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

VIRGINIA ELECTRIC AND POWER COMPANY

OLD DOMINION ELECTRIC COOPERATIVE

DOCKET NO. 50-338

NORTH ANNA POWER STATION, UNIT NO. 1

RENEWED FACILITY OPERATING LICENSE

Renewed License No. NPF-4

1. The U.S. Nuclear Regulatory Commission (the Commission) having previously made the findings set forth in License No. NPF-4 issued April 1, 1978, has now found that:

   A. The application to renew License No. NPF-4 filed by the Virginia Electric and Power Company (VEPCO or the licensee) and the Old Dominion Electric Cooperative (ODEC), complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I, 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 license will continue to be conducted in accordance with the current licensing basis, as defined in 10 CFR 54.3, for North Anna Power Station, Unit No. 1, 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 rules and regulations of the Commission;

   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 rules and regulations of the Commission;

E. VEPCO is technically and financially qualified to engage in the activities authorized by this renewed operating license in accordance with the rules and regulations of the Commission;

F. VEPCO and the ODEC 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 Renewed Facility Operating License No. NPF-4, subject to the conditions for protection of the environment set forth herein, is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied;

I. The receipt, possession, and use of source, byproduct, and special nuclear material as authorized by this renewed license will be in accordance with the Commission's regulations in 10 CFR Parts 30, 40, and 70, including 10 CFR Sections 30.33, 40.32, 70.23, and 70.31; and

J. ODEC is a partial financial owner of the facility and will not operate the facility.

2. On the basis of the foregoing findings regarding this facility, Facility Operating License No. NPF-4, issued April 1, 1978, is superseded by Renewed Facility Operating License No. NPF-4, which is hereby issued to VEPCO and ODEC to read as follows:

A. This renewed license applies to the North Anna Power Station, Unit No. 1, a pressurized water reactor and associated equipment (the facility), owned by VEPCO and ODEC. The facility is located near Mineral, in Louisa County, Virginia, and is described in the "Updated Final Safety Analysis Report" and the Environmental Report as supplemented and amended.

B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses:

(1) Pursuant to Section 103 of the Act and 10 CFR Part 50, "Licensing of Production and Utilization Facilities," VEPCO and ODEC to possess and VEPCO to use and operate the facility at the designated location in Louisa County, Virginia, in accordance with the procedures and limitations set forth in this renewed license;

(2) Pursuant to the Act and 10 CFR Part 70, VEPCO 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;

(3) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, VEPCO 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;

(4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, VEPCO 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 component; and

(5) Pursuant to the Act and 10 CFR Parts 30 and 70, VEPCO to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I; Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; 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

VEPCO is authorized to operate the North Anna Power Station, Unit No. 1, at reactor core power levels not in excess of 2940 megawatts (thermal).

(2) Technical Specifications

Technical Specifications contained in Appendix A, as revised through Amendment No. 296 are hereby incorporated in the renewed license. The licensee shall operate the facility in accordance with the Technical Specifications.

(3) Additional Conditions

The matters specified in the following conditions shall be completed to the satisfaction of the Commission within the stated time periods following the issuance of the condition or within the operational restrictions indicated. The removal of these conditions shall be made by an amendment to the renewed license, supported by a favorable evaluation by the Commission:

a. VEPCO may use up to four (4) fuel assemblies containing advanced zirconium based alloys as described in the licensee's submittal dated September 4, 1996, as supplemented February 3, 1997.

b. If VEPCO plans to remove or to make significant changes in the normal operation of equipment that controls the amount of radioactivity in effluents from the North Anna Power Station, the Commission shall be notified in writing regardless of whether the change affects the amount of radioactivity in the effluents.

c. VEPCO shall implement a procedure that will prohibit entry into an extended Emergency Diesel Generator Outage Time (14 days), for scheduled maintenance purposes, if severe weather conditions are expected, as described in the licensee's application dated June 25, 1998, and evaluated in the staff's Safety Evaluation dated August 26, 1998.

d. The licensee is authorized to relocate certain Technical Specification requirements previously included in Appendix A to licensee-controlled documents, as described in Table R, Relocated Specifications and Removed Details, attached to the NRC staff's Safety Evaluation enclosed with Amendment No. 231. These requirements shall be relocated to the appropriate documents no later than September 2, 2002.

e. The schedule for performing surveillance requirements (SRs) that are new or revised in Amendment No. 231 shall be as follows:

For SRs that are new in this amendment, the first performance is due at the end of the first surveillance interval that begins on the date of implementation of this amendment.

For SRs that existed prior to this amendment whose intervals of performance are being reduced, the first reduced surveillance interval begins upon completion of the first surveillance performed after implementation of this amendment.

For SRs that existed prior to this amendment that have modified acceptance criteria, the first performance subject to the modified acceptance criteria is due at the end of the first surveillance interval that began on the date the surveillance was last performed prior to the implementation of this amendment.

For SRs that existed prior to this amendment whose intervals of performance are being extended, the first extended surveillance interval begins upon completion of the last surveillance performed prior to implementation of this amendment.

This license condition is effective as of its date of issuance.

f. Upon implementation of Amendment No. 252 adopting TSTF-448, Revision 3, the determination of Main Control Room/Emergency Switchgear Room (MCR/ESGR) envelope unfiltered air inleakage as required by TS SR 3.7.10.4 in accordance with TS 5.5.16.c(i), the assessment of MCR/ESGR envelope habitability as required by Specification 5.5.16.c(ii), and the measurement of MCR/ESGR envelope pressure as required by Specification 5.5.16.d, shall be considered met. Following implementation:

(i) The first performance of SR 3.7.10.4 in accordance with 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 September 21, 2003, the date of the most recent successful tracer gas test, as stated in the March 30, 2004 letter response to Generic Letter 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.

(ii) The first performance of the periodic assessment of MCR/ESGR envelope habitability, Specification 5.5.16.c(ii), shall be within 3 years, plus the 9-month allowance of SR 3.0.2, as measured from September 21, 2003, the date of the most recent successful tracer gas test, as stated in the March 31, 2004 letter response to Generic Letter 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.

(iii) The first performance of the periodic measurement of MCR/ESGR envelope pressure, Specification 5.5.16.d, shall be within 18 months, plus the 138 days allowed by SR 3.0.2, as measured from February 27, 2007, the date of the most recent successful pressure measurement test, or within 138 days if not performed previously.

(4) The licensee is authorized to receive from the Surry Power Station, Unit Nos. 1 and 2, possess, and store irradiated Surry Power Station fuel assemblies containing special nuclear material, enriched to not more than 4.1 percent by weight U-235, subject to the following conditions:

a. Surry Power Station fuel assemblies may not be placed in North Anna Power Station, Unit Nos. 1 and 2, reactors.

b. Irradiated fuel shipped to North Anna Power Station shall have been removed from the Surry Power Station reactors no less than 730 days prior to shipment.

c. No more than 500 Surry Power Station irradiated fuel assemblies shall be received for storage at the North Anna Power Station, Unit Nos. 1 and 2, spent fuel pool.

(5) Environmental Protection Plan

The Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 197, is hereby incorporated in the renewed license. The licensee shall operate the facility in accordance with the Environmental Protection Plan.

D. Fire Protection

VEPCO shall implement and maintain in effect all provisions of the approved fire protection program as described in the Updated Final Safety Analysis Report for the facility and as approved in the SER dated February 1979 subject to the following provision:

The licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

E. Physical Protection

The licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security, guard training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and 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: "Millstone, North Anna and Surry Power Stations' Security Plan, Training, and Qualification Plan, Safeguards Contingency Plan, and Independent Spent Fuel Storage Installation Security Program" with revisions submitted through May 15, 2006.

The licensee shall fully implement and maintain in effect all provisions of the Commission-approved Kewaunee, Millstone, North Anna, and Surry Power Stations Cyber Security Plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The CSP was approved by License Amendment No. 264, as supplemented by a change approved by License Amendment No. 276.

F. Updated Final Safety Analysis Report

(1) The licensee's Updated Final Safety Analysis Report supplement submitted pursuant to 10 CFR 54.21(d), as revised on July 25, October 1, November 4, and December 2, 2002, describes certain future inspection activities to be completed before the period of extended operation. The licensee shall complete these activities no later than April 1, 2018, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.

(2) The Updated Final Safety Analysis Report supplement as revised on July 25, October 1, November 4, and December 2, 2002, shall be included in the next scheduled update to the Updated Final Safety Analysis Report required by 10 CFR 50.71(e)(4), following the issuance of this renewed license. Until that update is complete, the licensee may make changes to the programs described in such supplement without prior Commission approval, provided that the licensee evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

G. Mitigation Strategy

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

(1) Fire fighting response strategy with the following elements:

a. Pre-defined coordinated fire response strategy and guidance

b. Assessment of mutual aid fire fighting assets

c. Designated staging areas for equipment and materials

d. Command and control

e. Training of response personnel

(2) Operations to mitigate fuel damage considering the following:

a. Protection and use of personnel assets

b. Communications

c. Minimizing fire spread

d. Procedures for implementing integrated fire response strategy

e. Identification of readily-available pre-staged equipment

f. Training on integrated fire response strategy

g. Spent fuel pool mitigation measures

(3) Actions to minimize release to include consideration of:

a. Water spray scrubbing

b. Dose to onsite responders

H.

| COMMITMENT | SCHEDULED COMPLETION DATE |
|---|---|
| 1. Dominion will perform the final acceptance of the North Anna 1 uncertainty analysis to ensure the results are bounded by the statements contained in this LAR (Attachment 5 Section I.1.D.4.1). | Prior to operating above 2893 MWt (98.4% RTP). |
| 2. Technical Requirements Manual (TRM) will be revised to include UFM administrative controls (Attachment 1 Section 3.0). | Prior to operating above 2893 MWt (98.4% RTP). |
| 3. Procedures and documents for the new UFM (Attachment 5 Section I.1.D.1.1, I.1.H, and VII.2.A). | Prior to operating above 2893 MWt (98.4% RTP). |
| 4. Appropriate personnel will receive training on the UFM and affected procedures (Attachment 5 Sections I.1.D.1.1, VII.2.A, and VII.2.D). | Prior to operating above 2893 MWt (98.4% RTP). |
| 5. Simulator changes and validation will be completed (Attachment 5 Section VII.2.C). | Prior to operating above 2893 MWt (98.4% RTP). |
| 6. Revise existing plant operating procedures related to temporary operation above full steady-state licensed power levels (Attachment 5 Section VII.4). | Prior to operating above 2893 MWt (98.4% RTP). |
| 7. Replace Steam Generator secondary manway bolts or change cumulative fatigue usage analysis to support using existing bolts for the licensed period for each unit (Attachment 5 Section IV.1.A.vi.2 and IV.1.B.ii). | Prior to exceeding 45 years of in-service use for each secondary manway bolt. |

H. (continued)

| COMMITMENT | SCHEDULED COMPLETION DATE |
|---|---|
| 8. The impact of radiation effects on the EQ Program qualification requirements will be determined (Attachment 5 Section V.1.C). | Prior to operating above 2893 MWt (98.4% RTP). |
| 9. The FAC Checkworks SFA models will be updated to reflect the MUR power uprate conditions (Attachment 5 Section IV.1.E.iii). | Prior to operating above 2893 MWt (98.4% RTP). |
| 10. Dominion will determine the EQ-service life of the excore detectors. (Attachment 5 Section II.2). | Prior to operating above 2893 MWt (98.4% RTP). |
| 11. Verify bounding calibration test data and confirm that actual field performance meets the uncertainty bounds established for the instruments | Prior to operating above 2893 MWt (98.4% RTP). |
| 12. Confirm that the variation in the flow normalization factors over a 48-hour period is negligible and that the normalized venturi flows are an acceptable surrogate for the Ultrasonic Flow Meter flows during the 48-hour completion time | Prior to any such use above 2893 MWt (98.4% RTP). |

I. This renewed license is effective as of the date of issuance and shall expire at midnight on April 1, 2038.

FOR THE NUCLEAR REGULATORY COMMISSION

original signed by:

Samuel J. Collins, Director
Office of Nuclear Reactor Regulation

Attachments:

1. Appendix A, Technical Specifications
2. Appendix B, Environmental Protection Plan

Date of Issuance: March 20, 2003

# TECHNICAL SPECIFICATIONS

# FOR NORTH ANNA UNITS 1 & 2

TECHNICAL SPECIFICATIONS TABLE OF CONTENTS

# 1.0 USE AND APPLICATION

## 1.1 Definitions

NOTE

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

| Term | Definition |
|---|---|
| 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 required for OPERABILITY of a logic circuit 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 output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass all devices in the channel required for channel OPERABILITY. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an inplace qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps. |

## 1.1 Definitions

| | |
|---|---|
| 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 OPERABILITY of all devices in the channel required for channel OPERABILITY. The COT shall include adjustments, as necessary, of the required alarm, interlock, and trip setpoints required for channel OPERABILITY such that the setpoints are within the necessary range and accuracy. The COT may be performed by means of any series of sequential, overlapping, or total channel steps. |
| 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. Plant 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 the thyroid dose conversion factors listed in Table III of TID-14844, AEC, 1962, "Calculation of Distance Factors for Power and Test Reactor Sites," or in Table E-7 of NRC Regulatory Guide 1.109, Revision 1, October 1977. |

## 1.1 Definitions

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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 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 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. |
| LEAKAGE | LEAKAGE shall be:<br><br>a. <u>Identified LEAKAGE</u><br><br>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; |

(continued)

1.1 Definitions

LEAKAGE (continued)

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;

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 all master relays in the channel required for channel OPERABILITY and verifying the OPERABILITY of each required master relay. The MASTER RELAY TEST shall include a continuity check of each associated required slave relay. The MASTER RELAY TEST may be performed by means of any series of sequential, overlapping, or total steps.

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.

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,

(continued)

1.1 Definitions

| | |
|---|---|
| OPERABLE–OPERABILITY (continued) | 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:<br><br>a. Described in Chapter 14, Initial Tests and Operation, of the UFSAR;<br><br>b. Authorized under the provisions of 10 CFR 50.59; or<br><br>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 2940 MWt. |
| 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 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. |

1.1 Definitions

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|---|---|
| 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:<br><br>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. 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<br><br>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 all slave relays in the channel required for channel OPERABILITY and verifying the OPERABILITY of each required slave relay. The SLAVE RELAY TEST shall include a continuity check of associated required testable actuation devices. The SLAVE RELAY TEST may be performed by means of any series of sequential, overlapping, or total steps. |
| STAGGERED TEST BASIS | A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems, channels, or other designated components during the interval specified by the Surveillance Frequency, so that all systems, subsystems, channels, or other designated components are tested during *n* Surveillance Frequency intervals, where *n* is the total number of systems, subsystems, channels, or other designated components in the associated function. |
| THERMAL POWER | THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant. |
| TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT) | A TADOT shall consist of operating the trip actuating device and verifying the OPERABILITY of all devices in the channel required for trip actuating device OPERABILITY. The TADOT shall include adjustment, as necessary, of the trip |

(continued)

1.1 Definitions

| | |
|---|---|
| TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT) (Continued) | actuating device so that it actuates at the required setpoint within the necessary accuracy. The TADOT may be performed by means of any series of sequential, overlapping, or total channel steps. |

# 1.0 USE AND APPLICATION

## 1.2 Logical Connectors

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|---|---|
| PURPOSE | The purpose of this section is to explain the meaning of logical connectors.<br><br>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 <u>AND</u> and <u>OR</u>. The physical arrangement of these connectors constitutes logical conventions with specific meanings. |
| 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.<br><br>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. |

## 1.2 Logical Connectors

EXAMPLES

The following examples illustrate the use of logical connectors.

EXAMPLE 1.2-1

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. LCO not met. | A.1 Verify ...<br><br>AND<br><br>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.

## 1.2 Logical Connectors

EXAMPLES (continued)

EXAMPLE 1.2-2

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. LCO not met. | A.1 Trip ...<br><br>OR<br><br>A.2.1 Verify ...<br><br>AND<br><br>A.2.2.1 Reduce ...<br><br>OR<br><br>A.2.2.2 Perform ...<br><br>OR<br><br>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

The Completion Time is the amount of time allowed for completing a Required Action. It is referenced to the time of 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. 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.

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 time of discovery of the situation that required entry into the Condition.

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.

(continued)

## 1.3 Completion Times

DESCRIPTION (continued)

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.

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 . . ." Example 1.3-3 illustrates one use of this type of Completion Time. The 10 day Completion Time specified for Conditions A and B in Example 1.3-3 may not be extended.

## 1.3 Completion Times

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.<br><br>AND<br><br>B.2 Be in MODE 5. | 6 hours<br><br><br><br>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.

## 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.<br><br>AND<br><br>B.2 Be in MODE 5. | 6 hours<br><br><br><br>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, 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.

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-2 (continued)

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.

## 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<br><br>AND<br><br>10 days from discovery of failure to meet the LCO |
| B. One Function Y train inoperable. | B.1 Restore Function Y train to OPERABLE status. | 72 hours<br><br>AND<br><br>10 days from discovery of failure to meet the LCO |
| C. One Function X train inoperable.<br><br>AND<br><br>One Function Y train inoperable. | C.1 Restore Function X train to OPERABLE status.<br><br>OR<br><br>C.2 Restore Function Y train to OPERABLE status. | 72 hours<br><br><br><br>72 hours |

(continued)

1.3 Completion Times

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).

The Completion Times of Conditions A and B are modified by a logical connector with a separate 10 day Completion Time measured from the time it was discovered the LCO was not met. In this example, without the separate Completion Time, it would be 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. The separate Completion Time modified by the phrase "from discovery of failure to meet the LCO" is designed to prevent indefinite continued operation while not meeting the LCO. This Completion Time allows for an exception to the normal "time zero" for beginning the Completion Time "clock". In this instance, the Completion Time "time zero" is specified as commencing at the time the LCO was initially not met, instead of at the time the associated Condition was entered.

## 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.<br><br>AND<br><br>B.2 Be in MODE 4. | 6 hours<br><br><br><br>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.

## 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.<br><br>AND<br><br>B.2 Be in MODE 4. | 6 hours<br><br><br><br>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.

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

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-5 (continued)

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.<br><br>OR<br><br>A.2 Reduce THERMAL POWER to ≤ 50% RTP. | Once per 8 hours<br><br><br><br>8 hours |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3. | 6 hours |

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

(continued)

## 1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-6 (continued)

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.

EXAMPLE 1.3-7

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One subsystem inoperable. | A.1 Verify affected subsystem isolated. | 1 hour<br><br>AND<br><br>Once per 8 hours thereafter |
| | AND | |
| | 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 |
| | AND | |
| | 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.

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-7 (continued)

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 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.

# 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.

Sometimes special situations dictate when the requirements of a Surveillance are to be met. They are "otherwise stated" conditions allowed by SR 3.0.1. They may be stated as clarifying Notes in the Surveillance, as part of the Surveillance, or both.

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.

The use of "met" or "performed" in these instances conveys specific meanings. A Surveillance is "met" only when the acceptance criteria are satisfied. Known failure of the requirements of a Surveillance, even without a Surveillance specifically being "performed," constitutes a Surveillance not "met." "Performance" refers only to the requirement to specifically determine the ability to meet the acceptance criteria.

