 3.8.4.8.</li> <li>2. This Surveillance shall not normally be performed for the DG batteries in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.</li> </ol> <p>-----</p> <p>Verify DC channel and DG battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.4.9 -----NOTE-----            This Surveillance shall not normally be performed for the DG batteries in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.            -----</p> <p>Verify DC channel and DG battery capacity is <math>\geq</math> 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.</p>	<p>In accordance with the Surveillance Frequency Control Program</p> <p><u>AND</u></p> <p>18 months when battery shows degradation or has reached 85% of expected life with capacity &lt; 100% of manufacturer's rating</p> <p><u>AND</u></p> <p>-----NOTE-----            Not applicable to DG batteries            -----</p> <p>24 months when battery has reached 85% of the expected life with capacity <math>\geq</math> 100% of manufacturer's rating</p>

SURVEILLANCE REQUIREMENTS (continued)

Table 3.8.4-1 (page 1 of 1)

Battery Connection Resistance Limits

PARAMETER	DC CHANNEL LIMIT (micro-ohms)	DG BATTERY LIMIT (micro-ohms)
Single intercell connection	$\leq 175.54$	$\leq 148.94$
Single interrack connection	$\leq 200.0$	$\leq 200.0$
Single intertier connection	$\leq 200.0$	$\leq 200.0$
Single terminal connection	$\leq 206.92$	$\leq 97.24$
Average intercell connection	$\leq 103.46$	$\leq 97.24$

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources—Shutdown

LCO 3.8.5 The following shall be OPERABLE:

- a. Two channels of DC electrical power subsystems and a train of DG DC electrical power subsystem capable of supplying one train of the DC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems-Shutdown," and
- b. One source of DC electrical power, other than that required by LCO 3.8.5.a, capable of supplying the remaining train of the DC electrical power distribution subsystem(s) when required by LCO 3.8.10.

APPLICABILITY: MODES 5 and 6,  
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One or more required channel(s) of DC electrical power subsystems or required DG DC electrical power subsystem inoperable.</p>	<p>A.1.1 Declare affected required feature(s) inoperable.</p>	<p>Immediately</p>
	<p><u>OR</u></p> <p>A.2.1 Suspend CORE ALTERATIONS.</p>	<p>Immediately</p>
	<p><u>AND</u></p> <p>A.2.2 Suspend movement of irradiated fuel assemblies.</p> <p><u>AND</u></p>	<p>Immediately</p> <p style="text-align: right;">(continued)</p>



### 3.8 ELECTRICAL POWER SYSTEMS

#### 3.8.6 Battery Cell Parameters

- LCO 3.8.6
- a. Battery cell parameters for the channels of DC batteries shall be within the limits of Table 3.8.6-1; and
  - b. Battery cell parameters for the Diesel Generator (DG) Train A and Train B batteries shall be within the limits of Table 3.8.6-1.

APPLICABILITY: When associated DC electrical power subsystems are required to be OPERABLE.

ACTIONS

-----NOTE-----

Separate Condition entry is allowed for each battery.

-----

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One or more batteries (channel(s) of DC batteries, DG batteries, or both) with one or more battery cell parameters not within Category A or B limits.</p>	<p>A.1 Verify pilot cells electrolyte level and float voltage meet Table 3.8.6-1 Category C limits.</p>	<p>1 hour</p>
	<p><u>AND</u></p> <p>A.2 Verify battery cell parameters meet Table 3.8.6-1 Category C limits.</p>	<p>24 hours</p> <p><u>AND</u></p> <p>Once per 7 days thereafter</p>
	<p><u>AND</u></p> <p>A.3 Restore battery cell parameters to Category A and B limits of Table 3.8.6-1.</p>	<p>31 days</p>

(continued)





**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.8.6.1 Verify battery cell parameters of the channels of DC and DG batteries meet Table 3.8.6-1 Category A limits.	In accordance with the Surveillance Frequency Control Program
SR 3.8.6.2 Not used.	
SR 3.8.6.3 Verify battery cell parameters of the channels of DC and DG batteries meet Table 3.8.6-1 Category B limits.	<p>In accordance with the Surveillance Frequency Control Program</p> <p><u>AND</u></p> <p>Once within 7 days after a battery discharge &lt; 110 V</p> <p><u>AND</u></p> <p>Once within 7 days after a battery overcharge &gt; 150 V</p>
SR 3.8.6.4 Verify average electrolyte temperature for the channels of DC and DG batteries of representative cells is $\geq 60^{\circ}\text{F}$ .	In accordance with the Surveillance Frequency Control Program

Table 3.8.6-1 (page 1 of 1)  
Battery Cell Parameters Requirements

PARAMETER	CATEGORY A: LIMITS FOR EACH DESIGNATED PILOT CELL	CATEGORY B: LIMITS FOR EACH CONNECTED CELL	CATEGORY C: ALLOWABLE LIMITS FOR EACH CONNECTED CELL
Electrolyte Level	> Minimum level indication mark, and $\leq \frac{1}{4}$ inch above maximum level indication mark <sup>(a)</sup>	> Minimum level indication mark, and $\leq \frac{1}{4}$ inch above maximum level indication mark <sup>(a)</sup>	Above top of plates, and not overflowing
Float Voltage	$\geq 2.13$ V	$\geq 2.13$ V	> 2.07 V
Specific Gravity <sup>(b)(c)</sup>	$\geq 1.200$	$\geq 1.195$ <u>AND</u> Average of all connected cells $\geq 1.205$	Not more than 0.020 below average of all connected cells or $\geq 1.195$ <u>AND</u> Average of all connected cells $\geq 1.195$

- (a) It is acceptable for the electrolyte level to temporarily increase above the specified maximum during equalizing charges provided it is not overflowing.
- (b) Corrected for electrolyte temperature and level. Level correction is not required, however, when battery charging is < 2 amps when on float charge.
- (c) A battery charging current of < 2 amps when on float charge is acceptable for meeting specific gravity limits following a battery recharge, for a maximum of 7 days. When charging current is used to satisfy specific gravity requirements, specific gravity of each connected cell shall be measured prior to expiration of the 7 day allowance.

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Inverters—Operating

LCO 3.8.7 The required Train A and Train B inverters shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One required inverter inoperable.</p>	<p>A.1 -----NOTE----- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating" with any vital bus de-energized. ----- Restore inverter to OPERABLE status.</p>	<p>24 hours</p>
<p>B. Required Action and associated Completion Time not met.</p>	<p>B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 5.</p>	<p>6 hours  36 hours</p>

**SURVEILLANCE REQUIREMENTS**

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

3.8 ELECTRICAL POWER SYSTEMS

3.8.8 Inverters—Shutdown

LCO 3.8.8 The following shall be OPERABLE:

- a. Two inverters capable of supplying one train of the onsite Class 1E AC vital bus electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems-Shutdown," and
- b. One source of AC vital bus power, other than that required by LCO 3.8.8.a, capable of supplying the remaining onsite Class 1E AC vital bus electrical power distribution subsystem(s) when required by LCO 3.8.10.

APPLICABILITY: MODES 5 and 6,  
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One or more required AC vital bus power sources inoperable.</p>	<p>A.1 Declare affected required feature(s) inoperable.</p>	<p>Immediately</p>
	<p><u>OR</u></p> <p>A.2.1 Suspend CORE ALTERATIONS.</p>	<p>Immediately</p>
	<p><u>AND</u></p> <p>A.2.2 Suspend movement of irradiated fuel assemblies.</p> <p><u>AND</u></p>	<p>Immediately</p> <p style="text-align: right;">(continued)</p>



3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems—Operating

LCO 3.8.9 Train A and Train B AC, four channels of DC, DC Train A and Train B and four AC vital buses electrical power distribution subsystems shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more AC electrical power distribution subsystem(s) inoperable.	A.1 Restore AC electrical power distribution subsystem(s) to OPERABLE status.	8 hours
B. One AC vital bus inoperable.	B.1 Restore AC vital bus subsystem to OPERABLE status.	2 hours

(continued)



ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One channel of DC electrical power distribution subsystems inoperable.	C.1 Restore channel of DC electrical power distribution subsystems to OPERABLE status.	2 hours
D. One train of DC electrical power distribution subsystems inoperable.	D.1 Restore DC electrical power distribution subsystem to OPERABLE status.	2 hours
E. Required Action and associated Completion Time not met.	E.1 Be in MODE 3. <u>AND</u> E.2 Be in MODE 5.	6 hours  36 hours
F. Two trains with inoperable distribution subsystems that result in a loss of safety function.	F.1 Enter LCO 3.0.3.	Immediately

**SURVEILLANCE REQUIREMENTS**

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

3.8 ELECTRICAL POWER SYSTEMS

3.8.10 Distribution Systems—Shutdown

LCO 3.8.10 The necessary portion of AC, channels of DC, DC trains and AC vital buses electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE.

APPLICABILITY: MODES 5 and 6,  
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One or more required AC, channel(s) of DC, DC train(s) or AC vital bus(es) electrical power distribution subsystems inoperable.</p>	<p>A.1 Declare associated supported required feature(s) inoperable.</p>	<p>Immediately</p>
	<p><u>OR</u></p>	
	<p>A.2.1 Suspend CORE ALTERATIONS.</p>	<p>Immediately</p>
	<p><u>AND</u></p>	
	<p>A.2.2 Suspend movement of irradiated fuel assemblies.</p>	<p>Immediately</p>
	<p><u>AND</u></p>	
	<p>A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or required boron concentration.</p>	<p>Immediately</p>
	<p><u>AND</u></p>	<p>(continued)</p>

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.4 Initiate actions to restore required AC, channels of DC, DC trains, and AC vital bus electrical power distribution subsystems to OPERABLE status.  <u>AND</u>	Immediately
	A.2.5 Declare associated required residual heat removal subsystem(s) inoperable and not in operation.  <u>AND</u>	Immediately
	A.2.6 Declare affected Low Temperature Overpressure Protection feature(s) inoperable.	Immediately

**SURVEILLANCE REQUIREMENTS**

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

3.9 REFUELING OPERATIONS

3.9.1 Boron Concentration

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

-----NOTE-----

Only applicable to the refueling canal and refueling cavity when connected to the RCS.

APPLICABILITY: MODE 6.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

3.9 REFUELING OPERATIONS

3.9.2 Nuclear Instrumentation

LCO 3.9.2 Two source range neutron flux monitors shall be OPERABLE.

APPLICABILITY: MODE 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required neutron flux monitor Inoperable.	A.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u> A.2 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately
B. Two required neutron flux monitors Inoperable.	B.1 Initiate actions to restore one neutron flux monitor to OPERABLE status.	Immediately
	<u>AND</u> B.2 Perform SR 3.9.1.1.	Once per 12 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.9.2.1 Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.9.2.2 -----NOTE----- Neutron detectors are excluded from CHANNEL CALIBRATION. ----- Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program

3.9 REFUELING OPERATIONS

3.9.3 Containment Penetrations

- LCO 3.9.3            The containment penetrations shall be in the following status:
- a.    The equipment hatch closed and held in place by a minimum of four bolts;
  - b.    A minimum of one door in each air lock closed; and
  - c.    Each penetration providing direct access from the containment atmosphere to the outside atmosphere either:
    - 1.    closed by a manual or automatic isolation valve, blind flange, or equivalent, or
    - 2.    exhausting through an OPERABLE Containment Purge Exhaust System (CPES) HEPA filter and carbon adsorber.

APPLICABILITY:    During movement of recently irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A.    One or more containment penetrations not in required status.	A.1    Suspend movement of recently irradiated fuel assemblies within containment.	Immediately



**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.9.3.1 Verify each required containment penetration is in the required status.	In accordance with the Surveillance Frequency Control Program
SR 3.9.3.2 Operate each CPES for $\geq 15$ continuous minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.9.3.3 Perform required CPES filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP

3.9 REFUELING OPERATIONS

3.9.4 Residual Heat Removal (RHR) and Coolant Circulation — High Water Level

LCO 3.9.4 One RHR loop shall be OPERABLE and in operation.

-----NOTE-----

The required RHR loop may be removed from operation for  $\leq 1$  hour per 8 hour period, provided no operations are permitted that would cause introduction of coolant into the Reactor Coolant System with boron concentration less than required to meet the minimum required boron concentration of LCO 3.9.1.

APPLICABILITY: MODE 6 with the water level  $\geq 23$  ft above the top of reactor vessel flange.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RHR loop requirements not met.	A.1 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately
	<u>AND</u>	
	A.2 Suspend loading irradiated fuel assemblies in the core.	Immediately
	<u>AND</u>	
	A.3 Initiate action to satisfy RHR loop requirements.	Immediately
	<u>AND</u>	(continued)

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.4 Close the containment equipment hatch and secure with four bolts.	4 hours
	<u>AND</u>	
	A.5 Close one door in each air lock.	4 hours
	<u>AND</u>	
	A.6.1 Close each penetration providing direct access from the containment atmosphere to the outside atmosphere with a manual or automatic isolation valve, blind flange, or equivalent.	4 hours
	<u>OR</u>	
	A.6.2 Verify each penetration is capable of being closed on a high containment radiation signal.	4 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.9.4.1 Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of $\geq 1000$ gpm and RCS temperature is $\leq 140^\circ\text{F}$ .	In accordance with the Surveillance Frequency Control Program
SR 3.9.4.2 Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

3.9 REFUELING OPERATIONS

3.9.5 Residual Heat Removal (RHR) and Coolant Circulation — Low Water Level

LCO 3.9.5 Two RHR loops shall be OPERABLE, and one RHR loop shall be in operation.

-----NOTES-----

1. All RHR pumps may be removed from operation for ≤ 15 minutes when switching from one train to another provided:
    - a. The core outlet temperature is maintained > 10 degrees F below saturation temperature,
    - b. No operations are permitted that would cause introduction of coolant into the Reactor Coolant System (RCS) with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1, and
    - c. No draining operations to further reduce RCS water volume are permitted.
  2. One required RHR loop may be inoperable for up to 2 hours for surveillance testing, provided that the other RHR loop is OPERABLE and in operation.
- 

APPLICABILITY: MODE 6 with the water level < 23 ft above the top of reactor vessel flange.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Less than the required number of RHR loops OPERABLE.	A.1 Initiate action to restore required RHR loops to OPERABLE status.	Immediately
	<u>OR</u> A.2 Initiate action to establish ≥ 23 ft of water above the top of reactor vessel flange.	Immediately
B. No RHR loop in operation.	B.1 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.  <u>AND</u>	Immediately

(continued)

RHR and Coolant Circulation - Low Water Level  
3.9.5

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2 Initiate action to restore one RHR loop to operation.	Immediately
	<u>AND</u>	
	B.3 Close the containment equipment hatch and secure with four bolts.	4 hours
	<u>AND</u>	
	B.4 Close one door in each air lock.	4 hours
<u>AND</u>		
	B.5.1 Close each penetration providing direct access from the containment atmosphere to the outside atmosphere with a manual or automatic isolation valve, blind flange, or equivalent.	4 hours
<u>OR</u>		
	B.5.2 Verify each penetration is capable of being closed on a high containment radiation signal.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.5.1 Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of $\geq 1000$ gpm and RCS temperature is $\leq 140^\circ\text{F}$ .	In accordance with the Surveillance Frequency Control Program
SR 3.9.5.2 Verify correct breaker alignment and indicated power available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.9.5.3 Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

3.9 REFUELING OPERATIONS

3.9.6 Refueling Cavity Water Level

LCO 3.9.6 Refueling cavity water level shall be maintained  $\geq$  23 ft above the top of reactor vessel flange.

APPLICABILITY: During CORE ALTERATIONS, except during latching and unlatching of control rod drive shafts,  
During movement of irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Refueling cavity water level not within limit.	A.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u> A.2 Suspend movement of irradiated fuel assemblies within containment.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.6.1 Verify refueling cavity water level is $\geq$ 23 ft above the top of reactor vessel flange.	In accordance with the Surveillance Frequency Control Program

3.9 REFUELING OPERATIONS

3.9.7 Unborated Water Source Isolation Valves

LCO 3.9.7            Each valve used to isolate unborated water sources shall be secured in the closed position.

APPLICABILITY:    MODE 6.

ACTIONS

-----NOTE-----  
Separate Condition entry is allowed for each unborated water source isolation valve.  
-----

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A.    -----NOTE----- Required Action A.3 must be completed whenever Condition A is entered. -----  One or more valves not secured in closed position.</p>	<p>A.1    Suspend CORE ALTERATIONS.  <u>AND</u></p>	<p>Immediately</p>
	<p>A.2    Initiate actions to secure valve in closed position.  <u>AND</u></p>	<p>Immediately</p>
	<p>A.3    Perform SR 3.9.1.1.</p>	<p>4 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.9.7.1    Verify each valve that isolates unborated water sources is secured in the closed position.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

## 4.0 DESIGN FEATURES

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### 4.1 Site Location

Catawba Nuclear Station is located in the north central portion of South Carolina approximately six miles north of Rock Hill and adjacent to Lake Wylie. The station center is located at latitude 35 degrees, 3 minutes, 5 seconds north and longitude 81 degrees, 4 minutes, 10 seconds west. The corresponding Universal Transverse Mercator Coordinates are E 493, 660 and N 3, 878, 558, zone 17.

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### 4.2 Reactor Core

#### 4.2.1 Fuel Assemblies

The reactor shall contain 193 fuel assemblies. Each assembly shall consist of a matrix of either Zircalloy, ZIRLO<sup>®</sup>, or Optimized ZIRLO<sup>™</sup> clad fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO<sub>2</sub>) as fuel material.\* Limited substitutions of ZIRLO<sup>®</sup>, Optimized ZIRLO<sup>™</sup>, zirconium alloy, or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions.

\* A maximum of four lead assemblies containing mixed oxide fuel and M5<sup>™</sup> cladding may be inserted into the Unit 1 or Unit 2 reactor core.

#### 4.2.2 Control Rod Assemblies

The reactor core shall contain 53 control rod assemblies. The control material shall be silver indium cadmium and boron carbide as approved by the NRC.

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### 4.3 Fuel Storage

#### 4.3.1 Criticality

4.3.1.1 The spent fuel storage racks are designed and shall be maintained with:

(continued)



## 4.0 DESIGN FEATURES

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### 4.3 Fuel Storage (continued)

- a. Low enriched uranium fuel assemblies having a maximum nominal U-235 enrichment of 5.0 weight percent or mixed oxide fuel assemblies having a maximum nominal fissile plutonium concentration up to 4.15 weight percent and a maximum nominal U-235 enrichment of 0.35 weight percent;
- b.  $k_{\text{eff}} < 1.0$  if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1 of the UFSAR;
- c.  $k_{\text{eff}} \leq 0.95$  if fully flooded with water borated to a minimum of 200 ppm, which includes an allowance for uncertainties as described in Section 9.1 of the UFSAR; and
- d. A nominal 13.5 inch center to center distance between fuel assemblies placed in the fuel storage racks.

4.3.1.2 The new fuel storage racks are designed and shall be maintained with:

- a. Fuel assemblies having a maximum nominal U-235 enrichment of 5.0 weight percent;
- b.  $k_{\text{eff}} \leq 0.95$  if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1 of the UFSAR;
- c.  $k_{\text{eff}} \leq 0.98$  if moderated by aqueous foam, which includes an allowance for uncertainties as described in Section 9.1 of the UFSAR; and
- d. A nominal 21 inch center to center distance between fuel assemblies placed in the storage racks.