(continued)

## 1.4 Frequency

DESCRIPTION (continued)

Some Surveillances contain notes that modify the Frequency of performance or the conditions during which the acceptance criteria must be satisfied. For these Surveillances, the MODE-entry restrictions of SR 3.0.4 may not apply. Such a Surveillance is not required to be performed prior to entering a MODE or other specified condition in the Applicability of the associated LCO if any of the following three conditions are satisfied:

a. The Surveillance is not required to be met in the MODE or other specified condition to be entered; or

b. The Surveillance is required to be met in the MODE or other specified condition to be entered, but has been performed within the specified Frequency (i.e., it is current) and is known not to be failed; or

c. The Surveillance is required to be met, but not performed, in the MODE or other specified condition to be entered, and is known not to be failed.

Examples 1.4-3, 1.4-4, 1.4-5, and 1.4-6 discusses these special situations.

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.

<u>EXAMPLE 1.4-1</u>

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

(continued)

## 1.4 Frequency

EXAMPLES

EXAMPLE 1.4-1 (continued)

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.

EXAMPLE 1.4-2

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| Verify flow is within limits. | Once within 12 hours after ≥ 25% RTP<br><br>AND<br><br>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.

(continued)

## 1.4 Frequency

EXAMPLES

EXAMPLE 1.4-2 (continued)

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.

EXAMPLE 1.4-3

SURVEILLANCE REQUIREMENTS

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

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.

(continued)

1.4 Frequency

EXAMPLES

EXAMPLE 1.4-3 (continued)

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.

EXAMPLE 1.4-4

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| -------------------NOTE------------------- Only required to be met in MODE 1. ------------------------------------------- | |
| Verify leakage rates are within limits. | 24 hours |

Example 1.4-4 specifies that the requirements of this Surveillance do not have be met until the unit is in MODE 1. The interval measurement for the Frequency of this Surveillance continues at all times, as described in Example 1.4-1. However, the Note constitutes an "otherwise stated" exception to the Applicability of the Surveillance. Therefore, if the Surveillance were not performed within the 24 hour interval (plus the extension allowed by SR 3.0.2), but the unit was not in MODE 1, there would be no failure of the SR nor failure to meet the LCO. Therefore, no violation of SR 3.0.2 occurs when changing MODES, even with the 24 hour Frequency exceeded, provided the MODE change was not made into MODE 1. Prior to entering MODE 1 (assuming again that the 24 hour Frequency were not met), SR 3.0.4 would require satisfying the SR.

## 1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-5

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| -------------------NOTE------------------- Only required to be performed in MODE 1. --------------------------------------- | |
| Perform complete cycle of the valve. | 7 days |

The interval continues, whether or not the unit operation is in MODE 1, 2, or 3 (the assumed Applicability of the associated LCO) between performances.

As the Note modifies the required performance of the Surveillance, the Note is construed to be part of the "specified Frequency." Should the 7 day interval be exceeded while operation is not in MODE 1, this Note allows entry into and operation in MODES 2 and 3 to perform the Surveillance. The Surveillance is still considered to be performed within the "specified Frequency" if completed prior to entering MODE 1. Therefore, if the Surveillance were not performed within the 7 day (plus the extension allowed by SR 3.0.2) interval, but operation was not in MODE 1, 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 result in entry into MODE 1.

Once the unit reaches MODE 1, the requirement for the Surveillance to be performed within its specified Frequency applies and would require that the Surveillance had been performed. If the Surveillance were not performed prior to entering MODE 1, there would then be a failure to perform a Surveillance within the specified Frequency, and the provisions of SR 3.0.3 would apply.

## 1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-6

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| ------------------NOTE------------------<br>Not required to be met in MODE 3.<br>----------------------------------------<br><br>Verify parameter is within limits. | 24 hours |

Example 1.4-6 specifies that the requirements of this Surveillance do not have to be met while the unit is in MODE 3 (the assumed Applicability of the associated LCO is MODES 1, 2, and 3). The interval measurement for the Frequency of this Surveillance continues at all times, as described in Example 1.4-1. However, the Note constitutes an "otherwise stated" exception to the Applicability of this Surveillance. Therefore, if the Surveillance were not performed within the 24 hour interval (plus the extension allowed by SR 3.0.2), and the unit was in MODE 3, there would be no failure of the SR nor failure to meet the LCO. Therefore, no violation of SR 3.0.4 occurs when changing MODES to enter MODE 3, even with the 24 hour Frequency exceeded, provided the MODE change does not result in entry into MODE 2. Prior to entering MODE 2 (assuming again that the 24 hour Frequency were not met), SR 3.0.4 would require satisfying the SR.

# 2.0 SAFETY LIMITS (SLs)

## 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; and the following SLs shall not be exceeded.

2.1.1.1 The departure from nucleate boiling ratio (DNBR) shall be maintained greater than or equal to the 95/95 DNBR criterion for the DNB correlations and methodologies specified in Section 5.6.5.

2.1.1.2 The peak fuel centerline temperature shall be maintained < 5080°F, decreasing by 9°F per 10,000 MWD/MTU of burnup, for Westinghouse fuel and < 5173°F, decreasing by 65°F per 10,000 MWD/MTU of burnup, for Framatome fuel.

### 2.1.2 RCS Pressure SL

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

## 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

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, LCO 3.0.7, LCO 3.0.8, and LCO 3.0.9.

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.

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.

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 specific condition in the Applicability for an unlimited period of time,

(continued)

## 3.0 LCO APPLICABILITY

LCO 3.0.4 (continued)

b. After performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions, if appropriate, or

c. When a specific value or parameter allowance has been approved by the NRC.

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.

LCO 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3, and 4.

---

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 testing required 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, an evaluation shall be performed in accordance with Specification 5.5.14, "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.

## 3.0 LCO APPLICABILITY

LCO 3.0.7

Test Exception LCOs 3.1.9 and 3.4.19 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.

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.

LCO 3.0.9

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.

(continued)

LCO 3.0.9 (continued)

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.

## 3.0 SR APPLICABILITY

## 3.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

| | |
|---|---|
| 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. Surveillances may be performed by any series of sequential, overlapping, or total steps. |
| 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.<br><br>For Frequencies specified as "once," the above interval extension does not apply.<br><br>If a Completion Time requires periodic performance on a "once per . . ." basis, the above Frequency extension applies to each performance after the initial performance.<br><br>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. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours and the risk impact shall be managed.<br><br>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. |

(continued)

## 3.0 SR APPLICABILITY

| | |
|---|---|
| SR 3.0.3 (continued) | 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. |
| 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. When an LCO is not met, entry into a MODE or other specific condition in the Applicability shall only be made:<br><br>a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specific condition in the Applicability for an unlimited period of time,<br><br>b. After performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions, if appropriate, or<br><br>c. When a specific value or parameter allowance has been approved by the NRC.<br><br>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.<br><br>SR 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3 and 4. |

## 3.1 REACTIVITY CONTROL SYSTEMS

### 3.1.1 SHUTDOWN MARGIN (SDM)

LCO 3.1.1 SDM shall be within the limits provided 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 to be within limits. | 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 ± 1% Δk/k of predicted values.

APPLICABILITY: MODES 1 and 2.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.1.2.1 | -------------------NOTE-------------------<br>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.<br>------------------------------------------<br><br>Verify measured core reactivity is within ± 1% $\Delta k/k$ of predicted values. | Once prior to entering MODE 1 after each refueling<br><br><u>AND</u><br><br>-----NOTE------<br>Only required after 60 EFPD<br>---------------<br><br>In accordance with the Surveillance Frequency Control Program |

# 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 upper limit specified in the COLR shall be $\leq 0.6 \times 10^{-4}$ $\Delta k/k/°F$ when < 70% RTP, and $\leq 0.0$ $\Delta k/k/°F$ when $\geq$ 70% RTP.

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 |
|---|---|
| SR 3.1.3.1 Verify MTC is within upper limit. | Once prior to entering MODE 1 after each refueling |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.1.3.2 | -------------------NOTES-------------------<br>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<br><br>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.<br><br>3. SR 3.1.3.2 need not be repeated if the MTC measured at the equivalent of equilibrium RTP-ARO boron concentration of ≤ 60 ppm is less negative than the 60 ppm Surveillance limit specified in the COLR.<br>------------------------------------------<br><br>Verify MTC is within lower limit. | Once each cycle |

## 3.1 REACTIVITY CONTROL SYSTEMS

### 3.1.4 Rod Group Alignment Limits

LCO 3.1.4 All shutdown and control rods shall be OPERABLE.

AND

Individual indicated rod positions shall be within 12 steps of their group step counter demand position.

------------------------------ NOTE ------------------------------
When THERMAL POWER is ≤ 50% RTP, the indicated position of each rod as determined by its individual rod position indicator may be within 24 steps from its group step counter demand position for up to 1 hour per 24 hours. This NOTE is not applicable for control rods known to be greater than 12 steps from the rod group step counter demand position.
------------------------------------------------------------------

APPLICABILITY: MODES 1 and 2.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more rod(s) inoperable. | A.1.1 Verify SDM to be within the limits provided in the COLR. | 1 hour |
| | OR | |
| | A.1.2 Initiate boration to restore SDM to within limit. | 1 hour |
| | AND | |
| | A.2 Be in MODE 3. | 6 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B. One rod not within alignment limits. | B.1.1 Verify SDM to be within the limits provided in the COLR. | 1 hour<br><br>AND<br><br>Once per 12 hours thereafter |
| | OR | |
| | B.1.2 Initiate boration to restore SDM to within limit. | 1 hour |
| | AND | |
| | B.2.1 Reduce THERMAL POWER to ≤ 75% RTP. | 2 hours |
| | OR | |
| | B.2.2.1 Perform SR 3.2.1.1. | 72 hours |
| | AND | |
| | B.2.2.2 Perform SR 3.2.2.1. | 72 hours |
| | AND | |
| | B.3 Re-evaluate safety analyses and confirm results remain valid for duration of operation under these conditions. | 5 days |
| C. Required Action and associated Completion Time of Condition B not met. | C.1 Be in MODE 3. | 6 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| D. More than one rod not within alignment limit. | D.1.1 Verify SDM to be within the limit provided 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 |
| SR 3.1.4.2 | Verify rod freedom of movement (trippability) by moving each rod not fully inserted in the core ≥ 10 steps in either direction. | In accordance with the Surveillance Frequency Control Program |
| SR 3.1.4.3 | Verify rod drop time of each rod, from the fully withdrawn position, is ≤ 2.7 seconds from the beginning of decay of stationary gripper coil voltage to dashpot entry, with:<br>a. $T_{avg}$ ≥ 500°F; and<br>b. All reactor coolant pumps operating. | 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: MODES 1 and 2.

------------------------------ 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 for reasons other than Condition B. | A.1.1 Verify SDM to be within the limits provided 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 |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B. One shutdown bank inserted ≤ 18 steps below the insertion limit and immovable.<br><br>AND<br><br>Each control and shutdown rod within limits of LCO 3.1.4.<br><br>AND<br><br>Each control bank within the insertion limits of LCO 3.1.6. | B.1 Verify SDM to be within the limits provided in the COLR.<br><br>AND<br><br>B.2 Restore the shutdown bank to within insertion limit. | Once per 12 hours<br><br><br><br>72 hours |
| C. Required Action and associated Completion Time not met. | C.1 Be in MODE 3. | 6 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.1.5.1 | Verify each shutdown bank is within the insertion 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 sequence or overlap limits not met for reasons other than Condition C. | A.1.1 Verify SDM to be within the limits provided 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 sequence and overlap to within limits. | 2 hours |
| B. Control bank insertion limits not met for reasons other than Condition C. | B.1.1 Verify SDM to be within the limits provided in the COLR. | 1 hour |
| | <u>OR</u> | |
| | B.1.2 Initiate boration to restore SDM to within limit. | 1 hour |
| | <u>AND</u> | |

(continued)

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B. (continued) | B.2 Restore control bank(s) to within limits. | 2 hours |
| C. Control bank A, B, or C inserted ≤ 18 steps below the insertion limit and immovable.<br><br>AND<br><br>Each control and shutdown rod within limits of LCO 3.1.4.<br><br>AND<br><br>Each shutdown bank within the insertion limits of LCO 3.1.5. | C.1 Verify SDM to be within the limits provided in the COLR.<br><br>AND<br><br>C.2 Restore the control bank to within insertion limit. | Once per 12 hours<br><br><br><br>72 hours |
| D. Required Action and associated Completion Time not met. | D.1 Be in MODE 2 with $K_{eff} < 1.0$. | 6 hours |

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE REQUIREMENTS

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.1.6.2 | Verify each control bank is within the insertion limits specified in the COLR. | In accordance with the Surveillance Frequency Control Program |
| SR 3.1.6.3 | Verify each control bank not fully withdrawn from the core is within the sequence and overlap limits specified in the COLR. | In accordance with the Surveillance Frequency Control Program |

## 3.1 REACTIVITY CONTROL SYSTEMS

### 3.1.7 Rod Position Indication

LCO 3.1.7 The Rod Position Indication (RPI) 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 and each demand position indicator.
-----------------------------------------------------------------------------

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One RPI per group inoperable for one or more groups. | A.1 Verify the position indirectly 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 ≤ 50% RTP. | 8 hours |
| | <u>OR</u><br>---------NOTE---------------<br>Rod position monitoring by Action A.3.1 and A.3.2 may be applied to only one inoperable rod position indicator and shall be allowed until an entry into MODE 5.<br>---------------------------- | |

(continued)

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. (continued) | A.3.1 Verify the position of the rod with the inoperable rod position indication indirectly by using the movable incore detectors. | Within 8 hours of condition entry (or rod control system indication of potential rod movement)<br><br>AND<br><br>Once per 31 days thereafter |
| | AND | |
| | A.3.2 Review the parameters of the rod control system for indications of rod movement for the rod with an inoperable position indicator. | 16 hours<br><br>AND<br><br>Once per 8 hours thereafter |
| B. More than one RPI per group inoperable. | B.1 Place the control rods under manual control. | Immediately |
| | AND | |
| | B.2 Monitor and record RCS $T_{avg}$. | Once per 1 hour |
| | AND | |
| | B.3 Verify the position of the rods with inoperable position indicators indirectly by using the movable incore detectors. | Once per 8 hours |
| | AND | |
| | B.4 Restore inoperable position indicator to OPERABLE status such that a maximum of one RPI per group is inoperable. | 24 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| C. 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. | C.1 Verify the position indirectly of the rods with inoperable position indicators by using movable incore detectors. | 4 hours |
| | <u>OR</u> | |
| | C.2 Reduce THERMAL POWER to ≤ 50% RTP. | 8 hours |
| D. One demand position indicator per bank inoperable for one or more banks. | D.1.1 Verify by administrative means all RPIs for the affected banks are OPERABLE. | Once per 8 hours |
| | <u>AND</u> | |
| | D.1.2 Verify the most withdrawn rod and the least withdrawn rod of the affected banks are ≤ 12 steps apart. | Once per 8 hours |
| | <u>OR</u> | |
| | D.2 Reduce THERMAL POWER to ≤ 50% RTP. | 8 hours |
| E. Required Action and associated Completion Time not met. | E.1 Be in MODE 3. | 6 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.1.7.1 | Perform CHANNEL CALIBRATION of each RPI. | In accordance with the Surveillance Frequency Control Program |

## 3.1 REACTIVITY CONTROL SYSTEMS

### 3.1.8 Primary Grade Water Flow Path Isolation Valves

LCO 3.1.8 Each valve used to isolate primary grade water flow paths shall be secured in the closed position.

---------------------------- NOTE ----------------------------
Primary grade water flow path isolation valves may be opened under administrative control for planned boron dilution or makeup activities.
--------------------------------------------------------------

APPLICABILITY: MODES 3, 4, and 5.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. ---------NOTE---------<br>Required Action A.3 must be completed whenever Condition A is entered.<br>----------------------<br><br>One or more valves not secured in closed position. | A.1 Suspend positive reactivity additions.<br><br><u>AND</u><br><br>A.2 Secure valves in closed position.<br><br><u>AND</u><br><br>A.3 Perform SR 3.1.1.1. | Immediately<br><br><br><br>15 minutes<br><br><u>OR</u><br><br>Within 1 hour after Mode 3 entry from Mode 2<br><br><br>4 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.1.8.1 | Verify each valve in the affected flow path that isolates primary grade water flow paths is locked, sealed, or otherwise secured in the closed position. | Within 15 minutes following a boron dilution or makeup activity |

## 3.1 REACTIVITY CONTROL SYSTEMS

### 3.1.9 PHYSICS TESTS Exceptions—MODE 2

LCO 3.1.9 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, and 18.d, may be reduced to "3" required channels, provided:

a. RCS lowest loop average temperature is ≥ 531°F;

b. SDM is within the limits provided in the COLR; and

c. THERMAL POWER is ≤ 5% RTP.

APPLICABILITY: During PHYSICS TESTS initiated in MODE 2.

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 |

ACTIONS

| 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 3.1.9.1 | 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 3.1.9.2 | Verify the RCS lowest loop average temperature is $\geq$ 531°F. | In accordance with the Surveillance Frequency Control Program |
| SR 3.1.9.3 | Verify THERMAL POWER is $\leq$ 5% RTP. | In accordance with the Surveillance Frequency Control Program |
| SR 3.1.9.4 | Verify SDM to be within the limits provided in the COLR. | In accordance with the Surveillance Frequency Control Program |

## 3.2 POWER DISTRIBUTION LIMITS

### 3.2.1 Heat Flux Hot Channel Factor ($F_Q(Z)$)

LCO 3.2.1 $F_Q(Z)$, as approximated by $F_Q^E(Z)$ and $F_Q^T(Z)$, shall be within the limits specified in the COLR.

APPLICABILITY: MODE 1.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. ---------NOTE--------- Required Action A.4 shall be completed whenever this Condition is entered. SR 3.2.1.2 is not required to be performed if this Condition is entered prior to THERMAL POWER exceeding 75% RTP after a refueling. ---------------------- $F_Q^E(Z)$ not within limit. | A.1 Reduce THERMAL POWER $\geq$ 1% RTP for each 1% $F_Q^E(Z)$ exceeds limit. | 15 minutes after each $F_Q^E(Z)$ determination |
| | <u>AND</u> | |
| | A.2 Reduce Power Range Neutron Flux–High trip setpoints $\geq$ 1% for each 1% that THERMAL POWER is limited below RTP by Required Action A.1. | 72 hours after each $F_Q^E(Z)$ determination |
| | <u>AND</u> | |
| | A.3 Reduce Overpower $\Delta T$ trip setpoints $\geq$ 1% for each 1% that THERMAL POWER is limited below RTP by Required Action A.1. | 72 hours after each $F_Q^E(Z)$ determination |
| | <u>AND</u> | |
| | A.4 Perform SR 3.2.1.1 and SR 3.2.1.2. | Prior to increasing THERMAL POWER above the limit of Required Action A.1 |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B. ---------NOTE--------- Required Action B.5 shall be completed whenever this Condition is entered. ---------------------- $F_Q^T(Z)$ not within limit. | B.1 Reduce AFD limits as specified in the COLR. <br><br> AND <br><br> B.2 Reduce THERMAL POWER as specified in the COLR. <br><br> AND <br><br> B.3 Reduce Power Range Neutron Flux-High trip setpoints ≥ 1% for each 1% that THERMAL POWER is limited below RTP by Required Action B.2 <br><br> AND <br><br> B.4 Reduce Overpower ΔT trip setpoints ≥ 1% for each 1% that THERMAL POWER is limited below RTP by Required Action B.2. <br><br> AND <br><br> B.5 Perform SR 3.2.1.1 and SR 3.2.1.2. | 4 hours after each $F_Q^T(Z)$ determination <br><br><br><br> 4 hours after each $F_Q^T(Z)$ determination <br><br><br><br> 72 hours after each $F_Q^T(Z)$ determination <br><br><br><br> 72 hours after each $F_Q^T(Z)$ determination <br><br><br><br> Prior to increasing THERMAL POWER and AFD limits above the limits of Required Actions B.1 and B.2 |
| C. Required Action and associated Completion Time not met. | C.1 Be in MODE 2. | 6 hours |

SURVEILLANCE REQUIREMENTS

NOTE

During power escalation, THERMAL POWER may be increased until a power level for extended operation has been achieved, at which a power distribution map is obtained.