#### 4.3.2 Drainage

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 596 ft.

#### 4.3.3 Capacity

The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 1421 fuel assemblies.

## 5.0 ADMINISTRATIVE CONTROLS

### 5.1 Responsibility

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5.1.1 The Plant Manager shall be responsible for overall unit operation and shall delegate in writing the succession to this responsibility during his absence.

5.1.2 The Control Room Supervisor (CRS) shall be responsible for the control room command function. During any absence of the CRS from the control room while the unit is in MODE 1, 2, 3, or 4, an individual (other than the Shift Technical Advisor (STA)) with an active Senior Reactor Operator (SRO) license shall be designated to assume the control room command function. During any absence of the CRS from the control room while the unit is in MODE 5 or 6, an individual with an active SRO license or Reactor Operator license shall be designated to assume the control room command function.

On occasion when there is a need for both the CRS and the relief SRO to be absent from the control room in MODE 1, 2, 3, or 4, an STA with an active SRO license on the unit shall be allowed to assume the control room command function and serve as the SRO in the control room provided that:

- a. the CRS or the relief SRO is available to return to the control room within 10 minutes, and
  - b. the assumption of CRS duties by the STA is limited to periods not in excess of 15 minutes duration and a total time not to exceed 1 hour during any shift.
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## 5.0 ADMINISTRATIVE CONTROLS

### 5.2 Organization

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#### 5.2.1 Onsite and Offsite Organizations

Onsite and offsite organizations shall be established for unit operation and corporate management, respectively. The onsite and offsite organizations shall include the positions for activities affecting safety of the nuclear power plant.

- a. Lines of authority, responsibility, and communication shall be defined and established throughout highest management levels, intermediate levels, and all operating organization positions. These relationships shall be documented and updated, as appropriate, in organization charts, functional descriptions of departmental responsibilities and relationships, and job descriptions for key personnel positions, or in equivalent forms of documentation. These requirements shall be documented in the UFSAR;
- b. The Plant Manager shall be responsible for overall safe operation of the plant and shall have control over those onsite activities necessary for safe operation and maintenance of the plant;
- c. The Vice President, Catawba Nuclear Site, shall have responsibility for overall plant nuclear safety and shall take any measures needed to ensure acceptable performance of the staff in operating, maintaining, and providing technical support to the plant to ensure nuclear safety;
- d. The Chief Nuclear Officer will be the Senior Nuclear Executive and have corporate responsibility for overall nuclear safety; and
- e. The individuals who train the operating staff, carry out radiation protection, or perform quality assurance functions may report to the appropriate onsite manager; however, these individuals shall have sufficient organizational freedom to ensure their independence from operating pressures.

#### 5.2.2 Unit Staff

The unit staff organization shall include the following:

- a. A non-licensed operator shall be assigned to each reactor containing fuel and an additional non-licensed operator shall be assigned for each control room from which a reactor is operating in MODES 1, 2, 3, or 4.

A total of three non-licensed operators are required for the two units.

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(continued)

**5.2 Organization**

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**5.2.2 Unit Staff (continued)**

- b. At least one licensed Reactor Operator (RO) shall be present in the control room when fuel is in the reactor. In addition, while the unit is in MODE 1, 2, 3, or 4, at least one licensed Senior Reactor Operator (SRO) shall be present in the control room.
  - c. Shift crew composition may be less than the minimum requirement of 10 CFR 50.54(m)(2)(i) and 5.2.2.a and 5.2.2.g for a period of time not to exceed 2 hours in order to accommodate unexpected absence of on-duty shift crew members provided immediate action is taken to restore the shift crew composition to within the minimum requirements.
  - d. A Radiation Protection Technician shall be on site when fuel is in the reactor. The position may be vacant for not more than 2 hours, in order to provide for unexpected absence, provided immediate action is taken to fill the required position.
  - e. Deleted.
  - f. The Operations Manager shall hold or have held a SRO license. The Assistant Operations Manager - Shift, Shift Manager, and Control Room Supervisor shall hold an SRO license. The Control Operator shall hold a Reactor Operator License.
  - g. The Shift Technical Advisor (STA) shall provide advisory technical support to the Shift Manager in the areas of thermal hydraulics, reactor engineering, and plant analysis with regard to the safe operation of the unit. In addition, the STA shall meet the qualifications specified by the Commission Policy Statement on Engineering Expertise on Shift.
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## 5.0 ADMINISTRATIVE CONTROLS

### 5.3 Unit Staff Qualifications

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- 5.3.1 Each member of the unit staff shall meet or exceed the minimum qualifications referenced for comparable positions, as specified in the Duke Energy Corporation Quality Assurance Program Description (DUKE-QAPD-001-A).
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## 5.0 ADMINISTRATIVE CONTROLS

### 5.4 Procedures

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- 5.4.1 Written procedures shall be established, implemented, and maintained covering the following activities:
- a. The applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978;
  - b. The emergency operating procedures required to implement the requirements of NUREG-0737 and to NUREG-0737, Supplement 1, as stated in Generic Letter 82-33;
  - c. Quality assurance for effluent and environmental monitoring;
  - d. Commitments contained in UFSAR Chapter 16.0; and
  - e. All programs specified in Specification 5.5.
-

## 5.0 ADMINISTRATIVE CONTROLS

### 5.5 Programs and Manuals

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The following programs shall be established, implemented, and maintained.

#### 5.5.1 Offsite Dose Calculation Manual (ODCM)

The ODCM shall contain the methodology and parameters used in the calculation of offsite doses resulting from radioactive gaseous and liquid effluents, in the calculation of gaseous and liquid effluent monitoring alarm and trip setpoints, and in the conduct of the radiological environmental monitoring program.

Licensee initiated changes to the ODCM:

- a. Shall be documented and records of reviews performed shall be retained. This documentation shall contain:
  1. sufficient information to support the change(s) together with the appropriate analyses or evaluations justifying the change(s), and
  2. a determination that the change(s) do not adversely impact the accuracy or reliability of effluent, dose, or setpoint calculations;
- b. Shall become effective after the approval of the Plant Manager or Radiation Protection Manager; and
- c. Shall be submitted to the NRC in the form of a complete, legible copy of the entire ODCM as a part of or concurrent with the Radioactive Effluent Release Report for the period of the report in which any change in the ODCM was made. Each change shall be identified by markings in the margin of the affected pages, clearly indicating the area of the page that was changed, and shall indicate the date (i.e., month and year) the change was implemented.

#### 5.5.2 Containment Leakage Rate Testing Program

A program shall be established to implement 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 NEI 94-01, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," Revision 3-A, dated July 2012, and the conditions and limitations specified in NEI 94-01 Revision 2-A, dated October 2008.

(continued)

5.5 Programs and Manuals

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5.5.2 Containment Leakage Rate Testing Program (continued)

The peak calculated containment internal pressure for the design basis loss of coolant accident,  $P_a$ , is 14.68 psig. The containment design pressure is 15 psig. The maximum allowable containment leakage rate,  $L_a$ , at  $P_a$ , shall be 0.3% of containment air weight per day.

Leakage Rate acceptance criteria are:

- a. Containment leakage rate acceptance criterion is  $\leq 1.0 L_a$ . During the first plant startup following testing in accordance with this program, the leakage rate acceptance criteria are  $\leq 0.75 L_a$  for Type A tests and  $< 0.6 L_a$  for Type B and Type C tests.
- b. Air lock testing acceptance criteria for the overall air lock leakage rate is  $\leq 0.05 L_a$  when tested at  $\geq P_a$ . For each door, the leakage rate is  $\leq 0.01 L_a$  when tested at  $\geq 14.68$  psig.

The provisions of SR 3.0.3 are applicable to the Containment Leakage Rate Testing Program.

Nothing in these Technical Specifications shall be construed to modify the testing frequencies required by 10 CFR 50, Appendix J.

5.5.3 Primary Coolant Sources Outside Containment

This program provides controls to minimize leakage from those portions of systems outside containment that could contain highly radioactive fluids during a serious transient or accident to levels as low as practicable. The systems include Containment Spray, Safety Injection, Chemical and Volume Control, and Nuclear Sampling. The program shall include the following:

- a. Preventive maintenance and periodic visual inspection requirements; and
- b. Integrated leak test requirements for each system at refueling cycle intervals or less.

5.5.4 DELETED

(continued)



5.5 Programs and Manuals (continued)

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5.5.5 Radioactive Effluent Controls Program

- a. This program conforms to 10 CFR 50.36a for the control of radioactive effluents and for maintaining the doses to members of the public from radioactive effluents as low as reasonably achievable. The program shall be contained in Chapter 16 of the UFSAR, shall be implemented by procedures, and shall include remedial actions to be taken whenever the program limits are exceeded. The program shall include the following elements:
1. Limitations on the functional capability of radioactive liquid and gaseous monitoring instrumentation including surveillance tests and setpoint determination in accordance with the methodology in the ODCM;
  2. Limitations on the concentrations of radioactive material released in liquid effluents to unrestricted areas, conforming to ten times 10 CFR 20, Part 20.1001 - 20.2401, Appendix B, Table 2, Column 2;
  3. Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM;
  4. Limitations on the annual and quarterly doses or dose commitment to a member of the public from radioactive materials in liquid effluents released from each unit to unrestricted areas, conforming to 10 CFR 50, Appendix I;
  5. Determination of cumulative and projected dose contributions from radioactive effluents for the current calendar quarter and current calendar year in accordance with the methodology and parameters in the ODCM at least every 31 days;
  6. Limitations on the functional capability and use of the liquid and gaseous effluent treatment systems to ensure that appropriate portions of these systems are used to reduce releases of radioactivity when the projected doses in a period of 31 days would exceed 2% of the guidelines for the annual dose or dose commitment, conforming to 10 CFR 50, Appendix I;

(continued)

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5.5 Programs and Manuals

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5.5.5 Radioactive Effluent Controls Program (continued)