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.2.1.1 Verify $F_Q^E(Z)$ is within limit. | Once after each refueling prior to THERMAL POWER exceeding 75% RTP<br><br><u>AND</u><br><br>Once within 12 hours after achieving equilibrium conditions after exceeding, by ≥ 10% RTP, the THERMAL POWER at which $F_Q^E(Z)$ was last verified<br><br><u>AND</u><br><br>In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

NOTE

During power escalation, THERMAL POWER may be increased until a power level for extended operation has been achieved, at which a power distribution map is obtained.

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.2.1.1 | Verify $F_Q^E(Z)$ is within limit. | Once after each refueling prior to THERMAL POWER exceeding 75% RTP<br><br><u>AND</u><br><br>Once within 12 hours after achieving equilibrium conditions after exceeding, by ≥ 10% RTP, the THERMAL POWER at which $F_Q^E(Z)$ was last verified<br><br><u>AND</u><br><br>In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.2.1.2 | -------------------NOTE--------------- If measurements indicate that either the<br><br>maximum over z $\left[\frac{F_Q^E(Z)}{K(Z)}\right]$<br><br>OR<br><br>maximum over z $\left[\frac{F_Q^T(Z)}{K(Z)}\right]$<br><br>has increased since the previous evaluation of $F_Q(Z)$ or is expected to increase prior to the next evaluation:<br><br>A. Increase $F_Q^T(Z)$ by the appropriate factor, as specified in the COLR, and verify $F_Q^T(Z)$ is still within limits or<br><br>B. Repeat SR 3.2.1.2 once per 7 EFPD until<br><br>a. Above (A) is met or<br>b. Two successive flux maps indicate that the<br><br>maximum over z $\left[\frac{F_Q^E(Z)}{K(Z)}\right]$<br><br>AND<br><br>maximum over z $\left[\frac{F_Q^T(Z)}{K(Z)}\right]$<br><br>has not increased.<br>------------------------------------- | (continued) |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.2.1.2 | (continued)<br><br>Verify $F_Q^T(Z)$ is within limit. | Once after each refueling within 12 hours after achieving equilibrium conditions after THERMAL POWER exceeds 75% RTP<br><br>AND<br><br>Once within 12 hours after achieving equilibrium conditions after exceeding, by ≥ 10% RTP, the THERMAL POWER at which $F_Q^T(Z)$ was last verified<br><br>AND<br><br>In accordance with the Surveillance Frequency Control Program |

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

## 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 ≥ 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 |

## 3.2 POWER DISTRIBUTION LIMITS

### 3.2.4 QUADRANT POWER TILT RATIO (QPTR)

LCO 3.2.4 The QPTR shall be ≤ 1.02.

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

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. QPTR not within limit. | A.1 | Reduce THERMAL POWER ≥ 3% from RTP for each 1% of QPTR > 1.00. | 2 hours after each QPTR determination |
| | <u>AND</u> | | |
| | A.2 | Determine QPTR. | Once per 12 hours |
| | <u>AND</u> | | |
| | A.3 | Perform SR 3.2.1.1 and SR 3.2.2.1. | 24 hours after achieving equilibrium Conditions from a THERMAL POWER reduction per Required Action A.1<br><br><u>AND</u><br><br>Once per 7 days thereafter |
| | <u>AND</u> | | |
| | | | (continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
| --- | --- | --- |
| A. (continued) | A.4 Reevaluate safety analyses and confirm results remain valid for duration of operation under this condition. | Prior to increasing THERMAL POWER above the limit of Required Action A.1 |
| | AND | |
| | A.5 --------NOTES--------- 1. Perform Required Action A.5 only after Required Action A.4 is completed. 2. Required Action A.6 shall be completed whenever Required Action A.5 is performed. --------------------- Normalize excore detectors to restore QPTR to within limits. | Prior to increasing THERMAL POWER above the limit of Required Action A.1 |
| | AND | (continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. (continued) | A.6 | --------NOTE---------<br>Perform Required Action A.6 only after Required Action A.5 is completed.<br>--------------------- | |
| | | Perform SR 3.2.1.1 and SR 3.2.2.1. | Within 24 hours after achieving equilibrium Conditions at RTP not to exceed 48 hours after increasing THERMAL POWER above the limit of Required Action A.1 |
| B. Required Action and associated Completion Time not met. | B.1 | Reduce THERMAL POWER to ≤ 50% RTP. | 4 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.2.4.1 | ------------------NOTES----------------<br>1. With input from one Power Range Neutron Flux channel inoperable and THERMAL POWER ≤ 75% RTP, the remaining three power range channels can be used for calculating QPTR.<br><br>2. SR 3.2.4.2 may be performed in lieu of this Surveillance.<br>--------------------------------------- | |
| | Verify QPTR is within limit by calculation. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.2.4.2 | -------------------NOTE---------------- Not required to be performed until 12 hours after input from one or more Power Range Neutron Flux channels are inoperable with THERMAL POWER > 75% RTP. -------------------------------------- | |
| | Verify QPTR is within limit using the movable incore detectors. | In accordance with the Surveillance Frequency Control Program |

## 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 or trains inoperable. | A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s) or train(s). | Immediately |
| B. One Manual Reactor Trip channel inoperable. | B.1 Restore channel to OPERABLE status.<br><br>OR<br><br>B.2 Be in MODE 3. | 48 hours<br><br><br><br>54 hours |
| C. One channel or train inoperable. | C.1 Restore channel or train to OPERABLE status.<br><br>OR<br><br>C.2.1 Initiate action to fully insert all rods.<br><br>AND | 48 hours<br><br><br><br>48 hours<br><br>(continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| C. (continued) | C.2.2 Place the Rod Control System in a condition incapable of rod withdrawal. | 49 hours |
| D. One Power Range Neutron Flux-High channel inoperable. | ------------NOTE------------- The inoperable channel may be bypassed for up to 12 hours for surveillance testing and setpoint adjustment of other channels. ----------------------------- | |
| | D.1.1 Place channel in trip. | 72 hours |
| | <u>AND</u> | |
| | D.1.2 Reduce THERMAL POWER to ≤ 75% RTP. | 78 hours |
| | <u>OR</u> | |
| | D.2.1 Place channel in trip. | 72 hours |
| | <u>AND</u> | |
| | -------------NOTE----------- Only required to be performed when the Power Range Neutron Flux input to QPTR is inoperable. ----------------------------- | |
| | D.2.2 Perform SR 3.2.4.2. | Once per 12 hours |
| | <u>OR</u> | |
| | D.3 Be in MODE 3. | 78 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| E. One channel inoperable. | ------------NOTE------------<br>The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels.<br>---------------------------- | | |
| | E.1 | Place channel in trip. | 72 hours |
| | OR | | |
| | E.2 | Be in MODE 3. | 78 hours |
| F. One Intermediate Range Neutron Flux channel inoperable. | F.1 | Reduce THERMAL POWER to < P-6. | 24 hours |
| | OR | | |
| | F.2 | Increase THERMAL POWER to > P-10. | 24 hours |
| G. Two Intermediate Range Neutron Flux channels inoperable. | ------------NOTE------------<br>Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM.<br>---------------------------- | | |
| | G.1 | Suspend operations involving positive reactivity additions. | Immediately |
| | AND | | |
| | G.2 | Reduce THERMAL POWER to < P-6. | 2 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
| --- | --- | --- |
| H. One Source Range Neutron Flux channel inoperable. | ------------NOTE------------<br>Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM.<br>---------------------------- | |
| | H.1 Suspend operations involving positive reactivity additions. | Immediately |
| I. Two Source Range Neutron Flux channels inoperable. | I.1 Open Reactor Trip Breakers (RTBs). | Immediately |
| J. One Source Range Neutron Flux channel inoperable. | J.1 Restore channel to OPERABLE status. | 48 hours |
| | <u>OR</u> | |
| | J.2.1 Initiate action to fully insert all rods. | 48 hours |
| | <u>AND</u> | |
| | J.2.2 Place the Rod Control System in a condition incapable of rod withdrawal. | 49 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| K. Required Source Range Neutron Flux channel inoperable. | ------------NOTE------------- Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM. ----------------------------- | |
| | K.1 Suspend operations involving positive reactivity additions. | Immediately |
| | AND | |
| | K.2 Perform SR 3.1.1.1. | 1 hour<br><br>AND<br><br>Once per 12 hours thereafter |
| L. One channel inoperable. | ------------NOTE------------- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. ----------------------------- | |
| | L.1 Place channel in trip. | 72 hours |
| | OR | |
| | L.2 Reduce THERMAL POWER to < P-7. | 78 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| M. One Reactor Coolant Pump Breaker Position channel inoperable. | ------------NOTE------------- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. ---------------------------- | |
| | M.1 Restore channel to OPERABLE status. | 72 hours |
| | OR | |
| | M.2 Reduce THERMAL POWER to < P-7. | 78 hours |
| N. One Turbine Trip channel inoperable. | ------------NOTE------------- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. ---------------------------- | |
| | N.1 Place channel in trip. | 72 hours |
| | OR | |
| | N.2 Reduce THERMAL POWER to < P-8. | 76 hours |
| O. One train inoperable. | ------------NOTE------------- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. ---------------------------- | |
| | O.1 Restore train to OPERABLE status. | 24 hours |
| | OR | |
| | O.2 Be in MODE 3. | 30 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| P. One RTB train inoperable. | ------------NOTES------------<br>1. One train may be bypassed for up to 2 hours for surveillance testing, provided the other train is OPERABLE.<br><br>2. One RTB may be bypassed for up to 2 hours for maintenance on undervoltage or shunt trip mechanisms, provided the other train is OPERABLE.<br><br>3. One RTB train may be bypassed for up to 4 hours for concurrent surveillance testing of the RTB and automatic trip logic, provided the other train is OPERABLE.<br>---------------------------- | |
| | P.1 Restore train to OPERABLE status. | 1 hour |
| | <u>OR</u> | |
| | P.2 Be in MODE 3. | 7 hours |
| Q. One or more channels inoperable. | Q.1 Verify interlock is in required state for existing unit conditions. | 1 hour |
| | <u>OR</u> | |
| | Q.2 Be in MODE 3. | 7 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| R. One or more channels inoperable. | R.1 | Verify interlock is in required state for existing unit conditions. | 1 hour |
| | <u>OR</u> | | |
| | R.2 | Be in MODE 2. | 7 hours |
| S. One trip mechanism inoperable for one RTB. | S.1 | Restore inoperable trip mechanism to OPERABLE status. | 48 hours |
| | <u>OR</u> | | |
| | S.2 | Be in MODE 3. | 54 hours |

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 | --------------------NOTE------------<br>Not required to be performed until 12 hours after THERMAL POWER is ≥ 15% RTP.<br>---------------------------------- | |
| | Compare results of calorimetric heat balance calculation to power range channel output. Adjust power range output if calorimetric heat balance calculation result exceeds power range channel output by more than +2% RTP. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.3.1.3 | -------------------NOTE--------------- Not required to be performed until 72 hours after THERMAL POWER is ≥ 15% RTP. ------------------------------------- Compare results of the incore detector measurements to Nuclear Instrumentation System (NIS) AFD. Adjust NIS channel if absolute difference is ≥ 3%. | In accordance with the Surveillance Frequency Control Program |
| SR 3.3.1.4 | -------------------NOTE--------------- This Surveillance must be performed on the reactor trip bypass breaker immediately after placing the bypass breaker in service. ------------------------------------- Perform TADOT. | In accordance with the Surveillance Frequency Control Program |
| SR 3.3.1.5 | Perform ACTUATION LOGIC TEST. | In accordance with the Surveillance Frequency Control Program |
| SR 3.3.1.6 | -------------------NOTE--------------- Verification of setpoint is not required. ------------------------------------- Perform TADOT. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.1.7 | -------------------NOTE--------------<br>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.<br>--------------------------------------<br><br>Perform COT. | In accordance with the Surveillance Frequency Control Program |
| SR 3.3.1.8 | -------------------NOTE--------------<br>This Surveillance shall include verification that interlocks P-6 and P-10 are in their required state for existing unit conditions.<br>--------------------------------------<br><br>Perform COT. | -----NOTE-----<br>Only required when not performed within the frequency specified in the Surveillance Control Program<br>---------------<br><br>Prior to reactor startup<br><br><u>AND</u><br><br>Four hours after reducing power below P-6 for source range instrumentation<br><br><u>AND</u><br><br>Twelve hours after reducing power below P-10 for power and intermediate range instrumentation<br><br><u>AND</u><br><br>In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.1.9 | --------------------NOTES--------------<br>1. Adjust NIS channel if absolute difference ≥ 3%.<br>2. Not required to be performed until 72 hours after THERMAL POWER is ≥ 50% RTP.<br>--------------------------------------<br>Compare results of the excore channels to incore detector measurements. | In accordance with the Surveillance Frequency Control Program |
| SR 3.3.1.10 | -------------------NOTE---------------<br>This Surveillance shall include verification that the time constants are adjusted to the prescribed values.<br>--------------------------------------<br>Perform CHANNEL CALIBRATION. | In accordance with the Surveillance Frequency Control Program |
| SR 3.3.1.11 | -------------------NOTE---------------<br>Neutron detectors are excluded from CHANNEL CALIBRATION.<br>--------------------------------------<br>Perform CHANNEL CALIBRATION. | In accordance with the Surveillance Frequency Control Program |
| SR 3.3.1.12 | Perform CHANNEL CALIBRATION. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.1.13 | Perform COT. | In accordance with the Surveillance Frequency Control Program |
| SR 3.3.1.14 | -------------------NOTE---------------<br>Verification of setpoint is not required.<br>-------------------------------------<br><br>Perform TADOT. | In accordance with the Surveillance Frequency Control Program |
| SR 3.3.1.15 | -------------------NOTE---------------<br>Verification of setpoint is not required.<br>-------------------------------------<br><br>Perform TADOT. | Prior to exceeding the P-8 interlock whenever the unit has been in MODE 3, if not performed within the previous 31 days |
| SR 3.3.1.16 | -------------------NOTE---------------<br>Neutron detectors are excluded from response time testing.<br>-------------------------------------<br><br>Verify RTS RESPONSE TIME is within limits. | In accordance with the Surveillance Frequency Control Program |

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

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE |
|---|---|---|---|---|---|
| 1. Manual Reactor Trip | 1, 2 | 2 | B | SR 3.3.1.14 | NA |
| | 3(a), 4(a), 5(a) | 2 | C | SR 3.3.1.14 | NA |
| 2. Power Range Neutron Flux | | | | | |
| a. High | 1, 2 | 4 | D | SR 3.3.1.1<br>SR 3.3.1.2<br>SR 3.3.1.3<br>SR 3.3.1.7<br>SR 3.3.1.11<br>SR 3.3.1.16 | ≤ 110% RTP |
| b. Low | 1(b), 2 | 4 | E | SR 3.3.1.1<br>SR 3.3.1.8<br>SR 3.3.1.11<br>SR 3.3.1.16 | ≤ 26% RTP |
| 3. Power Range Neutron Flux Rate | | | | | |
| a. High Positive Rate | 1, 2 | 4 | E | SR 3.3.1.7<br>SR 3.3.1.11 | ≤ 5.5% RTP with time constant ≥ 2 sec |
| b. High Negative Rate | 1, 2 | 4 | E | SR 3.3.1.7<br>SR 3.3.1.11<br>SR 3.3.1.16 | ≤ 5.5% RTP with time constant ≥ 2 sec |
| 4. Intermediate Range Neutron Flux | 1(b), 2(c) | 2 | F, G | SR 3.3.1.1<br>SR 3.3.1.8<br>SR 3.3.1.11 | ≤ 40% RTP |
| 5. Source Range Neutron Flux | 2(d) | 2 | H, I | SR 3.3.1.1<br>SR 3.3.1.8<br>SR 3.3.1.11<br>SR 3.3.1.16 | ≤ 1.3 E5 cps |
| | 3(a), 4(a), 5(a) | 2 | I, J | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.11<br>SR 3.3.1.16 | ≤ 1.3 E5 cps |
| | 3(e), 4(e), 5(e) | 1 | K | SR 3.3.1.1<br>SR 3.3.1.11 | NA |

(a) With Rod Control System capable of rod withdrawal or one or more rods not fully inserted.

(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.

(e) With the Rod Control System incapable of rod withdrawal. In this condition, source range Function does not provide reactor trip but does provide indication.

Table 3.3.1-1 (page 2 of 5)
Reactor Trip System Instrumentation

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE |
|---|---|---|---|---|---|
| 6. Overtemperature ΔT | 1, 2 | 3 | E | SR 3.3.1.1<br>SR 3.3.1.3<br>SR 3.3.1.7<br>SR 3.3.1.9<br>SR 3.3.1.12<br>SR 3.3.1.16 | Refer to Note 1 (Page 3.3.1-16) |
| 7. Overpower ΔT | 1, 2 | 3 | E | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.12 | Refer to Note 2 (Page 3.3.1-17) |
| 8. Pressurizer Pressure | | | | | |
| a. Low | 1(f) | 3 | L | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.10<br>SR 3.3.1.16 | ≥ 1860 psig |
| b. High | 1, 2 | 3 | E | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.10<br>SR 3.3.1.16 | ≤ 2370 psig |
| 9. Pressurizer Water Level—High | 1(f) | 3 | L | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.10<br>SR 3.3.1.16 | ≤ 93% |
| 10. Reactor Coolant Flow—Low | 1(f) | 3 per loop | L | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.10<br>SR 3.3.1.16 | ≥ 89% |
| 11. Reactor Coolant Pump (RCP) Breaker Position | 1(f) | 1 per RCP | M | SR 3.3.1.14 | NA |
| 12. Undervoltage RCPs | 1(f) | 1 per bus | L | SR 3.3.1.6<br>SR 3.3.1.10<br>SR 3.3.1.16 | ≥ 2870 V |
| 13. Underfrequency RCPs | 1(f) | 1 per bus | L | SR 3.3.1.6(g)<br>SR 3.3.1.10<br>SR 3.3.1.16 | ≥ 56 Hz |
| 14. Steam Generator (SG) Water Level—Low Low | 1, 2 | 3 per SG | E | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.10<br>SR 3.3.1.16 | ≥ 17% |

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

(g) Required to be performed for Unit 2 only.

Table 3.3.1-1 (page 3 of 5)
Reactor Trip System Instrumentation

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE |
|---|---|---|---|---|---|
| 15. Deleted | | | | | |
| 16. Turbine Trip | | | | | |
| a. Low Auto Stop Oil Pressure | 1[h] | 3 | N | SR 3.3.1.10<br>SR 3.3.1.15 | ≥ 40 psig |
| b. Turbine Stop Valve Closure | 1[h] | 4 | N | SR 3.3.1.10<br>SR 3.3.1.15 | ≥ 0% open |
| 17. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS) | 1, 2 | 2 trains | O | SR 3.3.1.14 | NA |
| 18. Reactor Trip System Interlocks | | | | | |
| a. Intermediate Range Neutron Flux, P-6 | 2[d] | 2 | Q | SR 3.3.1.11<br>SR 3.3.1.13 | ≥ 3E-11 amp |
| b. Low Power Reactor Trips Block, P-7 | 1 | 1 per train | R | SR 3.3.1.5 | NA |
| c. Power Range Neutron Flux, P-8 | 1 | 4 | R | SR 3.3.1.11<br>SR 3.3.1.13 | ≤ 31% RTP |
| d. Power Range Neutron Flux, P-10 | 1, 2 | 4 | Q | SR 3.3.1.11<br>SR 3.3.1.13 | ≥ 7% RTP<br>≤ 11% RTP |
| e. Turbine Impulse Pressure, P-13 | 1 | 2 | R | SR 3.3.1.10<br>SR 3.3.1.13 | ≤ 11% turbine power |
| 19. Reactor Trip Breakers[i] | 1, 2 | 2 trains | P | SR 3.3.1.4 | NA |
| | 3[a], 4[a], 5[a] | 2 trains | C | SR 3.3.1.4 | NA |
| 20. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms | 1, 2 | 1 each per RTB | S | SR 3.3.1.4 | NA |
| | 3[a], 4[a], 5[a] | 1 each per RTB | C | SR 3.3.1.4 | NA |
| 21. Automatic Trip Logic | 1, 2 | 2 trains | O | SR 3.3.1.5 | NA |
| | 3[a], 4[a], 5[a] | 2 trains | C | SR 3.3.1.5 | NA |

(a) With Rod Control System capable of rod withdrawal or one or more rods not fully inserted.

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

(h) Above the P-8 (Power Range Neutron Flux) interlock.

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

Table 3.3.1-1 (page 4 of 5)
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 2.0% of $\Delta T$ span.

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

Where: $\Delta T$ is measured RCS $\Delta T$, °F.
$\Delta T_0$ is the indicated $\Delta T$ at RTP, °F.
s is the Laplace transform operator, $sec^{-1}$.
T is the measured RCS average temperature, °F.
T' is the nominal $T_{avg}$ at RTP, ≤ [*]°F.

P is the measured pressurizer pressure, psig
P' is the nominal RCS operating pressure, ≥ [*] psig

$K_1$ ≤ [*] $K_2$ ≥ [*]/°F $K_3$ ≥ [*]/psig

$\tau_1$ ≥ [*] sec $\tau_2$ ≤ [*] sec

$f_1(\Delta I)$ = [*]{[*] - ($q_t$ - $q_b$)} when $q_t$ - $q_b$ < [*]% RTP
0 when [*]% RTP ≤ $q_t$ - $q_b$ ≤ [*]% RTP
[*]{($q_t$ - $q_b$) - [*]} when $q_t$ - $q_b$ > [*]% RTP

Where $q_t$ and $q_b$ are percent RTP in the upper and lower halves of the core, respectively, and $q_t$ + $q_b$ is the total THERMAL POWER in percent RTP.

The values denoted with [*] are specified in the COLR.

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

Note 2: Overpower $\Delta T$

The Overpower $\Delta T$ Function Allowable Value shall not exceed the following nominal trip setpoint by more than 2% of $\Delta T$ span.

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

Where: $\Delta T$ is measured RCS $\Delta T$, °F.
$\Delta T_0$ is the indicated $\Delta T$ at RTP, °F.
s is the Laplace transform operator, $sec^{-1}$.
T is the measured RCS average temperature, °F.
T' is the nominal $T_{avg}$ at RTP, ≤ [*]°F.

$K_4 \le$ [*]

$K_5 \ge$ [*]/°F for increasing $T_{avg}$
[*]/°F for decreasing $T_{avg}$

$K_6 \ge$ [*]/°F when T > T'
[*]/°F when T ≤ T'

$\tau_3 \ge$ [*] sec

$f_2(\Delta I)$ = [*]

The values denoted with [*] are specified in the COLR.



Correction letter of 6-26-2005

## 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 |

ACTIONS

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| E. One Containment Pressure channel inoperable. | E.1 --------NOTE--------- One additional channel may be bypassed for up to 12 hours for surveillance testing. --------------------- | |
| | Place channel in bypass. | 72 hours |
| | OR | |
| | E.2.1 Be in MODE 3. | 78 hours |
| | AND | |
| | E.2.2 Be in MODE 4. | 84 hours |
| F. One channel or train inoperable. | F.1 Restore channel or train to OPERABLE status. | 48 hours |
| | OR | |
| | F.2.1 Be in MODE 3. | 54 hours |
| | AND | |
| | F.2.2 Be in MODE 4. | 60 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| G. One train inoperable. | G.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. | 24 hours |
| | <u>OR</u> | | |
| | G.2.1 | Be in MODE 3. | 30 hours |
| | <u>AND</u> | | |
| | G.2.2 | Be in MODE 4. | 36 hours |
| H. One Main Feedwater Pumps trip channel inoperable. | H.1 | Restore channel to OPERABLE status. | 48 hours |
| | <u>OR</u> | | |
| | H.2 | Be in MODE 3. | 54 hours |
| I. One channel inoperable. | I.1 | --------NOTE--------- One additional channel may be bypassed for up to 12 hours for surveillance testing. --------------------- | |
| | | Place channel in bypass. | 72 hours |
| | <u>OR</u> | | |
| | I.2.1 | Be in MODE 3. | 78 hours |
| | <u>AND</u> | | |
| | I.2.2 | Be in MODE 5. | 108 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| J. One or more channels inoperable. | J.1 Verify interlock is in required state for existing unit condition. | 1 hour |
| | <u>OR</u> | |
| | J.2.1 Be in MODE 3. | 7 hours |
| | <u>AND</u> | |
| | J.2.2 Be in MODE 4. | 13 hours |

SURVEILLANCE REQUIREMENTS

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

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

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.2.5 | -------------------NOTE-------------<br>Not required to be performed for SLAVE RELAYS if testing would:<br><br>1. Result in an inadvertent Reactor Trip System or ESFAS Actuation if accompanied by a single failure in the Safeguard Test Cabinet;<br><br>2. Adversely affect two or more components in one or more ESFAS system(s); or<br><br>3. Create a reactivity, thermal, or hydraulic transient condition in the Reactor Coolant System.<br>------------------------------------- | |
| | Perform SLAVE RELAY TEST. | In accordance with the Surveillance Frequency Control Program |
| SR 3.3.2.6 | -------------------NOTE-------------<br>Verification of relay setpoints not required.<br>------------------------------------- | |
| | Perform TADOT. | In accordance with the Surveillance Frequency Control Program |

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.2.7 | -------------------NOTE-------------- Verification of setpoint not required for manual initiation or interlock functions. ------------------------------------- | |
| | Perform TADOT. | In accordance with the Surveillance Frequency Control Program |
| SR 3.3.2.8 | -------------------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 3.3.2.9 | -------------------NOTE-------------- Not required to be performed for the turbine driven AFW pump until 24 hours after SG pressure is ≥ 1005 psig. ------------------------------------- | |
| | Verify ESFAS RESPONSE TIMES are within limit. | In accordance with the Surveillance Frequency Control Program |

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

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE |
|---|---|---|---|---|---|
| 1. Safety Injection | | | | | |
| a. Manual Initiation | 1, 2, 3, 4 | 2 | B | SR 3.3.2.7 | NA |
| b. Automatic Actuation Logic and Actuation Relays | 1, 2, 3, 4 | 2 trains | C | SR 3.3.2.2<br>SR 3.3.2.3<br>SR 3.3.2.5 | NA |
| c. Containment Pressure-High | 1, 2, 3 | 3 | D | SR 3.3.2.1<br>SR 3.3.2.4<br>SR 3.3.2.8<br>SR 3.3.2.9 | ≤ 17.7 psia |
| d. Pressurizer Pressure-Low-Low | 1, 2, 3[(a)] | 3 | D | SR 3.3.2.1<br>SR 3.3.2.4<br>SR 3.3.2.8<br>SR 3.3.2.9 | ≥ 1770 psig |
| e. High Differential Pressure Between Steam Lines | 1, 2, 3 | 3 per steam line | D | SR 3.3.2.1<br>SR 3.3.2.4<br>SR 3.3.2.8<br>SR 3.3.2.9 | ≤ 112 psid |
| f. High Steam Flow in Two Steam Lines | 1, 2, 3[(b)] | 2 per steam line | D | SR 3.3.2.1<br>SR 3.3.2.4<br>SR 3.3.2.8<br>SR 3.3.2.9 | (c) |
| Coincident with $T_{avg}$-Low Low | 1, 2, 3[(b)] | 1 per loop | D | SR 3.3.2.1<br>SR 3.3.2.4<br>SR 3.3.2.8<br>SR 3.3.2.9 | ≥ 542°F |
| g. High Steam Flow in Two Steam Lines | 1, 2, 3[(b)] | 2 per steam line | D | SR 3.3.2.1<br>SR 3.3.2.4<br>SR 3.3.2.8<br>SR 3.3.2.9 | (c) |
| Coincident with Steam Line Pressure-Low | 1, 2, 3[(b)] | 1 per steam line | D | SR 3.3.2.1<br>SR 3.3.2.4<br>SR 3.3.2.8<br>SR 3.3.2.9 | ≥ 585 psig |

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

(b) Above the P-12 ($T_{avg}$-Low Low) interlock.

(c) Less than or equal to a function defined as ΔP corresponding to 42% full steam flow below 20% load, and ΔP increasing linearly from 42% full steam flow at 20% load to 111% full steam flow at 100% load, and ΔP corresponding to 111% full steam flow above 100% load.

Table 3.3.2-1 (page 2 of 4)
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE |
|---|---|---|---|---|---|
| 2. Containment Spray Systems | | | | | |
| a. Manual Initiation | 1, 2, 3, 4 | 2 per train, 2 trains | B | SR 3.3.2.7 | NA |
| b. Automatic Actuation Logic and Actuation Relays | 1, 2, 3, 4 | 2 trains | C | SR 3.3.2.2<br>SR 3.3.2.3<br>SR 3.3.2.5 | NA |
| c. Containment Pressure | | | | | |
| High High | 1, 2, 3 | 4 | E | SR 3.3.2.1<br>SR 3.3.2.4<br>SR 3.3.2.8<br>SR 3.3.2.9 | ≤ 28.45 psia |
| d. Refueling Water Storage Tank (RWST) Level-Low | 1, 2, 3 | 3 | D | SR 3.3.2.1<br>SR 3.3.2.4<br>SR 3.3.2.8<br>SR 3.3.2.9 | ≥ 59% and ≤ 61% |
| Coincident with Containment Pressure—High High | Refer to Function 2.c (Containment Spray-Containment Pressure—High High) for all functions and requirements. | | | | |
| 3. Containment Isolation | | | | | |
| a. Phase A Isolation | | | | | |
| (1) Manual Initiation | 1, 2, 3, 4 | 2 | B | SR 3.3.2.7 | NA |
| (2) Automatic Actuation Logic and Actuation Relays | 1, 2, 3, 4 | 2 trains | C | SR 3.3.2.2<br>SR 3.3.2.3<br>SR 3.3.2.5 | NA |
| (3) Safety Injection | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. | | | | |
| b. Phase B Isolation | | | | | |
| (1) Manual Initiation | Refer to Function 2.a (Containment Spray—Manual Initiation) for all functions and requirements. | | | | |
| (2) Automatic Actuation Logic and Actuation Relays | 1, 2, 3, 4 | 2 trains | C | SR 3.3.2.2<br>SR 3.3.2.3<br>SR 3.3.2.5 | NA |
| (3) Containment Pressure | | | | | |
| High High | Refer to Function 2.c (Containment Spray—Containment Pressure High High) for all functions and requirements. | | | | |

Table 3.3.2-1 (page 3 of 4)
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE |
|---|---|---|---|---|---|
| 4. Steam Line Isolation | | | | | |
| a. Manual Initiation | 1, $2^{(d)}$, $3^{(d)}$ | 2 per steam line | F | SR 3.3.2.7 | NA |
| b. Automatic Actuation Logic and Actuation Relays | 1, $2^{(d)}$, $3^{(d)}$ | 2 trains | G | SR 3.3.2.2<br>SR 3.3.2.3<br>SR 3.3.2.5 | NA |
| c. Containment Pressure—Intermediate High High | 1, $2^{(d)}$, $3^{(d)}$ | 3 | D | SR 3.3.2.1<br>SR 3.3.2.4<br>SR 3.3.2.8<br>SR 3.3.2.9 | ≤ 18.5 psia |
| d. High Steam Flow in Two Steam Lines | 1, $2^{(d)}$, $3^{(d)}$ | 2 per steam line | D | SR 3.3.2.1<br>SR 3.3.2.4<br>SR 3.3.2.8<br>SR 3.3.2.9 | (c) |
| Coincident with $T_{avg}$—Low Low | 1, $2^{(d)}$, $3^{(b)(d)}$ | 1 per loop | D | SR 3.3.2.1<br>SR 3.3.2.4<br>SR 3.3.2.8<br>SR 3.3.2.9 | ≥ 542°F |
| e. High Steam Flow in Two Steam Lines | 1, $2^{(d)}$, $3^{(d)}$ | 2 per steam line | D | SR 3.3.2.1<br>SR 3.3.2.4<br>SR 3.3.2.8<br>SR 3.3.2.9 | (c) |
| Coincident with Steam Line Pressure—Low | 1, 2,$^{(d)}$ $3^{(d)}$ | 1 per steam line | D | SR 3.3.2.1<br>SR 3.3.2.4<br>SR 3.3.2.8<br>SR 3.3.2.9 | ≥ 585 psig |
| 5. Turbine Trip and Feedwater Isolation | | | | | |
| a. Automatic Actuation Logic and Actuation Relays | 1, $2^{(e)}$, $3^{(e)}$ | 2 trains | G | SR 3.3.2.2<br>SR 3.3.2.3<br>SR 3.3.2.5 | NA |
| b. SG Water Level—High High (P-14) | 1, $2^{(e)}$, $3^{(e)}$ | 3 per SG | D | SR 3.3.2.1<br>SR 3.3.2.4<br>SR 3.3.2.8<br>SR 3.3.2.9 | ≤ 76% |
| c. Safety Injection | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. | | | | |

(b) Above the P-12 ($T_{avg}$—Low Low) interlock.

(c) Less than or equal to a function defined as ΔP corresponding to 42% full steam flow below 20% load, and ΔP increasing linearly from 42% full steam flow at 20% load to 111% full steam flow at 100% load, and ΔP corresponding to 111% full steam flow above 100% load.

(d) Except when all MSTVs are closed and de-activated.

(e) Except when all Main Feedwater Pump Discharge Valves or all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve.

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

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE |
|---|---|---|---|---|---|
| 6. Auxiliary Feedwater | | | | | |
| a. Automatic Actuation Logic and Actuation Relays | 1, 2, 3 | 2 trains | G | SR 3.3.2.2<br>SR 3.3.2.3<br>SR 3.3.2.5 | NA |
| b. SG Water Level—Low Low | 1, 2, 3 | 3 per SG | D | SR 3.3.2.1<br>SR 3.3.2.4<br>SR 3.3.2.8<br>SR 3.3.2.9 | ≥ 17% |
| c. Safety Injection | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. | | | | |
| d. Loss of Offsite Power | 1, 2, 3 | 1 per bus, 2 buses | F | SR 3.3.2.6<br>SR 3.3.2.8<br>SR 3.3.2.9 | ≥ 2184 V |
| e. Trip of all Main Feedwater Pumps | 1, 2 | 2 per pump | H | SR 3.3.2.7<br>SR 3.3.2.9 | NA |
| 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<br>SR 3.3.2.3<br>SR 3.3.2.5 | NA |
| b. RWST Level—Low Low | 1, 2, 3, 4 | 4 | I | SR 3.3.2.1<br>SR 3.3.2.4<br>SR 3.3.2.8<br>SR 3.3.2.9 | ≥ 15% and ≤ 17% |
| 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 | 1 per train, 2 trains | F | SR 3.3.2.7 | NA |
| b. Pressurizer Pressure, P-11 | 1, 2, 3 | 3 | J | SR 3.3.2.1<br>SR 3.3.2.8 | ≤ 2010 psig |
| c. $T_{avg}$—Low Low, P-12 | 1, 2, 3 | 1 per loop | J | SR 3.3.2.1<br>SR 3.3.2.8 | ≥ 542°F and ≤ 545°F |

## 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 required channel inoperable. | A.1 Restore required channel to OPERABLE status. | 30 days |
| B. Required Action and associated Completion Time of Condition A not met. | B.1 Initiate action in accordance with Specification 5.6.6. | Immediately |
| C. One or more Functions with two required channels inoperable. | C.1 Restore one channel to OPERABLE status. | 7 days |
| D. Required Action and associated Completion Time of Condition C not met. | D.1 Be in MODE 3.<br>AND<br>D.2 Be in MODE 4. | 6 hours<br><br>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 except SR 3.3.3.3 does not apply to Item 10. SR 3.3.3.4 applies only to Item 10.
-------------------------------------------------------------------------------

| | 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 | -------------------NOTE-------------------<br>Neutron detectors are excluded from CHANNEL CALIBRATION.<br>------------------------------------------<br><br>Perform CHANNEL CALIBRATION. | In accordance with the Surveillance Frequency Control Program |
| SR 3.3.3.4 | Perform TADOT. | In accordance with the Surveillance Frequency Control Program |

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

| FUNCTION | REQUIRED CHANNELS |
|---|---|
| 1. Power Range Neutron Flux | 2 |
| 2. Source Range Neutron Flux | 2 |
| 3. Reactor Coolant System (RCS) Hot Leg Temperature (Wide Range) | 2 |
| 4. RCS Cold Leg Temperature (Wide Range) | 2 |
| 5. RCS Pressure (Wide Range) | 2 |
| 6. Inadequate Core Cooling Monitoring (ICCM) System | |
| 6.a. Reactor Vessel Level Instrumentation System (RVLIS) | 2 |
| 6.b. RCS Subcooling Margin Monitor | 2 |
| 6.c.1 Core Exit Temperature-Quadrant 1 | 2[c] |
| 6.c.2 Core Exit Temperature-Quadrant 2 | 2[c] |
| 6.c.3 Core Exit Temperature-Quadrant 3 | 2[c] |
| 6.c.4 Core Exit Temperature-Quadrant 4 | 2[c] |
| 7. Containment Sump Water Level (Wide Range) | 2 |
| 8. Containment Pressure | 2 |
| 9. Containment Pressure (Wide Range) | 2 |
| 10. Penetration Flow Path Containment Isolation Valve Position | 2 per penetration flow path[a][b] |
| 11. Containment Area Radiation (High Range) | 2 |
| 12. Deleted | |
| 13. Pressurizer Level | 2 |
| 14. Steam Generator (SG) Water Level (Wide Range) | 2 |
| 15. SG Water Level (Narrow Range) | 2 per SG |
| 16. Emergency Condensate Storage Tank Level | 2 |
| 17. SG Pressure | 2 per SG |
| 18. High Head Safety Injection Flow | 2 |

(a) Not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

(c) 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 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.<br><br><u>AND</u><br><br>B.2 Be in MODE 4. | 6 hours<br><br><br><br>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 | Verify each required control circuit and transfer switch is capable of performing the intended function. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.4.3 | Perform CHANNEL CALIBRATION for each required instrumentation channel. | In accordance with the Surveillance Frequency Control Program |

## 3.3 INSTRUMENTATION

### 3.3.5 Loss of Power (LOP) Emergency Diesel Generator (EOG) 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, and three channels per bus of the negative sequence Function for the following 4160 VAC buses shall be OPERABLE:

a. The Train Hand Train J buses; and

b. One bus on the other unit for each required shared component.