7. Limitations on the dose rate resulting from radioactive material released in gaseous effluents to areas beyond the site boundary shall be limited to the following:
    - i. For noble gases: Less than or equal to a dose rate of 500 mrem/yr to the total body and less than or equal to a dose rate of 3000 mrem/yr to the skin, and
    - ii. For iodine-131, iodine-133, tritium, and for all radionuclides in particulate form with half-lives greater than 8 days: Less than or equal to a dose rate of 1500 mrem/yr to any organ;
  8. Limitations on the annual and quarterly air doses resulting from noble gases released in gaseous effluents from each unit to areas beyond the site boundary, conforming to 10 CFR 50, Appendix I;
  9. Limitations on the annual and quarterly doses to a member of the public from iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half lives > 8 days in gaseous effluents released from each unit to areas beyond the site boundary, conforming to 10 CFR 50, Appendix I;
  10. Limitations on the annual dose or dose commitment to any member of the public due to releases of radioactivity and to radiation from uranium fuel cycle sources, conforming to 40 CFR 190; and
  11. Descriptions of the information that should be included in the Annual Radiological Environmental Operating, and Radioactive Effluent Release Reports required by Specification 5.6.2 and Specification 5.6.3.
- b. Licensee initiated changes to the Radiological Effluent Controls of the UFSAR:

(continued)

5.5 Programs and Manuals

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5.5.5 Radioactive Effluent Controls Program (continued)

1. Shall be documented and records of reviews performed shall be retained. This documentation shall contain:
  - i. Sufficient information to support the change(s) together with the appropriate analyses or evaluations justifying the change(s), and
  - ii. A determination that the change(s) maintain the overall conformance of the solidified waste product to existing requirements of Federal, State, or other applicable regulations or a determination that the change will maintain the level of radioactive effluent control required by 10 CFR 20.1302, 40 CFR Part 190, 10 CFR 50.36a, and Appendix I to 10 CFR Part 50 and not adversely impact the accuracy or reliability of effluent, dose, or setpoint calculations;
2. Shall become effective after approval of the station manager.
3. Shall be submitted to the Commission in the form of a complete, legible copy of the entire Section 16.11 of the UFSAR as a part of or concurrent with the Radioactive Effluent Release Report for the period of the report in which any changes to Section 16.11 of the UFSAR was made. Each change shall be identified by markings in the margin of the affected pages, clearly indicating the area of the page that was changed, and shall indicate the date (i.e., month/year) the change was implemented.

5.5.6 Component Cyclic or Transient Limit

This program provides controls to track the UFSAR, Section 3.9.1.1, cyclic and transient occurrences to ensure that components are maintained within the design limits.

5.5.7 Reactor Coolant Pump Flywheel Inspection Program

This program shall provide for the inspection of each reactor coolant pump flywheel per the recommendations of Regulatory Position C.4.b of Regulatory Guide 1.14, Revision 1, August 1975.

In lieu of Position C.4.b(1) and C.4.b(2), a qualified in-place UT examination over the volume from the inner bore of the flywheel to the circle one-half of the outer radius or a surface examination (MT and/or PT) of exposed surfaces of the removed flywheels may be conducted at 20 year intervals.

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(continued)

5.5 Programs and Manuals (continued)

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5.5.8 Inservice Testing Program (Deleted)

Note: See Section 1.1 for the definition of INSERVICE TESTING PROGRAM.

5.5.9 Steam Generator (SG) Program

An SG Program shall be established and implemented to ensure that SG tube integrity is maintained. In addition, the SG Program shall include the following:

- a. Provisions for condition monitoring assessments. Condition monitoring assessment means an evaluation of the "as found" condition of the tubing with respect to the performance criteria for structural integrity and accident induced leakage. The "as found" condition refers to the

(continued)

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**5.5 Programs and Manuals**

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**5.5.9 Steam Generator (SG) Program (continued)**

condition of the tubing during a SG inspection outage, as determined from the inservice inspection results or by other means, prior to the plugging of tubes. Condition monitoring assessments shall be conducted during each outage during which the SG tubes are inspected or plugged to confirm that the performance criteria are being met.

- b. Performance criteria for SG tube integrity. SG tube integrity shall be maintained by meeting the performance criteria for tube structural integrity, accident induced leakage, and operational LEAKAGE.
  - 1. Structural integrity performance criterion: All inservice SG tubes shall retain structural integrity over the full range of normal operating conditions (including startup, operation in the power range, hot standby, and cooldown), all anticipated transients included in the design specification, and design basis accidents. This includes retaining a safety factor of 3.0 against burst under normal steady state full power operation primary to secondary pressure differential and a safety factor of 1.4 against burst applied to the design basis accident primary to secondary pressure differentials. Apart from the above requirements, additional loading conditions associated with the design basis accidents, or combination of accidents in accordance with the design and licensing basis, shall also be evaluated to determine if the associated loads contribute significantly to burst or collapse. In the assessment of tube integrity, those loads that do significantly affect burst or collapse shall be determined and assessed in combination with the loads due to pressure with a safety factor of 1.2 on the combined primary loads and 1.0 on axial secondary loads.
  - 2. Accident induced leakage performance criterion: The primary to secondary accident induced leakage rate for any design basis accident, other than a SG tube rupture, shall not exceed the leakage rate assumed in the accident analysis in terms of total leakage rate for all SGs and leakage rate for an individual SG. Leakage is not to exceed 150 gallons per day through each SG for a total of 600 gallons per day through all SGs.
  - 3. The operational LEAKAGE performance criterion is specified in LCO 3.4.13, "RCS Operational LEAKAGE."
- c. Provisions for SG tube plugging criteria. Tubes found by inservice inspection to contain flaws with a depth equal to or exceeding 40% of the nominal tube wall thickness shall be plugged.

(continued)

5.5 Programs and Manuals

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5.5.9 Steam Generator (SG) Program (continued)

The following SG tube alternate plugging criteria shall be applied as an alternative to the 40% depth based criteria:

1. For Unit 2 only, tubes with service-induced flaws located greater than 14.01 inches below the top of the tubesheet do not require plugging. Tubes with service-induced flaws located in the portion of the tube from the top of the tubesheet to 14.01 inches below the top of the tubesheet shall be plugged upon detection.
  
- d. Provisions for SG tube inspections. Periodic SG tube inspections shall be performed. For Unit 1, the number and portions of the tubes inspected and method of inspection shall be performed with the objective of detecting flaws of any type (for example, volumetric flaws, axial and circumferential cracks) that may be present along the length of the tube, from the tube-to-tubesheet weld at the tube inlet to the tube-to-tubesheet weld at the tube outlet, and that may satisfy the applicable tube plugging criteria. The tube-to-tubesheet weld is not part of the tube. For Unit 2, the number and portions of the tubes inspected and method of inspection shall be performed with the objective of detecting flaws of any type (for example, volumetric flaws, axial and circumferential cracks) that may be present along the length of the tube, from the tube-to-tubesheet weld at the tube inlet to the tube-to-tubesheet weld at the tube outlet except for any portions of the tube that are exempt from inspection by alternate repair criteria, and that may satisfy the applicable tube plugging criteria. In addition to meeting requirements d.1, d.2, d.3, and d.4 below, the inspection scope, inspection methods, and inspection intervals shall be such as to ensure that SG tube integrity is maintained until the next SG inspection. A degradation assessment shall be performed to determine the type and location of flaws to which the tubes may be susceptible and, based on this assessment, to determine which inspection methods need to be employed and at what locations.

(continued)

5.5 Programs and Manuals

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5.5.9 Steam Generator (SG) Program (continued)

1. Inspect 100% of the tubes in each SG during the first refueling outage following SG installation.
  2. For Unit 1, after the first refueling outage following SG installation, inspect 100% of the tubes in each SG at least every 96 effective full power months, which defines the inspection period.
  3. For Unit 2, after the first refueling outage following SG installation, inspect 100% of the tubes in each SG at least every 54 effective full power months, which defines the inspection period. If none of the SG tubes have ever experienced cracking other than in regions that are exempt from inspection by alternate repair criteria and the SG inspection was performed with enhanced probes, the inspection period may be extended to 72 effective full power months. Enhanced probes have a capability to detect flaws of any type equivalent to or better than array probe technology. The enhanced probes shall be used from the tube-to-tubesheet weld at the tube inlet to the tube-to-tubesheet weld at the tube outlet except any portions of the tube that are exempt from inspection by alternate repair criteria. If there are regions where enhanced probes cannot be used, the tube inspection techniques shall be capable of detecting all forms of existing and potential degradation in that region.
  4. For Unit 1, if crack indications are found in any SG tube, then the next inspection for each affected and potentially affected SG for the degradation mechanism that caused the crack indication shall be at the next refueling outage. For Unit 2, if crack indications are found in any SG tube excluding any region that is exempt from inspection by alternate repair criteria, then the next inspection for each affected and potentially affected SG for the degradation mechanism that caused the crack indication shall be at the next refueling outage, but may be deferred to the following refueling outage if the 100% inspection of all SGs was performed with enhanced probes as described in paragraph d.3. If definitive information, such as from examination of a pulled tube, diagnostic non-destructive testing, or engineering evaluation indicates that a crack-like indication is not associated with crack(s), then the indication need not be treated as a crack.
- e. Provisions for monitoring operational primary to secondary LEAKAGE.

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Page 5.5-10 has been deleted by Amendment Nos. 311/307

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Page 5.5-11 has been deleted by Amendment Nos. 311/307

5.5 Programs and Manuals (continued)

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5.5.10 Secondary Water Chemistry Program

This program provides controls for monitoring secondary water chemistry to inhibit SG tube degradation and low pressure turbine disc stress corrosion cracking. The program shall include:

- a. Identification of a sampling schedule for the critical variables and control points for these variables;
- b. Identification of the procedures used to measure the values of the critical variables;
- c. Identification of process sampling points, which shall include monitoring the discharge of the condensate pumps for evidence of condenser in leakage;
- d. Procedures for the recording and management of data;
- e. Procedures defining corrective actions for all off control point chemistry conditions; and
- f. A procedure identifying the authority responsible for the interpretation of the data and the sequence and timing of administrative events, which is required to initiate corrective action.