APPLICABILITY: MODES 1, 2, 3, and 4,
When associated EOG 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 --------NOTE--------- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. --------------------- Place channel in trip. | 72 hours |

ACTIONS

| CONDITION | | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|---|
| B. One or more Functions with two or more channels per bus inoperable. | B.1 | -----------NOTE-----------<br>If the negative sequence voltage protection function cannot be performed (e.g., the 4160V to 480V Balance Relay is tripped), the negative sequence voltage protection does not have to be declared inoperable provided verification is performed at least once per 24 hours that an open phase condition does not exist on the primary side of transformer TX-3 and the Reserve Station Service Transformers, as well as the Unit 1/Unit 2 Main Step-up Transformers when power is supplied by the dependable alternate source. The negative sequence voltage protection function shall be restored within 72 hours.<br>---------------------------------<br>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 EDG made inoperable by LOP EDG start instrumentation. | Immediately |

SURVEILLANCE REQUIREMENTS

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.3.5.1 | --------------------NOTE----------------<br>Verification of setpoint is not required.<br>----------------------------------------<br><br>Perform TADOT for LCD 3.3.5.a and LCD 3.3.5.b Loss of Voltage/Degraded Voltage Functions. | <br><br><br><br>In accordance with the Surveillance Frequency Control Program |
| SR 3.3.5.2 | --------------------NOTE----------------<br>Verification of setpoint is not required.<br>----------------------------------------<br>Perform TADOT for LCD 3.3.5.a and LCD 3.3.5.b Negative Sequence Relay Functions. | In accordance with the Surveillance Frequency Control Program |
| SR 3.3.5.3 | --------------------NOTE----------------<br>Negative Sequence Voltage is calculated as a percentage of nominal voltage.<br>----------------------------------------<br><br>Peiform CHANNEL CALIBRATION with Allowable Values as follows:<br><br>a. Loss of voltage Allowable Values 2935 V and 3225 V with a time delay of 2 ±1 seconds for LCD 3.3.5.a and LCO 3.3.5.b Functions.<br><br>b. Degraded voltage Allowable Values 3720 V and 3772 V with:<br><br>1. A time delay of 7.5 ±1.5 seconds with a Safety Injection (SI) signal for LCD 3.3.5.a Function; and<br><br>2. A time delay of 56 ±7 seconds without an SI signal for LCD 3.3.5.a and LCD 3.3.5.b Functions.<br><br>c. Negative Sequence Voltage 2.894% and 5.106% for LCO 3.3.5.a and LCD 3.3.5.b Functions. | <br><br><br><br><br>In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| | ----------------------NOTE---------------------<br>ESF Response Times are only applicable to Loss of Voltage and Degraded Voltage Functions.<br>------------------------------------------------- | |
| SR 3.3.5.4 | Verify ESF RESPONSE TIMES are within limit for LCO 3.3.5.a and LCO 3.3.5.b Functions. | In accordance with the Surveillance Frequency Control Program |

## 3.3 INSTRUMENTATION

### 3.3.6 Main Control Room/Emergency Switchgear Room (MCR/ESGR) Envelope Isolation Actuation Instrumentation

LCO 3.3.6 The MCR/ESGR Envelope Isolation Actuation Instrumentation for each Function in Table 3.3.6-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.6-1.

ACTIONS

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

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more Functions with one train inoperable. | A.1 Isolate the MCR/ESGR envelope normal ventilation. | 7 days |
| B. One or more Functions with two trains inoperable. | B.1 Isolate the MCR/ESGR envelope normal ventilation. | Immediately |
| C. Required Action and associated Completion Time for Condition A or B not met in MODE 1, 2, 3, or 4. | C.1 Be in MODE 3.<br><br><u>AND</u><br><br>C.2 Be in MODE 5. | 6 hours<br><br><br><br>36 hours |
| D. Required Action and associated Completion Time for Condition A or B not met during movement of recently irradiated fuel assemblies. | D.1 Isolate the MCR/ESGR envelope normal ventilation.<br><br><u>OR</u><br><br>D.2 Suspend movement of recently irradiated fuel assemblies. | Immediately<br><br><br><br>Immediately |

SURVEILLANCE REQUIREMENTS

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.3.6.1 | --------------------NOTE------------------<br>Verification of setpoint is not required.<br>------------------------------------------<br><br>Perform TADOT. | In accordance with the Surveillance Frequency Control Program |

Table 3.3.6-1 (page 1 of 1)
MCR/ESGR Envelope Isolation Actuation Instrumentation

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | SURVEILLANCE REQUIREMENTS | TRIP SETPOINT |
|---|---|---|---|---|
| 1. Manual Initiation | 1, 2, 3, 4, (a) | 2 trains | SR 3.3.6.1 | N/A |
| 2. Safety Injection | Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 1, for all initiation functions and requirements. | | | |

(a) During movement of recently irradiated fuel assemblies.

## 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 below:

a. Pressurizer pressure is greater than or equal to the limit specified in the COLR;

b. RCS average temperature is less than or equal to the limit specified in the COLR; and

c. RCS total flow rate ≥ 295,000 gpm and is greater than or equal to the limit specified in the COLR.

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. One or more RCS DNB parameters not within limits. | A.1 Restore RCS DNB parameter(s) to within limit. | 2 hours |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 2. | 6 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.1.1 | Verify pressurizer pressure is greater than or equal to the limit specified in the COLR. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.1.2 | Verify RCS average temperature is less than or equal to the limit specified in the COLR. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.1.3 | Verify RCS total flow rate is ≥ 295,000 gpm and is greater than or equal to the limit specified in the COLR. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.1.4 | -------------------NOTE-------------------- Not required to be performed until 30 days after ≥ 90% RTP. -------------------------------------------- | |
| | Verify by precision heat balance that RCS total flow rate is ≥ 295,000 gpm and is greater than or equal to the limit specified in the COLR. | In accordance with the Surveillance Frequency Control Program |

## 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 ≥ 541°F.

APPLICABILITY: MODE 1,
MODE 2 with $k_{eff}$ ≥ 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 ≥ 541°F. | In accordance with the Surveillance Frequency Control Program |

## 3.4 REACTOR COOLANT SYSTEM (RCS)

### 3.4.3 RCS Pressure and Temperature (P/T) Limits

LCO 3.4.3 RCS pressure, RCS temperature, and RCS heatup and cooldown rates shall be maintained within the limits specified in Figures 3.4.3-1 and 3.4.3-2 with:

a. A maximum heatup of 60°F in any one hour period;

b. A maximum cooldown of 100°F in any one hour period; and

c. A maximum temperature change of 10°F in any one hour period during inservice hydrostatic and leak testing operations above the heatup and cooldown limit curves.

APPLICABILITY: At all times.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| 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. | A.1 Restore parameter(s) to within limits.<br><br>AND<br><br>A.2 Determine RCS is acceptable for continued operation. | 30 minutes<br><br><br><br>72 hours |
| B. Required Action and associated Completion Time of Condition A not met. | B.1 Be in MODE 3.<br><br>AND<br><br>B.2 Be in MODE 5 with RCS pressure < 500 psig. | 6 hours<br><br><br><br>36 hours |

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

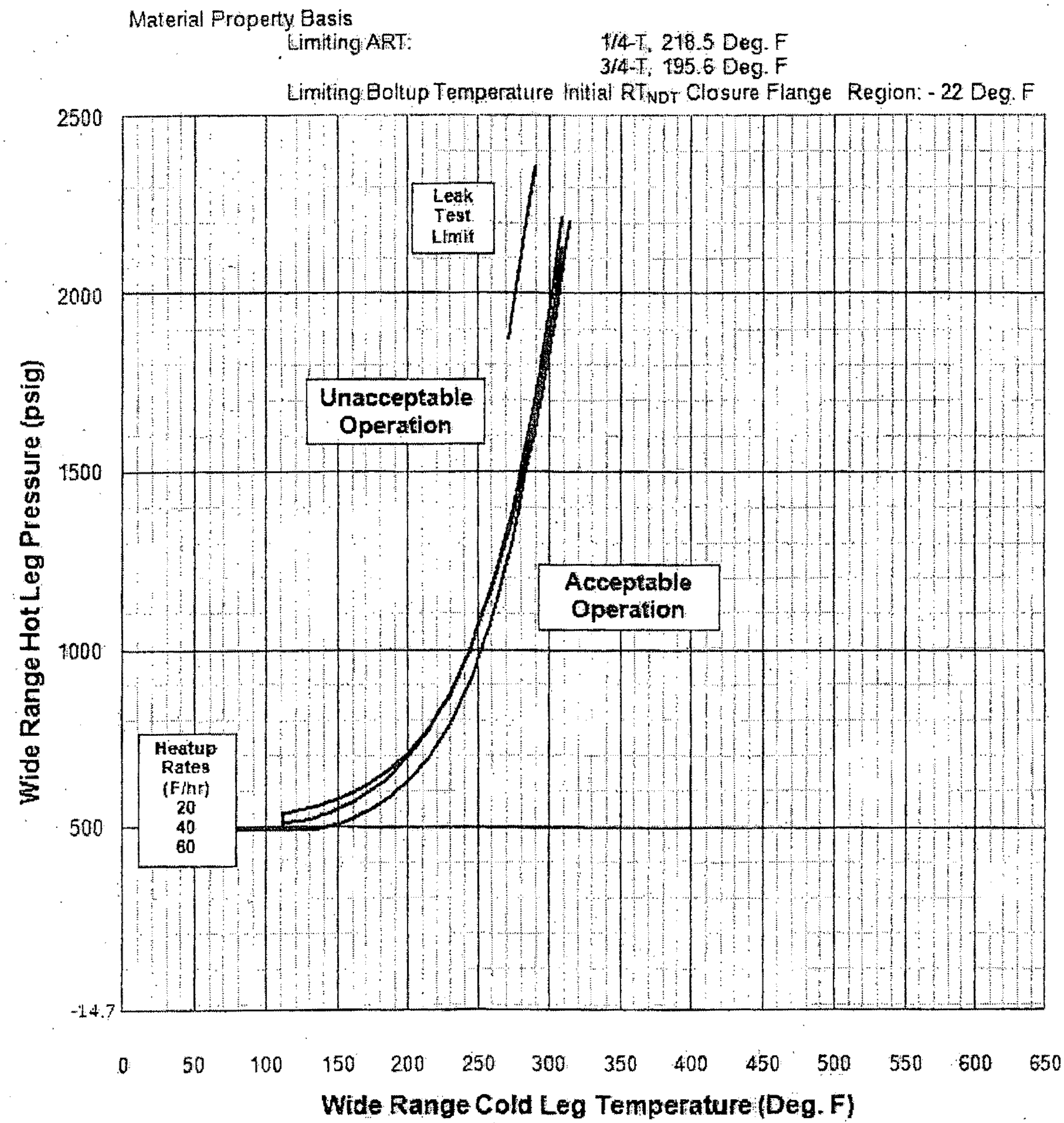


Figure 3.4.3-1 (page 1 of 1)
North Anna Units 1 and 2 Reactor Coolant System Heatup Limitations
(Heatup Rates up to 60°F/hr),
Applicable for the first 50.3 EFPY for Unit 1, and 52.3 EFPY for Unit 2
(Including Margins for Instrumentation Errors)

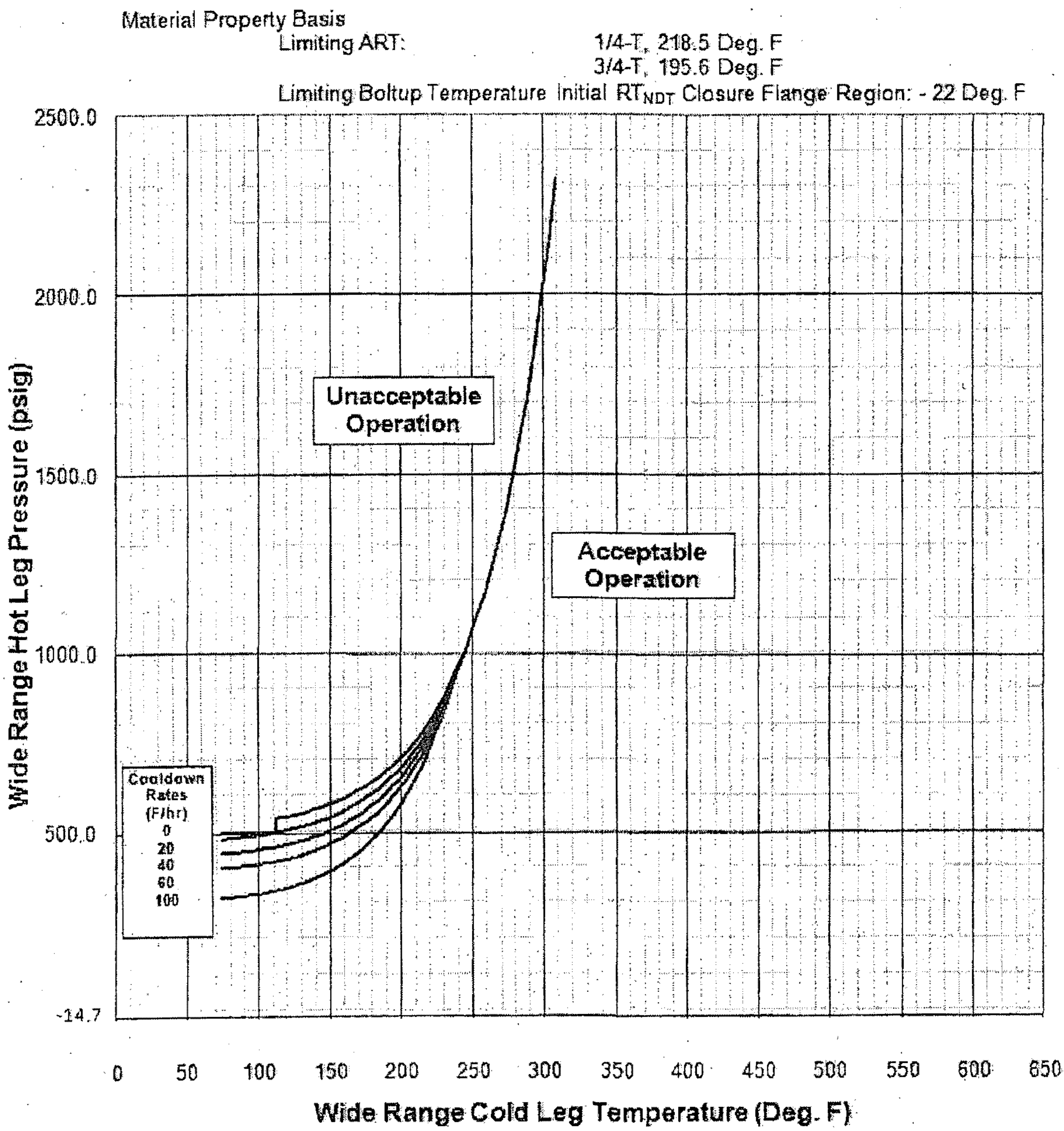


Figure 3.4.3-2 (page 1 of 1)
North Anna Units 1 and 2 Reactor Coolant System Cooldown Limitations
(Cooldown Rates up to 100°F/hr),
Applicable for the first 50.3 EFPY for Unit 1, and 52.3 EFPY for Unit 2
(Including Margins for Instrumentation Errors)

## 3.4 REACTOR COOLANT SYSTEM (RCS)

### 3.4.4 RCS Loops–MODES 1 and 2

LCO 3.4.4 Three 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 Two RCS loops shall be OPERABLE, and one RCS loop shall be in operation.

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

All reactor coolant pumps may be removed from operation for ≤ 1 hour per 8 hour period provided:

a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1; 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 required RCS loop inoperable. | A.1 Restore required RCS loop 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 |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| C. Two required RCS loops inoperable.<br><br><u>OR</u><br><br>Required RCS loop not in operation. | C.1 Place the Rod Control System in a condition incapable of rod withdrawal. | Immediately |
| | <u>AND</u> | |
| | C.2 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1. | Immediately |
| | <u>AND</u> | |
| | C.3 Initiate action to restore one RCS loop to OPERABLE status and operation. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.5.1 | Verify required RCS loops are in operation. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.5.2 | Verify steam generator secondary side water levels are ≥ 17% for required RCS loops. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.5.3 | -------------------NOTE-------------------<br>Not required to be performed until 24 hours after a required pump is not in operation.<br>------------------------------------------<br><br>Verify correct breaker alignment and indicated power are available to the required pump 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.

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

1. All reactor coolant pumps (RCPs) and RHR pumps may be removed from operation for ≤ 1 hour per 8 hour period provided:

   a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1; 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 ≤ 280°F unless the secondary side water temperature of each steam generator (SG) is ≤ 50°F above each of the RCS cold leg temperatures.

----------------------------------------------------------------

APPLICABILITY: MODE 4.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One required loop inoperable. | A.1 Initiate action to restore a second loop to OPERABLE status. | Immediately |
| | <u>AND</u> | |
| | A.2 ---------NOTE--------- Only required if RHR loop is OPERABLE. ---------------------- Be in MODE 5. | 24 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B. Two required loops inoperable.<br><br>OR<br><br>Required loop not in operation. | B.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1. | Immediately |
| | AND | |
| | B.2 Initiate action to restore one loop to OPERABLE status and operation. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.6.1 | Verify required RHR or RCS loop is in operation. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.6.2 | Verify SG secondary side water levels are $\geq$ 17% for required RCS loops. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.6.3 | -------------------NOTE-------------------<br>Not required to be performed until 24 hours after a required pump is not in operation.<br>------------------------------------------<br><br>Verify correct breaker alignment and indicated power are available to the required pump not in operation. | 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 one steam generator (SG) shall be ≥ 17%.

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

1. The RHR pump of the loop in operation may be removed from operation for ≤ 1 hour per 8 hour period provided:

   a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet 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 ≤ 280°F unless the secondary side water temperature of each SG is ≤ 50°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 |
|---|---|---|
| A. One required RHR loop inoperable.<br><br>AND<br><br>One RHR loop OPERABLE. | A.1 Initiate action to restore a second RHR loop to OPERABLE status.<br><br>OR | Immediately |
| | A.2 Initiate action to restore required SG secondary side water level to within limits. | Immediately |
| B. Required SG with secondary side water level not within limits.<br><br>AND<br><br>One RHR loop OPERABLE. | B.1 Initiate action to restore a second RHR loop to OPERABLE status.<br><br>OR | Immediately |
| | B.2 Initiate action to restore required SG secondary side water level to within limits. | Immediately |
| C. No required RHR loops OPERABLE.<br><br>OR<br><br>Required RHR loop not in operation. | C.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1.<br><br>AND | Immediately |
| | C.2 Initiate action to restore one RHR loop to OPERABLE status and operation. | Immediately |

SURVEILLANCE REQUIREMENTS

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.4.7.1 | Verify required 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 $\geq$ 17% in required SG. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.7.3 | -------------------NOTE-------------------- Not required to be performed until 24 hours after a required pump is not in operation. ------------------------------------------- Verify correct breaker alignment and indicated power are available to the required RHR pump not in operation. | 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 removed from operation for ≤ 15 minutes when switching from one loop to another provided:

   a. The core outlet temperature is maintained > 10°F below saturation temperature;

   b. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet 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 ≤ 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 required RHR loop inoperable. | A.1 Initiate action to restore RHR loop to OPERABLE status. | Immediately |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B. No required RHR loop OPERABLE.<br><br><u>OR</u><br><br>Required RHR loop not in operation. | B.1 Suspend operations that would cause introduction into the RCS, coolant 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 required RHR loop is in operation. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.8.2 | -------------------NOTE--------------------<br>Not required to be performed until 24 hours after a required pump is not in operation.<br>------------------------------------------<br><br>Verify correct breaker alignment and indicated power are available to the required RHR pump not in operation. | 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 ≤ 93%; and

b. Two groups of pressurizer heaters OPERABLE with the capacity of each group ≥ 125 kW and capable of being powered from an emergency bus.

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. | 6 hours |
| | <u>AND</u> | |
| | A.2 Fully insert all rods. | 6 hours |
| | <u>AND</u> | |
| | A.3 Place Rod Control System in a condition incapable of rod withdrawal. | 6 hours |
| | <u>AND</u> | |
| | A.4 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 ≤ 93%. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.9.2 | Verify capacity of each required group of pressurizer heaters is ≥ 125 kW. | 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 of 2485 psig, +2%/-3% average with no single valve outside ±3%.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 with all RCS cold leg temperatures > 280°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.<br><br>OR<br><br>Two or more pressurizer safety valves inoperable. | B.1 Be in MODE 3.<br><br>AND<br><br>B.2 Be in MODE 4 with any RCS cold leg temperatures ≤ 280°F. | 6 hours<br><br><br><br>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 within ±1%. | 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

NOTE

Separate Condition entry is allowed for each PORV and each block valve.

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more PORVs inoperable due to inoperable backup nitrogen supply and capable of being manually cycled. | A.1 Restore backup nitrogen supply to OPERABLE status. | 14 days |
| B. One or more PORVs inoperable for reason other than Condition A and capable of being manually cycled. | B.1 Close and maintain power to associated block valve. | 1 hour |
| C. One PORV inoperable and not capable of being manually cycled. | C.1 Close associated block valve.<br><br>AND<br><br>C.2 Remove power from associated block valve.<br><br>AND<br><br>C.3 Restore PORV to OPERABLE status. | 1 hour<br><br><br><br>1 hour<br><br><br><br>72 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| D. One block valve inoperable. | -------------NOTE------------<br>Required Action D.1 and D.2 do not apply when block valve is inoperable solely as a result of complying with Required Action C.2.<br>---------------------------- | |
| | D.1 Place associated PORV in manual control. | 1 hour |
| | AND | |
| | D.2 Restore block valve to OPERABLE status. | 72 hours |
| E. Required Action and associated Completion Time of Condition A, B, C, or D not met. | E.1 Be in MODE 3. | 6 hours |
| | AND | |
| | E.2 Be in MODE 4. | 12 hours |
| F. Two PORVs inoperable and not capable of being manually cycled. | F.1 Be in MODE 3. | 6 hours |
| | AND | |
| | F.2 Be in MODE 4. | 12 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| G. Two block valves inoperable. | G.1 | ---------NOTE---------<br>Required Action G.1 does not apply when block valve is inoperable solely as a result of complying with Required Action C.2.<br>----------------------<br><br>Restore one block valve to OPERABLE status. | <br><br><br><br><br><br><br><br>2 hours |
| H. Required Action and associated Completion Time of Condition G not met. | H.1 | Be in MODE 3. | 6 hours |
| | <u>AND</u> | | |
| | H.2 | Be in MODE 4. | 12 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.11.1 | Verify PORV backup nitrogen supply pressure is within limit. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.11.2 | -------------------NOTES---------------<br>1. Not required to be performed with block valve closed in accordance with the Required Actions of this LCO.<br>2. Only required to be performed in MODES 1 and 2.<br>-------------------------------------<br><br>Perform a complete cycle of each block valve. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.11.3 | -------------------NOTE---------------<br>Only required to be performed in MODES 1 and 2.<br>-------------------------------------<br><br>Perform a complete cycle of each PORV. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.11.4 | Perform a complete cycle of each solenoid control valve and check valve on the accumulators in PORV control systems. | In accordance with the Surveillance Frequency Control Program |

## 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 one charging pump and one low head safety injection (LHSI) pump capable of injecting into the RCS and the accumulators isolated, with power removed from the isolation valve operators, and one of the following pressure relief capabilities:

a. Two power operated relief valves (PORVs) with lift setting allowable values of:

1. ≤ 540 psig when any RCS cold leg temperature ≤ 280°F; and

2. ≤ 375 psig when any RCS cold leg temperature ≤ 180°F.

b. The RCS depressurized and an RCS vent of ≥ 2.07 square inches.

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

1. Two charging pumps may be made capable of injecting for ≤ 1 hour for pump swapping operations.

2. Accumulator isolation with power removed from the isolation valve operators is only required when accumulator pressure is greater than the PORV lift setting.

-----------------------------------------------------------

APPLICABILITY: MODE 4 when any RCS cold leg temperature is ≤ 280°F,
MODE 5,
MODE 6 when the reactor vessel head is on.

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. Two LHSI pumps capable of injecting into the RCS. | A.1 | Initiate action to verify a maximum of one LHSI pump is capable of injecting into the RCS. | Immediately |

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| B. Two or more charging pumps capable of injecting into the RCS. | B.1 | Initiate action to verify a maximum of one charging pump is capable of injecting into the RCS. | Immediately |
| C. --------NOTE--------- Only applicable when accumulator pressure is greater than PORV lift setting. --------------------- An accumulator not isolated. <u>OR</u> Power available to one or more accumulator isolation valve operators. | C.1 | Isolate affected accumulator. | Immediately |
| | <u>AND</u> | | |
| | C.2 | Remove power from affected accumulator isolation valve operators. | 1 hour |
| D. Required Action and associated Completion Time of Condition C not met. | D.1 | Increase RCS cold leg temperature to > 280°F. | 12 hours |
| | <u>OR</u> | | |
| | D.2 | Depressurize affected accumulator to less than PORV lift setting. | 12 hours |
| E. One required PORV inoperable in MODE 4. | E.1 | Restore required PORV to OPERABLE status. | 7 days |
| F. One required PORV inoperable in MODE 5 or 6. | F.1 | Restore required PORV to OPERABLE status. | 24 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| G. Two required PORVs inoperable.<br><br>OR<br><br>Required Action and associated Completion Time of Condition A, B, D, E, or F not met.<br><br>OR<br><br>LTOP System inoperable for any reason other than Condition A, B, C, D, E, or F. | G.1 Depressurize RCS and establish RCS vent of ≥ 2.07 square inches. | 12 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.12.1 | Verify a maximum of one LHSI pump is capable of injecting into the RCS. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.12.2 | Verify a maximum of one charging pump is capable of injecting into the RCS. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.12.3 | -------------------NOTE------------------<br>Only required to be met if accumulator pressure is greater than PORV lift setting.<br>-----------------------------------------<br><br>Verify each accumulator is isolated and power is removed from the accumulator isolation valve operator. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.12.4 | Verify required RCS vent ≥ 2.07 square inches open. | 12 hours for unlocked open vent valve(s)<br><br><u>AND</u><br><br>In accordance with the Surveillance Frequency Control Program |
| SR 3.4.12.5 | Verify PORV block valve is open for each required PORV and PORV keyswitch is in AUTO. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.12.6 | Verify required PORV backup nitrogen supply pressure is within limit. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.12.7 | ------------------NOTE------------------<br>Not required to be met until 12 hours after decreasing RCS cold leg temperature to ≤ 280°F.<br>----------------------------------------<br><br>Perform a COT on each required PORV, excluding actuation. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.12.8 | Perform CHANNEL CALIBRATION for each required PORV actuation channel. | In accordance with the Surveillance Frequency Control Program |

## 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;

d. 150 gallons per day 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 |

ACTIONS

| | | |
|---|---|---|
| C. Required Action and associated Completion Time not met.<br><br>OR<br><br>Primary to secondary LEAKAGE not within limit. | C.1 Be in MODE 3.<br><br>AND<br><br>C.2 Be in MODE 5. | 6 hours<br><br><br><br>36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.13.1 | -------------------NOTES-------------------<br>1. Not required to be performed until 12 hours after establishment of steady state operation.<br><br>2. Not applicable to primary to secondary LEAKAGE.<br>--------------------------------------------<br><br>Verify RCS operational LEAKAGE is within limits by performance of RCS water inventory balance. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.13.2 | -------------------NOTE--------------------<br>Not required to be performed until 12 hours after establishment of steady state operation.<br>--------------------------------------------<br><br>Verify primary to secondary LEAKAGE is $\leq$ 150 gallons per day through any one SG. | In accordance with the Surveillance Frequency Control Program |

## 3.4 REACTOR COOLANT SYSTEM (RCS)

### 3.4.14 RCS Pressure Isolation Valve (PIV) Leakage

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

APPLICABILITY: MODES 1, 2, and 3,
MODE 4, except any required 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 |
|---|---|---|
| A. One or more flow paths with leakage from one or more required RCS PIVs not within limit. | A.1 Restore RCS PIV leakage to within limit. | 4 hours |
| B. Required Action and associated Completion Time for Condition A 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 3.4.14.1 | -------------------NOTES-------------------<br>1. Not required to be performed in MODES 3 and 4.<br><br>2. Not required to be performed on any RCS PIVs required to be tested located in the RHR flow path when in the shutdown cooling mode of operation.<br><br>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.<br>------------------------------------------ | |
| | Verify leakage from each RCS PIV required to be tested is equivalent to ≤ 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm at an RCS pressure ≥ 2215 psig and ≤ 2255 psig. | In accordance with the Inservice Testing Program, and in accordance with the Surveillance Frequency Control Program<br><br><u>AND</u><br><br>Prior to entering MODE 2 whenever the unit has been in MODE 5 for 7 days or more, if leakage testing has not been performed in the previous 9 months<br><br><u>AND</u><br><br>Within 24 hours following valve actuation due to automatic or manual action or flow through the valve |

## 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. One containment sump (level or discharge flow) monitor; and

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

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

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. Required containment sump monitor inoperable. | A.1 | ---------NOTE---------<br>Not required until 12 hours after establishment of steady state operation.<br>---------------------- | |
| | | Perform SR 3.4.13.1. | Once per 24 hours |
| | AND | | |
| | A.2 | Restore required containment sump monitor to OPERABLE status. | 30 days |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B. Required containment atmosphere radioactivity monitor inoperable. | B.1.1 Analyze grab samples of the containment atmosphere. | Once per 24 hours |
| | <u>OR</u> | |
| | B.1.2 ---------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> | |
| | B.2 Restore required containment atmosphere radioactivity monitor to OPERABLE status. | 30 days |
| ---------NOTE--------- Only applicable when the containment atmosphere gaseous radiation monitor is the only OPERABLE monitor. ---------------------- | C.1 Analyze grab samples of the containment atmosphere. | Once per 12 hours |
| | <u>AND</u> | |
| C. Required containment sump monitor inoperable. | C.2 Restore required containment sump monitor to OPERABLE status. | 7 days |
| D. Required Action and associated Completion Time not met. | D.1 Be in MODE 3. | 6 hours |
| | <u>AND</u> | |
| | D.2 Be in MODE 5. | 36 hours |
| E. All required monitors inoperable. | E.1 Enter LCO 3.0.3. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.15.1 | Perform CHANNEL CHECK of the required containment atmosphere radioactivity monitor. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.15.2 | Perform COT of the required containment atmosphere radioactivity monitor. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.15.3 | Perform CHANNEL CALIBRATION of the required containment sump monitor. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.15.4 | Perform CHANNEL CALIBRATION of the required containment atmosphere radioactivity monitor. | 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------------<br>LCO 3.0.4.c is applicable.<br>---------------------------- | |
| | A.1 Verify DOSE EQUIVALENT I-131 $\leq$ 60 μCi/gm. | Once per 4 hours |
| | <u>AND</u> | |
| | A.2 Restore DOSE EQUIVALENT I-131 to within limit. | 48 hours |
| B. DOSE EQUIVALENT XE-133 not within limit. | ------------NOTE------------<br>LCO 3.0.4.c is applicable.<br>---------------------------- | |
| | B.1 Restore DOSE EQUIVALENT XE-133 to within limit. | 48 hours |
| C. Required Action and associated Completion Time of Condition A or B not met. | C.1 Be in MODE 3. | 6 hours |
| <u>OR</u> | <u>AND</u> | |
| DOSE EQUIVALENT I-131 > 60 μCi/gm. | C.2 Be in MODE 5. | 36 hours |



Corrected by letter dated March 9, 2010

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.16.1 | Verify reactor coolant DOSE EQUIVALENT XE-133 specific activity ≤ 197 μCi/gm. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.16.2 | Verify reactor coolant DOSE EQUIVALENT I-131 specific activity ≤ 1.0 μCi/gm. | In accordance with the Surveillance Frequency Control Program<br><br>AND<br><br>Between 2 and 6 hours after a THERMAL POWER change of ≥ 15% RTP within a 1 hour period |

## 3.4 REACTOR COOLANT SYSTEM (RCS)

### 3.4.17 RCS Loop Isolation Valves

LCO 3.4.17 Each RCS hot and cold leg loop isolation valve shall be open with power removed from each isolation valve operator.

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

ACTIONS

------------------------------------NOTE------------------------------------
Separate Condition entry is allowed for each RCS loop isolation valve.
----------------------------------------------------------------------------

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. Power available to one or more loop isolation valve operators. | A.1 Remove power from loop isolation valve operators. | 30 minutes |
| B. ---------NOTE--------- All Required Actions shall be completed whenever this Condition is entered. --------------------- One or more RCS loop isolation valves closed. | B.1 Maintain valve(s) closed. <br> <u>AND</u> <br> B.2 Be in MODE 3. <br> <u>AND</u> <br> B.3 Be in MODE 5. | Immediately <br><br> 6 hours <br><br> 36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.4.17.1 Verify each RCS loop isolation valve is open. | Once prior to removing power to the valve operator |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.17.2 | Verify power removed from each RCS loop isolation valve. | In accordance with the Surveillance Frequency Control Program |

## 3.4 REACTOR COOLANT SYSTEM (RCS)

### 3.4.18 RCS Isolated Loop Startup

LCO 3.4.18 Each RCS isolated loop shall remain isolated with both loop isolation valves closed and power removed from the valve operators unless:

a. The isolated loop is filled and:

1. The boron concentration of the isolated loop is ≥ the boron concentration required to meet SDM of LCO 3.1.1 or the boron concentration of LCO 3.9.1 prior to opening the hot leg isolation valve;

2. The hot leg isolation valve has been open with recirculation line flow of ≥ 125 gpm for ≥ 90 minutes prior to opening the cold leg isolation valve; and

3. The cold leg temperature of the isolated loop is ≤ 20°F below the highest cold leg temperature of the operating loops prior to opening the cold leg isolation valve; or

b. The isolated loop is drained and:

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

Seal injection may be initiated to the RCP in the isolated, drained loop and continued during filling of the isolated loop from the active RCS volume provided:

1) The isolated loop is initially drained; and

2) The boron concentration of the seal injection source is ≥ the boron concentration required to meet the SDM of LCO 3.1.1 or the boron concentration of LCO 3.9.1.

----------------------------------------------------------------

1. Pressurizer water level is maintained ≥ 32% prior to and during the opening of the hot or cold leg isolation valves; and

2. The hot and cold leg isolation valves are fully open within 2 hours after the loop is filled.

---------------------------- NOTE ----------------------------
A hot or cold leg isolation valve may be closed for up to two hours for valve maintenance or testing. If the isolation valve is not opened within 2 hours, the loop shall be isolated.
--------------------------------------------------------------

APPLICABILITY: MODES 5 and 6.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. Isolated, filled loop boron concentration requirement not met when performing isolated loop startup in accordance with LCO 3.4.18.a. | A.1 Close hot and cold leg isolation valves. | Immediately |
| B. Isolated, filled loop recirculation line flow $\geq$ 125 gpm for $\geq$ 90 minutes with hot leg isolation valve open not established when performing isolated loop startup in accordance with LCO 3.4.18.a. | B.1 Close cold leg isolation valve. | Immediately |
| C. Isolated, filled loop temperature requirement not met when performing isolated loop startup in accordance with LCO 3.4.18.a. | C.1 Close cold leg isolation valve. | Immediately |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| D. Pressurizer level requirement not met during filling of an initially drained loop when performing isolated loop startup in accordance with LCO 3.4.18.b.<br><br><u>OR</u><br><br>Seal injection boron concentration requirements not met during filling of an initially drained loop when performing isolated loop startup in accordance with LCO 3.4.18.b. | D.1 Close hot and cold leg isolation valves. | Immediately |
| E. Hot and cold leg isolation valves not fully open within 2 hours after filling an initially drained loop when performing isolated loop startup in accordance with LCO 3.4.18.b. | E.1 Close hot and cold leg isolation valves.<br><br><u>OR</u><br><br>E.2 Verify the boron concentration is ≥ the boron concentration required to meet the SDM of LCO 3.1.1 or the boron concentration of LCO 3.9.1. | Immediately<br><br><br><br>Immediately |
| F. Power available to one or more loop isolation valve operators of closed hot or cold isolation valve(s) with LCO 3.4.18.a.1 or LCO 3.4.18.b.1 not met. | F.1 Remove power from the loop isolation valve operator(s). | 30 minutes |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.18.1 | -------------------NOTE-------------------<br>Only required to be met when utilizing the requirements of LCO 3.4.18.a.<br>------------------------------------------<br><br>Verify cold leg temperature of a filled, isolated loop is ≤ 20°F below the highest cold leg temperature of the operating loops. | Within 30 minutes prior to opening the cold leg isolation valve in isolated loop |
| SR 3.4.18.2 | -------------------NOTE-------------------<br>Only required to be met when utilizing the requirements of LCO 3.4.18.a.<br>------------------------------------------<br><br>Verify boron concentration of a filled, isolated loop is greater than or equal to boron concentration required to meet SDM of LCO 3.1.1 or the boron concentration of LCO 3.9.1. | Within 1 hour prior to opening the hot or cold leg isolation valve in isolated loop |
| SR 3.4.18.3 | -------------------NOTE-------------------<br>Only required to be met when utilizing the requirements of LCO 3.4.18.a.<br>------------------------------------------<br><br>Verify that hot leg isolation valve is open with recirculation line flow ≥ 125 gpm for ≥ 90 minutes. | Within 30 minutes prior to opening the cold leg isolation valve in filled, isolated loop |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.18.4 | -------------------NOTE-------------------<br>Only required to be met when utilizing the requirements of LCO 3.4.18.b.<br>------------------------------------------<br><br>Verify that isolated loop is drained. | <br><br><br><br>Within 2 hours prior to filling an initially drained loop from the active RCS volume<br><br><u>OR</u><br><br>Within 2 hours prior to initiating seal injection to the RCP in a drained loop |
| SR 3.4.18.5 | -------------------NOTES-------------------<br>1. Only required to be met when utilizing the requirements of LCO 3.4.18.b.<br><br>2. Only required to be met when using blended makeup flow as the source for RCP seal injection.<br>------------------------------------------<br><br>Verify the boron concentration of the source for RCP seal injection is $\geq$ the boron concentration required to meet the SDM of LCO 3.1.1 or the boron concentration of LCO 3.9.1. | <br><br><br><br><br><br><br>Within 1 hour prior to initiating RCP seal injection in the isolated loop<br><br><u>AND</u><br><br>Once per hour during filling of an initially drained loop from the active RCS volume |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.18.6 | -------------------NOTE-------------------<br>Only required to be met when utilizing the requirements of LCO 3.4.18.b.<br>------------------------------------------<br><br>Verify that the pressurizer level is ≥ 32%. | Prior to filling an initially drained loop from the active RCS volume<br><br>AND<br><br>Once per 15 minutes during the filling of an initially drained loop from the active RCS volume |
| SR 3.4.18.7 | -------------------NOTE-------------------<br>Only required to be met when utilizing the requirements of LCO 3.4.18.b.<br>------------------------------------------<br><br>Verify the boron concentration of the isolated loop is ≥ the boron concentration required to meet the SDM of LCO 3.1.1 or the boron concentration of LCO 3.9.1. | Within 1 hour prior to fully opening the cold leg isolation valve or opening the hot leg isolation valve |