5.5.11 Ventilation Filter Testing Program (VFTP)

A program shall be established to implement the following required testing of Engineered Safety Feature (ESF) filter ventilation systems in accordance with Regulatory Guide 1.52, Revision 2, and ANSI N510-1980, with exceptions as noted in the UFSAR.

- a. Demonstrate for each of the ESF systems that an in-place test of the high efficiency particulate air (HEPA) filters shows the following penetration and system bypass when tested in accordance with Regulatory Guide 1.52, Revision 2, and ANSI N510-1980 at the flowrate specified below  $\pm 10\%$ .

(continued)

5.5 Programs and Manuals

5.5.11 Ventilation Filter Testing Program (VFTP) (continued)

ESF Ventilation System	Penetration and System Bypass	Flowrate
Annulus Ventilation	< 1%	9000 cfm
Control Room Area Ventilation	< 0.05%	6000 cfm
Aux. Bldg. Filtered Exhaust	< 1%	30,000 cfm
Containment Purge (non-ESF) (2 fans)	< 1%	25,000 cfm
Fuel Bldg. Ventilation	< 1%	16,565 cfm

- b. Demonstrate for each of the ESF systems that an in-place test of the carbon adsorber shows the following penetration and system bypass when tested in accordance with Regulatory Guide 1.52, Revision 2, and ANSI N510-1980 at the flowrate specified below  $\pm 10\%$ .

ESF Ventilation System	Penetration and System Bypass	Flowrate
Annulus Ventilation	< 1%	9000 cfm
Control Room Area Ventilation	< 0.05%	6000 cfm
Aux. Bldg. Filtered Exhaust	< 1%	30,000 cfm
Containment Purge (non-ESF) (2 fans)	< 1%	25,000 cfm
Fuel Bldg. Ventilation	< 1%	16,565 cfm

- c. Demonstrate for each of the ESF systems that a laboratory test of a sample of the carbon adsorber, when obtained as described in Regulatory Guide 1.52, Revision 2, shows the methyl iodide penetration less than the value specified below when tested in accordance with ASTM D3803-1989 at a temperature of  $\leq 30^\circ\text{C}$  and greater than or equal to the relative humidity specified below.

ESF Ventilation System	Penetration	RH
Annulus Ventilation	< 4%	95%
Control Room Area Ventilation	< 0.95%	95%
Aux. Bldg. Filtered Exhaust (Note 1)	< 4%	95%
Containment Purge (non-ESF)	< 6%	95%
Fuel Bldg. Ventilation	< 4%	95%

Note 1: The Auxiliary Building Filtered Exhaust System carbon adsorber samples shall be tested at a face velocity of 48 ft/min instead of the 40 ft/min specified in ASTM D3803-1989. 48 ft/min is the nominal limiting velocity the carbon adsorber may be exposed to under post accident conditions as a result of certain postulated failures. The results from this test shall then be corrected to a 2.27 inch bed in accordance with the guidance provided in ASTM D3803-1989 prior to comparing them to the Technical Specification criteria. 2.27 inches is the actual bed depth for the filter unit.

(continued)

5.5 Programs and Manuals

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5.5.11 Ventilation Filter Testing Program (VFTP) (continued)

- d. Demonstrate for each of the ESF systems that the pressure drop across the combined HEPA filters, the prefilters, and the carbon adsorbers is less than the value specified below when tested in accordance with Regulatory Guide 1.52, Revision 2, and ANSI N510-1980 at the flowrate specified below  $\pm$  10%.

ESF Ventilation System	Delta P	Flowrate
Annulus Ventilation	8.0 in wg	9000 cfm
Control Room Area Ventilation	8.0 in wg	6000 cfm
Aux. Bldg. Filtered Exhaust	8.0 in wg	30,000 cfm
Containment Purge (non-ESF) (2 fans)	8.0 in wg	25,000 cfm
Fuel Bldg. Ventilation	8.0 in wg	16,565 cfm

- e. Deleted

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the VFTP test frequencies.

5.5.12 Explosive Gas and Storage Tank Radioactivity Monitoring Program

This program provides controls for potentially explosive gas mixtures contained in the Waste Gas Holdup System, the quantity of radioactivity contained in gas storage tanks or fed into the offgas treatment system, and the quantity of radioactivity contained in unprotected outdoor liquid storage tanks. The gaseous radioactivity quantities shall be determined following the methodology in Branch Technical Position (BTP) ETSB 11-5, "Postulated Radioactive Release due to Waste Gas System Leak or Failure". The liquid radwaste quantities shall be determined in accordance with Standard Review Plan, Section 15.7.3, "Postulated Radioactive Release due to Tank Failures".

(continued)

5.5 Programs and Manuals

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5.5.12 Explosive Gas and Storage Tank Radioactivity Monitoring Program (continued)

The program shall include:

- a. The limits for concentrations of hydrogen and oxygen in the Waste Gas Holdup System and a surveillance program to ensure the limits are maintained. Such limits shall be appropriate to the system's design criteria (i.e., whether or not the system is designed to withstand a hydrogen explosion);
- b. A surveillance program to ensure that the quantity of radioactivity contained in each gas storage tank or connected gas storage tanks and fed into the offgas treatment system is less than the amount that would result in a Deep Dose Equivalent of  $\geq 0.5$  rem to any individual in an unrestricted area, in the event of an uncontrolled release of the tanks' contents; and
- c. A surveillance program to ensure that the quantity of radioactivity contained in all outdoor liquid radwaste tanks that are not surrounded by liners, dikes, or walls, capable of holding the tanks' contents and that do not have tank overflows and surrounding area drains connected to the Liquid Radwaste Treatment System is less than the amount that would result in concentrations exceeding the limits of 10 CFR 20, Appendix B, Table 2, Column 2, at the nearest potable water supply and the nearest surface water supply in an unrestricted area, in the event of an uncontrolled release of the tanks' contents.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Explosive Gas and Storage Tank Radioactivity Monitoring Program surveillance frequencies.

5.5.13 Diesel Fuel Oil Testing Program

A diesel fuel oil testing program to implement required testing of both new fuel oil and stored fuel oil shall be established. The program shall include sampling and testing requirements, and acceptance criteria, all in accordance with applicable ASTM Standards. The purpose of the program is to establish the following:

- a. Acceptability of new fuel oil for use prior to addition to storage tanks by determining that the fuel oil has:
  - 1. an API gravity or an absolute specific gravity within limits,
  - 2. a flash point and kinematic viscosity within limits for ASTM 2D fuel oil, and

(continued)

## 5.5 Programs and Manuals

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### 5.5.13 Diesel Fuel Oil Testing Program (continued)

3. a clear and bright appearance with proper color or a water and sediment content within limits;
- b. Other properties for ASTM 2D fuel oil are within limits within 31 days following sampling and addition to storage tanks; and
- c. Total particulate concentration of the fuel oil is  $\leq 10$  mg/l when tested every 31 days.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Diesel Fuel Oil Testing Program test frequencies.

### 5.5.14 Technical Specifications (TS) Bases Control Program

This program provides a means for processing changes to the Bases of these Technical Specifications.

- a. Changes to the Bases of the TS shall be made under appropriate administrative controls and reviews.
- b. Licensees may make changes to Bases without prior NRC approval provided the changes do not require either of the following:
  1. a change in the TS incorporated in the license; or
  2. a change to the updated FSAR or Bases that requires NRC approval pursuant to 10 CFR 50.59.
- c. The Bases Control Program shall contain provisions to ensure that the Bases are maintained consistent with the UFSAR.
- d. Proposed changes that meet the criteria of Specification 5.5.14.b.1 or 5.5.14.b.2 above shall be reviewed and approved by the NRC prior to implementation. Changes to the Bases implemented without prior NRC approval shall be provided to the NRC on a frequency consistent with 10 CFR 50.71(e), with approved exemptions.

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(continued)

5.5 Programs and Manuals (continued)

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5.5.15 Safety Function Determination Program (SFDP)

This program ensures loss of safety function is detected and appropriate actions taken. Upon entry into LCO 3.0.6, an evaluation shall be made to determine if loss of safety function exists. Additionally, other appropriate actions may be taken as a result of the support system inoperability and corresponding exception to entering supported system Condition and Required Actions. This program implements the requirements of LCO 3.0.6. The SFDP shall contain the following:

- a. Provisions for cross train checks to ensure a loss of the capability to perform the safety function assumed in the accident analysis does not go undetected;
- b. Provisions for ensuring the plant is maintained in a safe condition if a loss of function condition exists;
- c. Provisions to ensure that an inoperable supported system's Completion Time is not inappropriately extended as a result of multiple support system inoperabilities; and
- d. Other appropriate limitations and remedial or compensatory actions.

A loss of safety function exists when, assuming no concurrent single failure, a safety function assumed in the accident analysis cannot be performed. For the purpose of this program, a loss of safety function may exist when a support system is inoperable, and:

- a. A required system redundant to the system(s) supported by the inoperable support system is also inoperable; or
- b. A required system redundant to the system(s) in turn supported by the inoperable supported system is also inoperable; or
- c. A required system redundant to the support system(s) for the supported systems (a) and (b) above is also inoperable.

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.