## 3.4 REACTOR COOLANT SYSTEM (RCS)

### 3.4.19 RCS Loops–Test Exceptions

LCO 3.4.19 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 ≥ P-7. | A.1 Open reactor trip breakers. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.4.19.1 Verify THERMAL POWER is < P-7. | In accordance with the Surveillance Frequency Control Program |
| SR 3.4.19.2 Perform a COT for each power range neutron flux–low channel, intermediate range neutron flux channel, P-10, and P-13. | Prior to initiation of startup and PHYSICS TESTS |
| SR 3.4.19.3 Perform an ACTUATION LOGIC TEST on P-7. | Prior to initiation of startup and PHYSICS TESTS |

## 3.4 REACTOR COOLANT SYSTEM (RCS)

### 3.4.20 Steam Generator (SG) Tube Integrity

LCO 3.4.20 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 refueling outage or SG tube inspection. | 7 days |
| | AND | |
| | 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 |

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.4.20.1 Verify SG tube integrity in accordance with the Steam Generator Program. | In accordance with the Steam Generator Program |
| SR 3.4.20.2 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 Three 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. | 1 hour |
| C. Required Action and associated Completion Time of Condition A or B not met. | C.1 Be in MODE 3.<br>AND<br>C.2 Reduce RCS pressure to ≤ 1000 psig. | 6 hours<br><br>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 ≥ 7580 gallons and ≤ 7756 gallons. | In accordance with the Surveillance Frequency Control Program |
| SR 3.5.1.3 | Verify nitrogen cover pressure in each accumulator is ≥ 599 psig and ≤ 667 psig. | In accordance with the Surveillance Frequency Control Program |
| SR 3.5.1.4 | Verify boron concentration in each accumulator is ≥ 2500 ppm and ≤ 2800 ppm. | In accordance with the Surveillance Frequency Control Program<br><br>AND<br><br>-----NOTE------<br>Only required to be performed for affected accumulators<br>---------------<br><br>Once within 6 hours after each solution volume increase of ≥ 50% of indicated level that is not the result of addition from the refueling water storage tank |
| SR 3.5.1.5 | Verify power is removed from each accumulator isolation valve operator when RCS pressure is ≥ 2000 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.

-------------------------------------------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.
------------------------------------------------------------------------------------------

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One or more trains inoperable. | A.1 | Restore train(s) to OPERABLE status. | ------NOTE------<br>The Completion Time for the November 2, 2005 entry into Condition A for the Unit 1 "A" train of the Low Head Safety Injection System is 7 days<br>----------------<br><br>72 hours |
| B. Required Action and associated Completion Time not met. | B.1<br><br>AND<br><br>B.2 | Be in MODE 3.<br><br><br><br>Be in MODE 4. | 6 hours<br><br><br><br>12 hours |
| C. Less than 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available. | C.1 | Enter LCO 3.0.3. | Immediately |

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.<br><br>Unit 1<br><br>Number / Position / Function<br>1-SI-MOV-1890A Closed LHSI to Hot Leg<br>1-SI-MOV-1890B Closed LHSI to Hot Leg<br>1-SI-MOV-1836 Closed HHSI Pump to Cold Leg<br>1-SI-MOV-1869A Closed HHSI Pump to Hot Leg<br>1-SI-MOV-1869B Closed HHSI Pump to Hot Leg<br><br>Unit 2<br><br>Number / Position / Function<br>2-SI-MOV-2890A Closed LHSI to Hot Leg<br>2-SI-MOV-2890B Closed LHSI to Hot Leg<br>2-SI-MOV-2836 Closed HHSI Pump to Cold Leg<br>2-SI-MOV-2869A Closed HHSI Pump to Hot Leg<br>2-SI-MOV-2869B Closed HHSI Pump to Hot Leg | In accordance with the Surveillance Frequency Control Program |
| SR 3.5.2.2 | Verify each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position. | In accordance with the Surveillance Frequency Control Program |
| SR 3.5.2.3 | Verify ECCS piping is sufficiently full of water. | In accordance with the Surveillance Frequency Control Program |
| SR 3.5.2.4 | Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head. | In accordance with the Inservice Testing Program |

SURVEILLANCE REQUIREMENTS

| 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 capable of starting automatically starts automatically on an actual or simulated actuation signal. | In accordance with the Surveillance Frequency Control Program |
| SR 3.5.2.7 | Verify each ECCS throttle valve listed below is secured in the correct position.<br><br><u>Unit 1 Valve Number</u> <u>Unit 2 Valve Number</u><br>1-SI-188 2-SI-89<br>1-SI-191 2-SI-97<br>1-SI-193 2-SI-103<br>1-SI-203 2-SI-116<br>1-SI-204 2-SI-111<br>1-SI-205 2-SI-123 | In accordance with the Surveillance Frequency Control Program |
| SR 3.5.2.8 | Verify, by visual inspection, each ECCS train containment sump component 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

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. Required ECCS train inoperable. | A.1 Restore required ECCS train to OPERABLE status. | 1 hour |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 5. | 24 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.5.3.1 The following SRs are applicable for all equipment required to be OPERABLE:<br>SR 3.5.2.1 SR 3.5.2.7<br>SR 3.5.2.3 SR 3.5.2.8<br>SR 3.5.2.4 | In accordance with applicable SRs |

## 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 |
|---|---|---|
| A. RWST boron concentration not within limits.<br><br>OR<br><br>RWST borated water temperature not within limits. | A.1 Restore RWST to OPERABLE status. | 8 hours |
| B. RWST inoperable for reasons other than Condition A. | B.1 Restore RWST to OPERABLE status. | 1 hour |
| C. Required Action and associated Completion Time not met. | C.1 Be in MODE 3.<br><br>AND<br><br>C.2 Be in MODE 5. | 6 hours<br><br><br><br>36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.5.4.1 | Verify RWST borated water temperature is ≥ 40°F and ≤ 50°F. | In accordance with the Surveillance Frequency Control Program |
| SR 3.5.4.2 | Verify RWST borated water volume is ≥ 466,200 gallons and ≤ 487,000 gallons. | In accordance with the Surveillance Frequency Control Program |
| SR 3.5.4.3 | Verify RWST boron concentration is ≥ 2600 ppm and ≤ 2800 ppm. | 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 ≤ 30 gpm with RCS pressure ≥ 2215 psig and ≤ 2255 psig and the seal injection hand 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 RCS pressure ≥ 2215 psig and ≤ 2255 psig and the seal injection hand 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 |
|---|---|---|
| SR 3.5.5.1 | -------------------NOTE-------------------- Not required to be performed until 4 hours after the Reactor Coolant System pressure stabilizes at ≥ 2215 psig and ≤ 2255 psig. ------------------------------------------- | |
| | Verify manual seal injection throttle valves are adjusted to give a flow within limit with RCS pressure ≥ 2215 psig and ≤ 2255 psig and the seal injection hand control valve full open. | In accordance with the Surveillance Frequency Control Program |

## 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

### 3.5.6 Boron Injection Tank (BIT)

LCO 3.5.6 The BIT shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. BIT inoperable. | A.1 Restore BIT to OPERABLE status. | 1 hour |
| B. Required Action and associated Completion Time of Condition A not met. | B.1 Be in MODE 3.<br>AND<br>B.2 Borate to an SDM within the limit provided in the COLR.<br>AND<br>B.3 Restore BIT to OPERABLE status. | 6 hours<br><br>6 hours<br><br>7 days |
| C. Required Action and associated Completion Time of Condition B not met. | C.1 Be in MODE 4. | 12 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.5.6.1 | Verify BIT borated water temperature is ≥ 115°F. | In accordance with the Surveillance Frequency Control Program |
| SR 3.5.6.2 | Verify BIT borated water volume is ≥ 900 gallons. | In accordance with the Surveillance Frequency Control Program |
| SR 3.5.6.3 | Verify BIT boron concentration is ≥ 12,950 ppm and ≤ 15,750 ppm. | In accordance with the Surveillance Frequency Control Program |

## 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.<br>AND<br>B.2 Be in MODE 5. | 6 hours<br><br>36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.1.1 | Perform required visual examinations and leakage rate testing except for containment air lock testing, in accordance with the Containment Leakage Rate Testing Program. | In accordance with the Containment Leakage Rate Testing Program |

## 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 |
|---|---|---|
| A. One or more containment air locks with one containment air lock door inoperable. | ------------NOTES------------<br>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.<br>2. Entry and exit is permissible for 7 days under administrative controls.<br>----------------------------- | (continued) |

ACTIONS

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B. One or more containment air locks with containment air lock interlock mechanism inoperable. | ------------NOTES------------<br>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.<br><br>2. Entry and exit of containment is permissible under the control of a dedicated individual.<br>---------------------------- | |
| | B.1 Verify an OPERABLE door is closed in the affected air lock. | 1 hour |
| | AND | |
| | B.2 Lock an OPERABLE door closed in the affected air lock. | 24 hours |
| | AND | |
| | B.3 ---------NOTE---------<br>Air lock doors in high radiation areas may be verified locked closed by administrative means.<br>----------------------<br><br>Verify an OPERABLE door is locked closed in the affected air lock. | Once per 31 days |

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| C. One or more containment air locks inoperable for reasons other than Condition A or B. | C.1 | Initiate action to evaluate overall containment leakage rate per LCO 3.6.1. | Immediately |
| | <u>AND</u> | | |
| | C.2 | Verify a door is closed in the affected air lock. | 1 hour |
| | <u>AND</u> | | |
| | C.3 | Restore air lock to OPERABLE status. | 24 hours |
| 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 3.6.2.1 | -------------------NOTES------------------<br>1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test.<br><br>2. Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1.<br>-------------------------------------------<br><br>Perform required air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program. | In accordance with the Containment Leakage Rate Testing Program |
| SR 3.6.2.2 | Verify only one door in the air lock can be opened at a time. | In accordance with the Surveillance Frequency Control Program |

## 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 36 inch purge and exhaust valves, 18 inch containment vacuum breaking valve, 8 inch purge bypass valve, and steam jet air ejector suction 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 leakage for a penetration flow path results in exceeding the overall containment leakage rate acceptance criteria.

-------------------------------------------------------------------------------

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. ---------NOTE---------<br>Only applicable to penetration flow paths with two or more containment isolation valves.<br>---------------------<br><br>One or more penetration flow paths with one containment isolation valve inoperable for reasons other than Condition D. | 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 with flow through the valve secured. | 4 hours |
| | AND | | |
| | | | (continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. (continued) | A.2 --------NOTES---------<br>1. Isolation devices in high radiation areas may be verified by use of administrative means.<br><br>2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means.<br>---------------------<br><br>Verify the affected penetration flow path is isolated. | <br><br><br><br><br>Once per 31 days for isolation devices outside containment<br><br><u>AND</u><br><br>Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| 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 for reasons other than Condition D. | 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. | 1 hour |
| C. ---------NOTE--------- Only applicable to penetration flow paths with only one containment isolation valve and a closed system. ---------------------- One or more penetration flow paths with one containment isolation valve inoperable. | C.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. <br> <u>AND</u> | 72 hours <br> (continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| C. (continued) | C.2 | --------NOTES---------<br>1. Isolation devices in high radiation areas may be verified by use of administrative means.<br>2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means.<br>--------------------- | |
| | | Verify the affected penetration flow path is isolated. | Once per 31 days |
| D. Purge valve penetration leakage not within limit. | D.1 | Restore leakage within limit. | 24 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 5. | 36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.3.1 | -------------------NOTE-------------------- Valves and blind flanges in high radiation areas may be verified by use of administrative controls. ------------------------------------------ | |
| | Verify each containment isolation manual valve and blind flange that is located outside containment and 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. | In accordance with the Surveillance Frequency Control Program |
| SR 3.6.3.2 | -------------------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 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. | Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days |
| SR 3.6.3.3 | Verify the isolation time of each automatic power operated containment isolation valve is within limits. | In accordance with the Inservice Testing Program |
| SR 3.6.3.4 | Perform leakage rate testing for containment purge valves with resilient seals. | Prior to entering MODE 4 from MODE 5 after containment vacuum has been broken |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.3.5 | Verify each automatic containment isolation valve that is not locked, sealed or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal. | In accordance with the Surveillance Frequency Control Program |
| SR 3.6.3.6 | Cycle each weight or spring loaded check valve not testable during operation through one complete cycle of full travel, and verify each check valve remains closed when the differential pressure in the direction of flow is < 1.2 psid and opens when the differential pressure in the direction of flow is ≥ 1.2 psid and < 5.0 psid. | In accordance with the Surveillance Frequency Control Program |

## 3.6 CONTAINMENT SYSTEMS

### 3.6.4 Containment Pressure

LCO 3.6.4 Containment air partial pressure shall be within the acceptable operation range shown on Figure 3.6.4-1.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

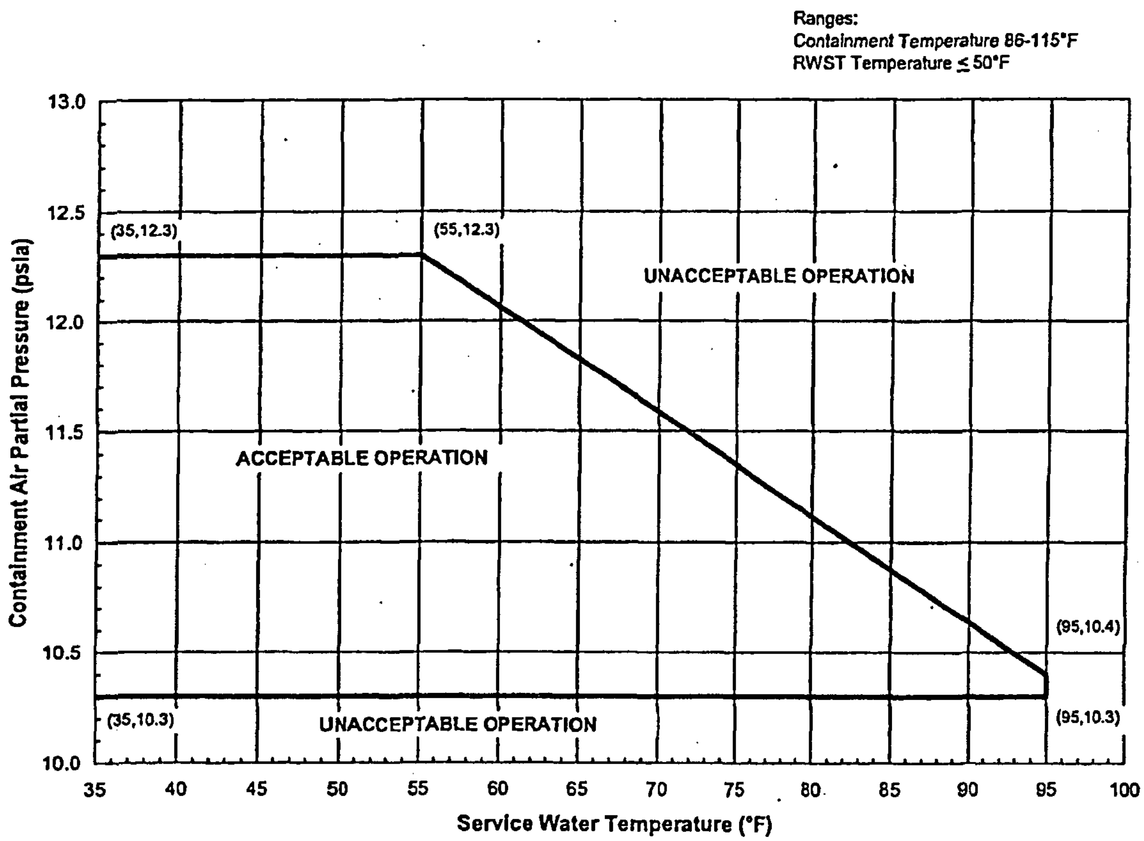


Figure 3.6.4-1 (page 1 of 1)
Containment Air Partial Pressure Versus
Service Water Temperature

# 3.6 CONTAINMENT SYSTEMS

## 3.6.5 Containment Air Temperature

LCO 3.6.5 Containment average air temperature shall be ≥ 86°F and ≤ 115°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.<br><br>AND<br><br>B.2 Be in MODE 5. | 6 hours<br><br><br><br>36 hours |

SURVEILLANCE REQUIREMENTS

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

## 3.6 CONTAINMENT SYSTEMS

### 3.6.6 Quench Spray (QS) System

LCO 3.6.6 Two QS trains shall be OPERABLE.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.6.1 | Verify each QS manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position. | In accordance with the Surveillance Frequency Control Program |
| SR 3.6.6.2 | Verify each QS 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 |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.6.3 | Verify each QS 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 3.6.6.4 | Verify each QS pump starts automatically on an actual or simulated actuation signal. | In accordance with the Surveillance Frequency Control Program |
| SR 3.6.6.5 | Verify each spray nozzle is unobstructed. | Following maintenance which could cause nozzle blockage |

## 3.6 CONTAINMENT SYSTEMS

### 3.6.7 Recirculation Spray (RS) System

LCO 3.6.7 Four RS subsystems and a casing cooling tank shall be OPERABLE.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One RS subsystem inoperable. | A.1 Restore RS subsystem to OPERABLE status. | 7 days |
| B. Two RS subsystems inoperable in one train. | B.1 Restore one RS subsystem to OPERABLE status. | 72 hours |
| C. Two inside RS subsystems inoperable. | C.1 Restore one RS subsystem to OPERABLE status. | 72 hours |
| D. Casing cooling tank inoperable. | D.1 Restore casing cooling tank to OPERABLE status. | 72 hours |
| E. Required Action and associated Completion Time not met. | E.1 Be in MODE 3.<br><br>AND<br><br>E.2 Be in MODE 5. | 6 hours<br><br><br><br>84 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| F. One outside RS subsystem and one inside RS subsystem inoperable and not in the same train.<br><br><u>OR</u><br><br>Three or more RS subsystems inoperable.<br><br><u>OR</u><br><br>Two outside RS subsystems inoperable. | F.1 Enter LCO 3.0.3. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.7.1 | Verify casing cooling tank temperature is ≥ 35°F and ≤ 50°F. | In accordance with the Surveillance Frequency Control Program |
| SR 3.6.7.2 | Verify casing cooling tank contained borated water volume is ≥ 116,500 gal. | In accordance with the Surveillance Frequency Control Program |
| SR 3.6.7.3 | Verify casing cooling tank boron concentration is ≥ 2600 ppm and ≤ 2800 ppm. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.7.4 | Verify each RS and casing cooling manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position. | In accordance with the Surveillance Frequency Control Program |
| SR 3.6.7.5 | Verify each RS and casing cooling 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 3.6.7.6 | Verify on an actual or simulated actuation signal(s):<br><br>a. Each RS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position;<br><br>b. Each RS pump starts automatically; and<br><br>c. Each casing cooling pump starts automatically. | In accordance with the Surveillance Frequency Control Program |
| SR 3.6.7.7 | Verify, by visual inspection, each RS train containment sump component is not restricted by debris and shows no evidence of structural distress or abnormal corrosion. | In accordance with the Surveillance Frequency Control Program |
| SR 3.6.7.8 | Verify each spray nozzle is unobstructed. | Following maintenance which could cause nozzle blockage |

## 3.6 CONTAINMENT SYSTEMS

### 3.6.8 Chemical Addition System

LCO 3.6.8 The Chemical Addition System shall be OPERABLE.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. Chemical Addition System inoperable. | A.1 Restore Chemical Addition System to OPERABLE status. | 72 hours |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3. | 6 hours |
| | AND | |
| | B.2 Be in MODE 5. | 84 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.6.8.1 Verify that each sodium tetraborate decahydrate basket is unobstructed, in place and intact. | In accordance with the Surveillance Frequency Control Program |
| SR 3.6.8.2 Verify that the sodium tetraborate decahydrate baskets collectively contain ≥ 16,013 lbm and ≤ 22,192 lbm of sodium tetraborate decahydrate. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.8.3 | Verify that a sample from the sodium tetraborate decahydrate baskets provides adequate pH adjustment of borated water. | In accordance with the Surveillance Frequency Control Program |

## 3.7 PLANT SYSTEMS

### 3.7.1 Main Steam Safety Valves (MSSVs)

LCO 3.7.1 Five MSSVs per steam generator shall be OPERABLE.