5.5 Programs and Manuals (continued)

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5.5.16 Control Room Envelope Habitability Program

A Control Room Envelope (CRE) Habitability Program shall be established and implemented to ensure that CRE habitability is maintained such that, with an OPERABLE Control Room Area Ventilation System (CRAVS), CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem total effective dose equivalent (TEDE) for the duration of the accident. The program shall include the following elements:

- a. The definition of the CRE and the CRE boundary.
- b. Requirements for maintaining the CRE boundary in its design condition including configuration control and preventive maintenance.
- c. Requirements for (i) determining the unfiltered air leakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003, and (ii) assessing CRE habitability at the Frequencies specified in Sections C.1. and C.2. of Regulatory Guide 1.197, Revision 0.
- d. Measurement, at designated locations, of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation by one train of the CRAVS, operating at a makeup flow rate of  $\leq 4000$  cfm, at a Frequency of 18 months on a STAGGERED TEST BASIS. The results shall be trended and used as part of the 18 month assessment of the CRE boundary.
- e. The quantitative limits on unfiltered air leakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air leakage measured by the testing described in paragraph c. The unfiltered air leakage limit for radiological challenges is the leakage flow rate assumed in the licensing basis analyses of DBA consequences. Unfiltered air leakage limits for hazardous chemicals must ensure that exposure of CRE occupants to these hazards will be within the assumptions in the licensing basis.
- f. The provisions of SR 3.0.2 are applicable to the Frequencies for assessing CRE habitability, determining CRE unfiltered leakage, and measuring CRE pressure and assessing the CRE boundary as required by paragraphs c and d, respectively.



5.5 Programs and Manuals (continued)

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5.5.17 Surveillance Frequency Control Program

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

- a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program.
  - b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1.
  - c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.
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5.0 ADMINISTRATIVE CONTROLS

5.6 Reporting Requirements

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The following reports shall be submitted in accordance with 10 CFR 50.4.

5.6.1 Not used.

5.6.2 Annual Radiological Environmental Operating Report

-----NOTE-----

A single submittal may be made for a multiple unit station. The submittal should combine sections common to all units at the station.

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The Annual Radiological Environmental Operating Report covering the operation of the unit during the previous calendar year shall be submitted by May 15 of each year. The report shall include summaries, interpretations, and analyses of trends of the results of the radiological environmental monitoring program for the reporting period. The material provided shall be consistent with the objectives outlined in Chapter 16 of the UFSAR and in 10 CFR 50, Appendix I, Sections IV.B.2, IV.B.3, and IV.C.

The Annual Radiological Environmental Operating Report shall include summarized and tabulated results of the analyses and measurements in the format of the table in the Radiological Assessment Branch Technical Position, Revision 1, November 1979. In the event that some individual results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. The missing data shall be submitted in a supplementary report as soon as possible.

5.6.3 Radioactive Effluent Release Report

-----NOTE-----

A single submittal may be made for a multiple unit station. The submittal should combine sections common to all units at the station; however, for units with separate radwaste systems, the submittal shall specify the releases of radioactive material from each unit.

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The Radioactive Effluent Release Report covering the operation of the unit in the previous year shall be submitted prior to May 1 of each year in accordance with 10 CFR 50.36a. The report shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit. The material provided shall be consistent with the objectives outlined in Chapter 16 of the UFSAR and in conformance with 10 CFR 50.36a and 10 CFR Part 50, Appendix I, Section IV.B.1.

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(continued)

5.6 Reporting Requirements (continued)

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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. Illustration of Reactor Core Safety Limits for Specification 2.1.1,
  2. Moderator Temperature Coefficient BOL and EOL limits and 60 ppm and 300 ppm surveillance limits for Specification 3.1.3,
  3. Shutdown Bank Insertion Limit for Specification 3.1.5,
  4. Control Bank Insertion Limits for Specification 3.1.6,
  5. Axial Flux Difference limits for Specification 3.2.3,
  6. Heat Flux Hot Channel Factor for Specification 3.2.1,
  7. Nuclear Enthalpy Rise Hot Channel Factor for Specification 3.2.2,
  8. Overtemperature and Overpower Delta T setpoint parameter values for Specification 3.3.1,
  9. Reactor Coolant System Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits for Specification 3.4.1,
  10. Accumulator and Refueling Water Storage Tank boron concentration limits for Specification 3.5.1 and 3.5.4,
  11. Reactor Coolant System and refueling canal boron concentration limits for Specification 3.9.1,
  12. Spent fuel pool boron concentration limits for Specification 3.7.15,
  13. SHUTDOWN MARGIN for Specification 3.1.1,
  14. 31 EFPD Surveillance Penalty Factors for Specifications 3.2.1 and 3.2.2, and
  15. Reactor Makeup Water Pumps Combined Flow Rates limit for Specification 3.3.9.

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5.6 Reporting Requirements

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5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

- b. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:
1. WCAP-9272-P-A, "WESTINGHOUSE RELOAD SAFETY EVALUATION METHODOLOGY" (W Proprietary).
  2. WCAP-10266-P-A, "THE 1981 VERSION OF WESTINGHOUSE EVALUATION MODEL USING BASH CODE" (W Proprietary).
  3. BAW-10168-P-A, "B&W Loss-of-Coolant Accident Evaluation Model for Recirculating Steam Generator Plants" (B&W Proprietary).
  4. DPC-NE-2011-P-A, "Duke Power Company Nuclear Design Methodology for Core Operating Limits of Westinghouse Reactors" (DPC Proprietary).
  5. DPC-NE-3001-P-A, "Multidimensional Reactor Transients and Safety Analysis Physics Parameter Methodology" (DPC Proprietary).
  6. DPC-NF-2010-A, "Duke Power Company McGuire Nuclear Station Catawba Nuclear Station Nuclear Physics Methodology for Reload Design."
  7. DPC-NE-3002-A, "FSAR Chapter 15 System Transient Analysis Methodology."
  8. DPC-NE-3000-P-A, "Thermal-Hydraulic Transient Analysis Methodology" (DPC Proprietary).
  9. DPC-NE-1004-A, "Design Methodology Using CASMO-3/SIMULATE-3P."
  10. DPC-NE-2004-P-A, "Duke Power Company McGuire and Catawba Nuclear Stations Core Thermal-Hydraulic Methodology using VIPRE-01" (DPC Proprietary).
  11. DPC-NE-2005-P-A, "Thermal Hydraulic Statistical Core Design Methodology" (DPC Proprietary).

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(continued)

## 5.6 Reporting Requirements

5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

12. DPC-NE-2008-P-A, "Fuel Mechanical Reload Analysis Methodology Using TACO3" (DPC Proprietary).
13. WCAP-10054-P-A, "Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code" (W Proprietary).
14. DPC-NE-2009-P-A, "Westinghouse Fuel Transition Report" (DPC Proprietary).
15. WCAP-12945-P-A, Volume 1 and Volumes 2-5, "Code Qualification Document for Best-Estimate Loss of Coolant Analysis" (W Proprietary).
16. DPC-NE-1005P-A, "Duke Power Nuclear Design Methodology Using CASMO-4/SIMULATE-3 MOX," (DPC Proprietary).
17. BAW-10231P-A, "COPERNIC Fuel Rod Design Computer Code," (Framatome ANP Proprietary).
18. DPC-NE-1007-PA, "Conditional Exemption of the EOC MTC Measurement Methodology" (Duke and Westinghouse Proprietary).
19. WCAP-12610-P-A, "VANTAGE+ Fuel Assembly Reference Core Report," April 1995 (Westinghouse Proprietary).
20. WCAP-12610-P-A & CENPD-404-P-A, Addendum 1-A, "Optimized ZIRLO™," July 2006 (Westinghouse Proprietary).

The COLR will contain the complete identification for each of the Technical Specifications referenced topical reports used to prepare the COLR (i.e., report number, title, revision number, report date or NRC SER date, and any supplements).

- 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)

5.6 Reporting Requirements (continued)

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5.6.6 Not used.

5.6.7 PAM Report

When a report is required by LCO 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

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(continued)

5.6 Reporting Requirements (continued)

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5.6.8 Steam Generator (SG) Tube Inspection Report

A report shall be submitted within 180 days after the initial entry into MODE 4 following completion of the inspection. The report shall include:

- a. The scope of inspections performed on each SG;
- b. The nondestructive examination techniques utilized for tubes with increased degradation susceptibility;
- c. For each degradation mechanism found:
  - 1. The nondestructive examination techniques utilized;
  - 2. The location, orientation (if linear), measured size (if available), and voltage response for each indication. For tube wear at support structures less than 20 percent through-wall, only the total number of indications needs to be reported;
  - 3. A description of the condition monitoring assessment and results, including the margin to the tube integrity performance criteria and comparison with the margin predicted to exist at the inspection by the previous forward-looking tube integrity assessment; and
  - 4. The number of tubes plugged during the inspection outage.
- d. An analysis summary of the tube integrity conditions predicted to exist at the next scheduled inspection (the forward-looking tube integrity assessment) relative to the applicable performance criteria, including the analysis methodology, inputs, and results;
- e. The number and percentage of tubes plugged to date, and the effective plugging percentage in each SG;
- f. The results of any SG secondary side inspections;
- g. For Unit 2, the primary to secondary LEAKAGE rate observed in each SG (if it is not practical to assign leakage to an individual SG, the entire primary to secondary LEAKAGE should be conservatively assumed to be from one SG) during the cycle preceding the inspection which is the subject of the report;

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5.6 Reporting Requirements

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5.6.8 Steam Generator (SG) Tube Inspection Report (continued)

- h. For Unit 2, the calculated accident leakage rate from the portion of the tubes below 14.01 inches from the top of the tubesheet for the most limiting accident in the most limiting SG. In addition, if the calculated accident leakage rate from the most limiting accident is less than 3.27 times the maximum primary to secondary LEAKAGE rate, the report shall describe how it was determined; and
  - i. For Unit 2, the results of monitoring for tube axial displacement (slippage). If slippage is discovered, the implications of the discovery and corrective action shall be provided.
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## 5.0 ADMINISTRATIVE CONTROLS

### 5.7 High Radiation Area

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5.7.1 Pursuant to 10 CFR 20, paragraph 20.1601(c), in lieu of the requirements of 10 CFR 20.1601, each high radiation area, as defined in 10 CFR 20, in which the intensity of radiation is  $> 100$  mrem/hr but  $\leq 1000$  mrem/hr at 30 cm (12 in.) from the radiation source or from any surface which the radiation penetrates, shall be barricaded and conspicuously posted as a high radiation area and entrance thereto shall be controlled by requiring issuance of a Radiation Work Permit (RWP). Individuals qualified in radiation protection procedures (e.g., Radiation Protection Technicians) or personnel continuously escorted by such individuals may be exempt from the RWP issuance requirement during the performance of their assigned duties in high radiation areas with exposure rates  $\leq 1000$  mrem/hr, provided they are otherwise following plant radiation protection procedures for entry into such high radiation areas.

Any individual or group of individuals permitted to enter such areas shall be provided with or accompanied by one or more of the following:

- a. A radiation monitoring device that continuously indicates the radiation dose rate in the area.
- b. A radiation monitoring device that continuously integrates the radiation dose rate in the area and alarms when a preset integrated dose is received. Entry into such areas with this monitoring device may be made after the dose rate levels in the area have been established and personnel are aware of them.
- c. An individual qualified in radiation protection procedures with a radiation dose rate monitoring device, who is responsible for providing positive control over the activities within the area and shall perform periodic radiation surveillance at the frequency specified by the Radiation Protection Manager in the RWP.

5.7.2 In addition to the requirements of Specification 5.7.1, areas with radiation levels  $> 1000$  mrem/hr at 30 cm (12 in.) from the radiation source or from any surface which the radiation penetrates shall be provided with locked or continuously guarded doors to prevent unauthorized entry and the keys shall be maintained under the administrative control of the Shift Manager, Radiation Protection Manager, or radiation protection personnel. Doors shall remain locked except during periods of access by personnel under an approved RWP that shall specify the dose rate levels in the immediate work areas and the maximum allowable stay times for individuals in those areas. In lieu of the stay time specification of the RWP, direct or remote (such as closed circuit TV cameras) continuous surveillance may be made by personnel qualified in radiation protection procedures to provide positive exposure control over the activities being performed within the area.

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**5.7 High Radiation Area (continued)**

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- 5.7.3** For individual high radiation areas with radiation levels of  $> 1000$  mrem/hr at 30 cm (12 in.), accessible to personnel, that are located within large areas such as reactor containment, where no enclosure exists for purposes of locking, or that cannot be continuously guarded, and where no enclosure can be reasonably constructed around the individual area, that individual area shall be barricaded and conspicuously posted, and a flashing light shall be activated as a warning device.
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APPENDIX B

ADDITIONAL CONDITIONS

FACILITY OPERATING LICENSE NO. NPF-35

Duke Energy Carolinas, LLC shall comply with the following conditions on the schedules noted below:

<u>Amendment Number</u>	<u>Additional Condition</u>	<u>Implementation Date</u>
159	This amendment requires the licensee to use administrative controls, as described in the licensee's letter of March 7, 1997, and evaluated in the staff's safety evaluation dated April 29, 1997, to restrict the dose-equivalent iodine levels to 0.46 microCurie per gram (in lieu of the limit in TS Section 3.4.16.a), and to 26 microCurie per gram (in lieu of the limit of TS Figure 3.4.16-1), until this license condition is removed by a future amendment.	Immediately upon issuance of the amendment
173	The licensee is authorized to relocate certain requirements included in appendix A to licensee-controlled documents. Implementation of this amendment shall include the relocation of these requirements to the appropriate documents as described in the licensee's letters dated May 27, 1997, as amended by letters dated March 9, March 20, April 20, June 3, June 24, July 7, July 21, August 5, September 8, and September 15, 1998, and evaluated in the NRC staff's Safety Evaluation associated with this amendment.	All relocation to be completed by January 31, 1999.

<u>Amendment Number</u>	<u>Additional Condition</u>	<u>Implementation Date</u>
173	<p>The schedule for the performance of new and revised surveillance requirements shall be as follows:</p> <p>For surveillance requirements (SRs) that are new in Amendment No. 173 the first performance is due at the end of the first surveillance interval that begins at implementation of Amendment No. 173. For SRs that existing prior to Amendment No. 173, including SRs with modified acceptance criteria and SRs who intervals of performance are 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 No. 173. For SRs that existed prior to Amendment No. 173, whose intervals of performance are being reduced, the first reduced surveillance interval begins upon completion of the first surveillance performed after implementation of Amendment No. 173</p>	By January 31, 1999
	<p>In association with the ECCS sump strainer modification and Generic Safety Issue (GSI)-191 requirements:</p> <ol style="list-style-type: none"> <li>1. Unit 1 shall enter Mode 5 for the outage to install the sump strainer modification no later than May 19, 2008 and</li> <li>2. The Unit 1 sump strainer modification shall be completed prior to entry into Mode 4 after May 19, 2008.</li> </ol>	Within 30 days of date of amendment and no later than December 31, 2007

<u>Amendment Number</u>	<u>Additional Condition</u>	<u>Implementation Date</u>
242	<ul style="list-style-type: none"> <li>• The 72 hour allowed outage time of Technical Specification 3.7.5 Action "B" for the 1B AFW pump which was entered at 1041 on July 12, 2008 may be extended by an additional 144 hours. Upon completion of the repair and restoration of the 1B NSWS pump, this License Condition is no longer applicable and will expire at 1041 on July 21, 2008.</li> <li>• The 72 hour allowed outage time of Technical Specification 3.6.6 Action "A" for the 1B CSS which was entered at 1041 on July 12, 2008 may be extended by an additional 144 hours. Upon completion of the repair and restoration of the 1B NSWS pump, this License Condition is no longer applicable and will expire at 1041 on July 21, 2008.</li> </ul>	July 15, 2008 at 1041

<u>Amendment Number</u>	<u>Additional Condition</u>	<u>Implementation Date</u>
250	<p>Upon implementation of the Amendment adopting TSTF-448, Rev. 3, the determination of CRE unfiltered air inleakage as required by SR 3.7.10.4, in accordance with Technical Specification 5.5.16.c(i), the assessment of CRE habitability as required by Technical Specification 5.5.16.c(ii), and the measurement of CRE pressure as required by Technical Specification 5.5.16.d, shall be met. Following implementation:</p> <p>(a) The first performance of SR 3.7.10.4 in accordance with Technical Specification 5.5.16.c(i) shall be within the specified Frequency of 6 years, plus the 18 month allowance of SR 3.0.2, as measured from November 12, 2002, the date of the most recent successful tracer gas test, as stated in the December 9, 2003 letter response to Generic Letter (GL) 2003-01, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years.</p> <p>(b) The first performance of the periodic assessment of CRE habitability, Technical Specification 5.5.16.c(ii), shall be within 3 years, plus the 9 month allowance of SR 3.0.2 as measured from November 12, 2002, the date of the most recent successful tracer gas test, as stated in the December 9, 2003 letter response to GL 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years.</p> <p>(c) The first performance of the periodic measurement of CRE pressure, Technical Specification 5.5.16.d, shall be within 18 months, plus the 138 days allowed by SR 3.0.2, as measured from September 1, 2007, the date of the most recent successful pressure measurement test, or within 138 days if not performed previously.</p>	Within 60 days of date of amendment

<u>Amendment Number</u>	<u>Additional Condition</u>	<u>Implementation Date</u>
300	<p>1. To reduce NSWS pipe stress at the 1A Component Cooling (KC) Heat Exchanger piping return nozzle location, a 1/4" thick reinforcing pad will be added to the existing reinforcing pad.</p> <p>2. The plant engineering process will be utilized to develop new plant procedures and required training to support the Single Pond Return Header alignment and new operator actions credited in the PRA.</p> <p>Human Error Probabilities (HEPs) for the two new operator actions developed in support of Single Pond Return Header alignment LAR will be updated as needed to be consistent with the updated procedural guidance and training. Risk estimates will also be updated to include the updated HEPs.</p> <p>After the HEPs are updated, it will be confirmed that the risk estimates associated with Single Pond Return Header alignment LAR are within the acceptance guidelines of RG 1.177 and RG 1.174. If the risk estimates are not within the acceptance guidelines of RG 1.177 and RG 1.174, additional risk reduction measures will be taken as needed to ensure that the acceptance guidance are met.</p>	<p>Prior to entry into TS 3.7.8, Nuclear Service Water System (NSWS) Condition D  – One NSWS Pond return header inoperable due to NSWS being aligned for single Pond return header operation.</p>

Renewed License No. NPF-35  
Amendment No. 300

<u>Amendment Number</u>	<u>Additional Condition</u>	<u>Implementation Date</u>
304	During the extended DG Completion Times authorized by Amendment No. 304, the turbine-driven auxiliary feed water pump will not be removed from service for elective maintenance activities. The turbine-driven auxiliary feed water pump will be controlled as "protected equipment" during the extended DG CT. The Non-CT EDGs, ESPS, Component Cooling System, Safe Shutdown Facility, Nuclear Service Water System, motor driven auxiliary feed water pumps, and the switchyard will also be controlled as "protected equipment."	Upon implementation of Amendment No. 304
304	The risk estimates associated with the 14-day EDG Completion Time LAR (including those results of associated sensitivity studies) will be updated, as necessary to incorporate the as-built, as-operated ESPS modification. Duke Energy will confirm that any updated risk estimates continue to meet the risk acceptance guidelines of RG 1.174 and RG 1.177.	Upon implementation of Amendment No. 304
304	The preplanned diesel generator (DG) maintenance will not be scheduled if severe weather conditions are anticipated. Weather conditions will be evaluated prior to intentionally entering the extended DG Completion Time (CT) and will not be entered if official weather forecasts are predicting severe weather conditions (i.e., thunderstorm, tornado or hurricane warnings). Operators will monitor weather forecasts each shift during the extended DG CT. If severe weather or grid instability is expected after a DG outage begins, station managers will assess the conditions and determine the best course for returning the DG to operable status.	Upon implementation of Amendment No. 304

Renewed License No. NPF-35  
Amendment No. 304



## APPENDIX C

### ANTITRUST CONDITIONS

Pursuant to an Order by the Atomic Safety and Licensing Board, dated April 23, 1975, the Nuclear Regulatory Commission incorporates in Operating License NPR-35 the following antitrust conditions:

- a. The licensee makes the commitments contained herein, recognizing that bulk power supply arrangements between neighboring entities normally tend to serve the public interest. In addition, where there are net benefits to all participants such arrangements also serve the best interests of each of the participants. Among the benefits of such transactions are increased electric system reliability, a reduction in the cost of electric power, and minimization of the environmental effects of the production and sale of electricity.

Any particular bulk power supply transaction may afford greater benefits to one participant than to another. The benefits realized by a small system may be proportionately greater than those realized by a larger system. The relative benefits to be derived by the parties from a proposed transaction, however, should not be controlling upon a decision with respect to the desirability of participating in the transaction. Accordingly, the licensee will enter into proposed bulk power transactions of the types hereinafter described which, on balance, provide net benefits to the licensee. There are net benefits in a transaction if the licensee recovers the cost of the transaction, (as defined in subparagraph (1)(d) hereof) and there is no demonstrable net detriment to the licensee arising from the transaction.

(1) As used herein:

- (a) "Bulk Power" means electric power and any attendant energy, supplied or made available at transmission or sub-transmission voltage by one electric system to another.
- (b) "Neighboring Entity" means a private or public corporation, a governmental agency or authority, a municipality, a cooperative, or a lawful association of any of the foregoing owning or operating, or proposing to own or operate, facilities for the generation and transmission of electricity which meets each of the following criteria: (1) its existing or proposed facilities are economically and technically feasible of interconnection with those of the licensee and (2) with the exception of municipalities, cooperatives, governmental agencies or authorities, and associations, it is, or upon commencement of operations will be, a public utility and subject to regulation with respect to rates and service under the laws of North Carolina or South Carolina or under the Federal Power Act; provided, however, that as to associations, each member of such association is either a public utility as discussed in this clause (2) or a

municipality, a cooperative or a governmental agency or authority.

- (c) Where the phrase "neighboring entity" is intended to include entities engaging or proposing to engage only in the distribution of electricity, this is indicated by adding the phrase "including distribution systems."
  - (d) "Cost" means any appropriate operating and maintenance expenses, together with all other costs, including a reasonable return on the licensee's investment, which are reasonably allocable to a transaction. However, no value shall be included for loss of revenue due to the loss of any wholesale or retail customer as a result of any transaction hereafter described.
- (2)
- (a) The licensee will interconnect and coordinate reserves by means of the sale and exchange of emergency and scheduled maintenance bulk power with any neighboring entity(ies), when there are net benefits to each party, on terms that will provide for all of the licensee's properly assignable costs as may be determined by the Federal Energy Regulatory Commission and consistent with such cost assignment will allow the other party the fullest possible benefits of such coordination.
  - (b) Emergency service and/or scheduled maintenance service to be provided by each party will be furnished to the fullest extent available from the supplying party and desired by the party in need. The licensee and each party will provide to the other emergency service and/or scheduled maintenance service if and when available from its own generation and, in accordance with recognized industry practice, from generation of others to the extent it can do so without impairing service to its customers, including other electric systems to whom it has firm commitments.
  - (c) Each party to a reserve coordination arrangement will establish its own reserve criteria, but in no event shall the minimum installed reserve on each system be less than 15%, calculated as a percentage of estimated peak load responsibility. Either party, if it has, or has firmly planned, installed reserves in excess of the amount called for by its own reserve criterion, will offer any such excess as may in fact be available at the time for which it is sought and for such period as the selling party shall determine for purchase in accordance with reasonable industry practice by the other party to meet such other party's own reserve requirements. The parties will provide such amounts of spinning reserve as may be adequate to avoid the imposition of unreasonable

demands on the other part(ies) in meeting the normal contingencies of operating its (their) system(s). However, in no circumstances shall such spinning reserve requirement exceed the installed reserve requirement.

- (d) Interconnections will not be limited to low voltages when higher voltages are available from the licensee's installed facilities in the area where interconnection is desired and when the proposed arrangement is found to be technically and economically feasible.
  - (e) Interconnection and reserve coordination agreements will not embody provisions which impose limitations upon the use or resale of power and energy sold or exchanged pursuant to the agreement. Further, such arrangements will not prohibit the participants from entering into other interconnection and coordination arrangements, but may include appropriate provisions to assure that (i) the licensee receives adequate notice of such additional interconnection or coordination, (ii) the parties will jointly consider and agree upon such measures, if any, as are reasonably necessary to protect the reliability of the interconnected systems and to prevent undue burdens from being imposed on any system, and (iii) the licensee will be fully compensated for its costs. Reasonable industry practice as developed in the area from time to time will satisfy this provision.
- (3) The licensee currently has on file, and may hereafter file, with the Federal Energy Regulatory Commission contracts with neighboring entity(ies) providing for the sale and exchange of short-term power and energy, limited term power and energy, economy energy, non-displacement energy, and emergency capacity and energy. The Licensee will enter into contracts providing for the same or for like transactions with any neighboring entity on terms which enable the licensee to recover the full costs allocable to such transaction.
- (4) The licensee currently sells capacity and energy in bulk on a full requirements basis to several entities engaging in the distribution of electric power at retail. In addition, the licensee supplies electricity directly to ultimate users in a number of municipalities. Should any such entity(ies) or municipality(ies) desire to become a neighboring entity as defined in subparagraph (1)(b) hereof (either alone or through combination with others), the licensee will assist in facilitating the necessary transition through the sale of partial requirements firm power and energy to the extent that, except for such transition, the licensee would otherwise be supplying firm power and energy. The provision of such firm partial requirements service shall be under such rates, terms and conditions as shall be found by the Federal Energy Regulatory Commission to

provide for the recovery of the licensee's cost. The licensee will sell capacity and energy in bulk on a full requirements basis to any municipality currently served by the licensee when such municipality lawfully engages in the distribution of electric power at retail.

- (5) (a) The licensee will facilitate the exchange of electric power in bulk in wholesale transactions over its transmission facilities (1) between or among two or more neighboring entities including distribution systems with which it is interconnected or may be interconnected in the future, and (2) between any such entity(ies) and any other electric system engaging in bulk power supply between whose facilities the licensee's transmission lines and other transmission lines would form a continuous electric path, provided that permission to utilize such other transmission lines has been obtained. Such transaction shall be undertaken provided that the particular transaction reasonably can be accommodated by the licensee's transmission system from a functional and technical standpoint and does not constitute the wheeling of power to a retail customer. Such transmission shall be on terms that fully compensate the licensee for its cost. Any entity(ies) requesting such transmission arrangements shall give reasonable notice of its (their) schedule and requirements.
- (b) The licensee will include in its planning and construction program sufficient transmission capacity as required for the transactions referred to in subparagraph (a) of this paragraph, provided that (1) the neighboring entity(ies) gives the licensee sufficient advance notice as may be necessary reasonably to accommodate its (their) requirements from a functional and technical standpoint and (2) that such entity(ies) fully compensate the licensee for its cost. In carrying out this subparagraph (b), however, the licensee shall not be required to construct or add transmission facilities which (a) will be of no demonstrable present or future benefit to the licensee, or (b) which could be constructed by the requesting entity(ies) without duplicating any portion of the licensee's existing transmission lines, or (c) which would jeopardize the licensee's ability to finance or construct on reasonable terms facilities needed to meet its own anticipated system requirements. Where regulatory or environmental approvals are required for the construction or addition of transmission facilities needed for the transactions referred to in subparagraph (a) of this paragraph it shall be the responsibility of the entity(ies) seeking the transaction to participate in obtaining such approvals, including sharing in the cost thereof.
- (6) To increase the possibility of achieving greater reliability and economy of electric generation and transmission facilities, the licensee will discuss load projections and system development plans with any neighboring entity(ies).

- (7) When the licensee's plans for future nuclear generating units (for which application will hereafter be made to the Nuclear Regulatory Commission) have reached the stage of serious planning, but before firm decisions have been made as to the size and desired completion date of the proposed nuclear units, the licensee will notify all neighboring entities including distribution systems with peak loads smaller than the licensee's that the licensee plans to construct such nuclear units. Neither the timing nor the information provided need be such as to jeopardize obtaining the required site at the lowest possible cost.
- (8) The foregoing commitments shall be implemented in a manner consistent with the provisions of the Federal Power Act and all other lawful local, state and Federal regulation and authority. Nothing in these commitments is intended to determine in advance the resolution of issues which are properly raised at the Federal Energy Regulatory Commission concerning such commitments, including allocation of costs or the rates to be charged. The licensee will negotiate (including the execution of a contingent statement of intent) with respect to the foregoing commitments with any neighboring entity including distribution systems where applicable engaging in or proposing to engage in bulk power supply transactions, but the licensee shall not be required to enter into any final arrangement prior to resolution of any substantial questions as to the lawful authority of an entity to engage in the transactions.

In addition, the licensee shall not be obligated to enter into a given bulk power supply transaction if: (1) to do so would violate, or incapacitate it from performing, any existing lawful contracts it has with a third party; (2) there is contemporaneously available to it a competing or alternative arrangement which affords it greater benefits which would be mutually exclusive of such arrangement; (3) to do so would adversely affect its system operations or the reliability of power supply to its customers, or (4) if to do so would jeopardize the licensee's ability to finance or construct on reasonable terms facilities needed to meet its own anticipated system requirements.