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 steam generators with one MSSV inoperable and the Moderator Temperature Coefficient (MTC) zero or negative at all power levels. | A.1 Reduce THERMAL POWER to less than or equal to 52% RTP. | 4 hours |
| B. One or more steam generators with one MSSV inoperable and the MTC positive at any power levels.<br><br><u>OR</u><br><br>One or more steam generators with two or more MSSVs inoperable. | B.1 Reduce THERMAL POWER to less than or equal to the Maximum Allowable % RTP specified in Table 3.7.1-1 for the number of OPERABLE MSSVs.<br><br><u>AND</u> | 4 hours<br><br>(continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B. (continued) | B.2 ---------NOTE---------<br>Only required in MODE 1.<br>---------------------<br><br>Reduce the Power Range Neutron Flux-High reactor trip setpoint to less than or equal to the Maximum Allowable % RTP specified in Table 3.7.1-1 for the number of OPERABLE MSSVs. | <br><br><br><br>36 hours |
| C. Required Action and associated Completion Time not met.<br><br>OR<br><br>One or more steam generators with greater than or equal to 4 MSSVs inoperable. | C.1 Be in MODE 3.<br><br>AND<br><br>C.2 Be in MODE 4. | 6 hours<br><br><br><br>12 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.1.1 | -------------------NOTE-------------------<br>Only required to be performed in MODES 1 and 2.<br>-------------------------------------------<br><br>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%. | <br><br><br><br>In accordance with the Inservice Testing Program |

Table 3.7.1-1 (page 1 of 1)
OPERABLE Main Steam Safety Valves versus
Maximum Allowable Power

| NUMBER OF OPERABLE MSSVs PER STEAM GENERATOR | MAXIMUM ALLOWABLE POWER % RTP |
|---|---|
| 4 | 52 |
| 3 | 37 |
| 2 | 21 |

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

| STEAM GENERATOR #1 | STEAM GENERATOR #2 | STEAM GENERATOR #3 | LIFT SETTING (psig ± 3%) |
|---|---|---|---|
| Unit 1 VALVE NUMBER | | | |
| MS-SV-101A | MS-SV-101B | MS-SV-101C | 1085 |
| MS-SV-102A | MS-SV-102B | MS-SV-102C | 1095 |
| MS-SV-103A | MS-SV-103B | MS-SV-103C | 1110 |
| MS-SV-104A | MS-SV-104B | MS-SV-104C | 1120 |
| MS-SV-105A | MS-SV-105B | MS-SV-105C | 1135 |
| Unit 2 VALVE NUMBER | | | |
| MS-SV-201A | MS-SV-201B | MS-SV-201C | 1085 |
| MS-SV-202A | MS-SV-202B | MS-SV-202C | 1095 |
| MS-SV-203A | MS-SV-203B | MS-SV-203C | 1110 |
| MS-SV-204A | MS-SV-204B | MS-SV-204C | 1120 |
| MS-SV-205A | MS-SV-205B | MS-SV-205C | 1135 |

## 3.7 PLANT SYSTEMS

### 3.7.2 Main Steam Trip Valves (MSTVs)

LCO 3.7.2 Three MSTVs shall be OPERABLE.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One MSTV inoperable in MODE 1. | A.1 Restore MSTV 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 MSTV. ---------------------- One or more MSTVs inoperable in MODE 2 or 3. | C.1 Close MSTV. <br> <u>AND</u> <br> C.2 Verify MSTV is closed. | 8 hours <br><br> Once per 7 days |
| D. Required Action and associated Completion Time of Condition C not met. | D.1 Be in MODE 3. <br> <u>AND</u> <br> D.2 Be in MODE 4. | 6 hours <br><br> 12 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.2.1 | -------------------NOTE--------------------<br>Only required to be performed in MODES 1 and 2.<br>-------------------------------------------<br><br>Verify isolation time of each MSTV is ≤ 5 seconds. | In accordance with the Inservice Testing Program |
| SR 3.7.2.2 | -------------------NOTE--------------------<br>Only required to be performed in MODES 1 and 2.<br>-------------------------------------------<br><br>Verify each MSTV actuates to the isolation position on an actual or simulated actuation signal. | In accordance with the Surveillance Frequency Control Program |

## 3.7 PLANT SYSTEMS

### 3.7.3 Main Feedwater Isolation Valves (MFIVs), Main Feedwater Pump Discharge Valves (MFPDVs), Main Feedwater Regulating Valves (MFRVs), and Main Feedwater Regulating Bypass Valves (MFRBVs)

LCO 3.7.3 Three MFIVs, three MFPDVs, three MFRVs, and three MFRBVs shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3 except when MFIV, MFPDV, MFRV, or MFRBV is closed and de-activated or isolated by a closed manual valve.

ACTIONS

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

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more MFIVs inoperable. | A.1 Close or isolate MFIV.<br><br>AND<br><br>A.2 Verify MFIV is closed or isolated. | 72 hours<br><br><br><br>Once per 7 days |
| B. One or more MFRVs inoperable. | B.1 Close or isolate MFRV.<br><br>AND<br><br>B.2 Verify MFRV is closed or isolated. | 72 hours<br><br><br><br>Once per 7 days |
| C. One or more MFRBVs inoperable. | C.1 Close or isolate MFRBV.<br><br>AND<br><br>C.2 Verify MFRBV is closed or isolated. | 72 hours<br><br><br><br>Once per 7 days |

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.3.1 | Verify the isolation time of each MFIV, MFRV, and MFRBV is ≤ 6.98 seconds and the isolation time of each MFPDV is ≤ 60 seconds. | In accordance with the Inservice Testing Program |
| SR 3.7.3.2 | Verify each MFIV, MFPDV, MFRV, and MFRBV actuates to the isolation position on an actual or simulated actuation signal. | In accordance with the Surveillance Frequency Control Program |

## 3.7 PLANT SYSTEMS

### 3.7.4 Steam Generator Power Operated Relief Valves (SG PORVs)

LCO 3.7.4 Three 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 required SG PORV line inoperable. | A.1 | Restore required SG PORV line to OPERABLE status. | 7 days |
| B. Two or more required 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 |
| | AND | | |
| | 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 complete cycle of each SG PORV. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.4.2 | Verify one complete cycle of each SG PORV manual isolation 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

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One steam supply to turbine driven AFW pump inoperable.<br><br><u>OR</u><br><br>---------NOTE---------<br>Only applicable if MODE 2 has not been entered following refueling.<br>----------------------<br><br>One turbine driven AFW pump inoperable in MODE 3 following refueling. | A.1 Restore affected equipment to OPERABLE status. | 7 days<br><br><u>AND</u><br><br>10 days from discovery of failure to meet the LCO |
| B. One AFW train inoperable in MODE 1, 2 or 3 for reasons other than Condition A. | B.1 Restore AFW train to OPERABLE status. | 72 hours<br><br><u>AND</u><br><br>10 days from discovery of failure to meet the LCO |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| C. Required Action and associated Completion Time for Condition A or B not met.<br><br>OR<br><br>Two AFW trains inoperable in MODE 1, 2, or 3. | C.1 Be in MODE 3.<br><br>AND<br><br>C.2 Be in MODE 4. | 6 hours<br><br><br><br>18 hours |
| D. Three AFW trains inoperable in MODE 1, 2, or 3. | D.1 ---------NOTE--------<br>LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status.<br>---------------------<br><br>Initiate action to restore one AFW train to OPERABLE status. | <br><br><br><br><br><br>Immediately |
| E. Required AFW train inoperable in MODE 4. | E.1 Initiate action to restore AFW train to OPERABLE status. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.5.1 | Verify each AFW manual, power operated, and automatic valve in each water flow path, and in both steam supply flow paths to the steam turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.5.2 | -------------------NOTE------------------<br>Not required to be performed for the turbine driven AFW pump until 24 hours after ≥ 1005 psig in the steam generator.<br>-----------------------------------------<br><br>Verify the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head. | In accordance with the Inservice Testing Program |
| SR 3.7.5.3 | -------------------NOTE--------------------<br>Not applicable in MODE 4 when steam generator is relied upon for heat removal.<br>------------------------------------------<br><br>Verify each AFW automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal. | In accordance with the Surveillance Frequency Control Program |
| SR 3.7.5.4 | -------------------NOTES------------------<br>1. Not required to be performed for the turbine driven AFW pump until 24 hours after ≥ 1005 psig in the steam generator.<br><br>2. Not applicable in MODE 4 when steam generator is relied upon for heat removal.<br>-----------------------------------------<br><br>Verify each AFW pump starts automatically on an actual or simulated actuation signal. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.5.5 | Verify proper alignment of the required AFW flow paths by verifying flow from the emergency condensate storage tank to each steam generator. | Prior to entering MODE 3, whenever unit has been in MODE 5, 6, or defueled for a cumulative period > 30 days |

## 3.7 PLANT SYSTEMS

### 3.7.6 Emergency Condensate Storage Tank (ECST)

LCO 3.7.6 The ECST 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. ECST inoperable. | A.1 Verify by administrative means OPERABILITY of Condensate Storage Tank. | 4 hours<br><u>AND</u><br>Once per 12 hours thereafter |
| | <u>AND</u> | |
| | A.2 Restore ECST 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 4, without reliance on steam generator for heat removal. | 24 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.7.6.1 Verify the ECST contains ≥ 110,000 gal. | In accordance with the Surveillance Frequency Control Program |

## 3.7 PLANT SYSTEMS

### 3.7.7 Secondary Specific Activity

LCO 3.7.7 The specific activity of the secondary coolant shall be $\leq$ 0.10 $\mu$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.<br><br>AND<br><br>A.2 Be in MODE 5. | 6 hours<br><br><br><br>36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.7.1 | Verify the specific activity of the secondary coolant is $\leq$ 0.10 $\mu$Ci/gm DOSE EQUIVALENT I-131. | In accordance with the Surveillance Frequency Control Program |

# 3.7 PLANT SYSTEMS

## 3.7.8 Service Water (SW) System

LCO 3.7.8 Two SW System loops shall be OPERABLE.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One SW pump inoperable. | A.1 Throttle SW System flow to Component Cooling (CC) heat exchangers. | 72 hours |
| B. Two SW pumps inoperable. | B.1 Throttle SW System flow to CC heat exchangers. | 1 hour |
| | <u>AND</u> | |
| | B.2 Restore one SW pump to OPERABLE status. | 72 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| C. One SW System loop inoperable for reasons other than Condition A. | C.1 Restore SW System loop to OPERABLE status. | -----NOTE------<br>72 hour Completion Time only required if criteria allowing 7 day Completion Time are not met.<br>---------------<br><br>72 hours<br><br>AND<br><br>-----NOTE------<br>Only applicable if:<br>1. SW loop inoperability is part of SW System upgrades, and<br>2. Three SW pumps are OPERABLE from initial Condition entry (one SW pump allowed to not have automatic start capability), and<br>3. Two auxiliary SW pumps are OPERABLE from initial Condition entry.<br>---------------<br><br>7 days |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| D. Required Actions and associated Completion Times of Conditions A, B or C not met. | D.1 Be in MODE 3.<br><br>AND<br><br>D.2 Be in MODE 5. | 6 hours<br><br><br><br>36 hours |
| E. Two SW System loops inoperable for reasons other than only two SW pumps being OPERABLE. | E.1 Be in MODE 4.<br><br>AND<br><br>E.2 Initiate actions to be in MODE 5. | 12 hours<br><br><br><br>13 hours |

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.8.3 | Verify each SW pump starts automatically on an actual or simulated actuation signal. | In accordance with the Surveillance Frequency Control Program |

3.7 PLANT SYSTEMS

3.7.9 Ultimate Heat Sink (UHS)

LCO 3.7.9 The UHS shall be OPERABLE.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.9.1 | Verify water level of the Service Water Reservoir is ≥ 313 ft mean sea level. | In accordance with the Surveillance Frequency Control Program |
| SR 3.7.9.2 | Verify average water temperature of the Service Water Reservoir is ≤ 95°F. | In accordance with the Surveillance Frequency Control Program |

## 3.7 PLANT SYSTEMS

### 3.7.10 Main Control Room/Emergency Switchgear Room (MCR/ESGR) Emergency Ventilation System (EVS)

LCO 3.7.10 Two MCR/ESGR EVS trains shall be OPERABLE.

------------- NOTE -------------
The MCR/ESGR envelope boundary may be opened intermittently under administrative control.
--------------------------------

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One required MCR/ESGR EVS train inoperable for reasons other than Condition B. | A.1 Restore MCR/ESGR EVS train to OPERABLE status. | 7 days |
| B. One or more required MCR/ESGR EVS trains inoperable due to inoperable MCR/ESGR envelope 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 MCR/ESGR envelope occupant exposures to radiological, chemical, and smoke hazards will not exceed limits. | 24 hours |
| | <u>AND</u> | |
| | B.3 Restore MCR/ESGR envelope boundary to OPERABLE status. | 90 days |

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| C. Required Action and associated Completion Time of Condition A or B not met in MODES 1, 2, 3, or 4. | C.1 | Be in MODE 3. | 6 hours |
| | AND | | |
| | C.2 | Be in MODE 5. | 36 hours |
| D. Required Action and associated Completion Time for Condition A not met during movement of recently irradiated fuel assemblies. | D.1.1 | Isolate the MCR/ESGR envelope normal ventilation. | Immediately |
| | AND | | |
| | D.1.2 | Place OPERABLE EVS train in emergency (outside filtered air supply) mode. | 1 hour |
| | OR | | |
| | D.2 | Suspend movement of recently irradiated fuel assemblies. | Immediately |
| E. One or more required MCR/ESGR EVS trains inoperable due to inoperable MCR/ESGR envelope boundary during movement of recently irradiated fuel assemblies. | E.1 | Suspend movement of recently irradiated fuel assemblies. | Immediately |

(continued)

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| E. (continued)<br><br><u>OR</u><br><br>Two required MCR/ESGR EVS trains inoperable during movement of recently irradiated fuel assemblies for reasons other than Condition B. | | |
| F. Two required MCR/ESGR EVS trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B. | F.1 Enter LCO 3.0.3. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.10.1 | Operate each required MCR/ESGR EVS train for ≥ 15 continuous minutes. | In accordance with the Surveillance Frequency Control Program |
| SR 3.7.10.2 | Perform required MCR/ESGR EVS filter testing in accordance with the Ventilation Filter Testing Program (VFTP). | In accordance with VFTP |
| SR 3.7.10.3 | Not Used | |

SURVEILLANCE REQUIREMENTS

| | | |
|---|---|---|
| SR 3.7.10.4 | Perform required MCR/ESGR Envelope unfiltered air inleakage testing in accordance with the MCR/ESGR Envelope Habitability Program. | In accordance with the MCR/ESGR Envelope Habitability Program |

## 3.7 PLANT SYSTEMS

### 3.7.11 Main Control Room/Emergency Switchgear Room (MCR/ESGR) Air Conditioning System (ACS)

LCO 3.7.11 Two MCR/ESGR ACS subsystems shall be OPERABLE.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more required MCR/ESGR ACS subsystem inoperable. | A.1 Restore MCR/ESGR ACS subsystem 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.<br><br>AND<br><br>B.2 Be in MODE 5. | 6 hours<br><br><br><br>36 hours |
| C. Required Action and associated Completion Time of Condition A not met during movement of recently irradiated fuel assemblies. | C.1 Place OPERABLE MCR/ESGR ACS subsystem in operation.<br><br>OR<br><br>C.2 Suspend movement of recently irradiated fuel assemblies. | Immediately<br><br><br><br>Immediately |
| D. Less than 100% of the MCR/ESGR ACS cooling equivalent to a single OPERABLE MCR/ESGR ACS subsystem available during movement of recently irradiated fuel assemblies. | D.1 Suspend movement of recently irradiated fuel assemblies. | Immediately |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| E. Less than 100% of the MCR/ESGR ACS cooling equivalent to a single OPERABLE MCR/ESGR ACS subsystem available in MODE 1, 2, 3, or 4. | E.1 Enter LCO 3.0.3. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.11.1 | Verify each required MCR/ESGR ACS chiller has the capability to remove the assumed heat load. | In accordance with the Surveillance Frequency Control Program |

## 3.7 PLANT SYSTEMS

### 3.7.12 Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)

LCO 3.7.12 Two ECCS PREACS trains shall be OPERABLE.

---------------------------- NOTE ----------------------------
The ECCS pump room boundary openings not open by design may be opened intermittently under administrative control.
--------------------------------------------------------------

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

ACTIONS

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

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One ECCS PREACS train inoperable for reasons other than Condition B. | A.1 Restore ECCS PREACS train to OPERABLE status. | 7 days |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B. One ECCS PREACS train inoperable due to inoperable filtration capability. | B.1.1 Verify ECCS leakage log is less than the maximum allowable unfiltered leakage. | 1 hour |
| | <u>AND</u> | |
| | B.1.2 Verify by field walkdown that ECCS leakage is less than the maximum allowable unfiltered leakage. | Once per 12 hours thereafter |
| | <u>AND</u> | |
| | B.1.3 Restore ECCS PREACS train to OPERABLE status. | 30 days |
| | <u>OR</u> | |
| | B.2 Restore ECCS PREACS train to OPERABLE status. | 7 days |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| C. Two ECCS PREACS trains inoperable due to inoperable filtration capability. | C.1.1 Verify ECCS leakage log is less than the maximum allowable unfiltered leakage. | 1 hour |
| | AND | |
| | C.1.2 Verify by field walkdown that ECCS leakage is less than the maximum allowable unfiltered leakage. | Once per 12 hours thereafter |
| | AND | |
| | C.1.3 Restore at least one ECCS PREACS train to OPERABLE status. | 14 days |
| | OR | |
| | C.2 Restore at least one ECCS PREACS train to OPERABLE status. | 1 hour |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| D. Two ECCS PREACS trains inoperable due to inoperable ECCS pump room boundary affecting filtration capability. | D.1.1 Verify ECCS leakage log is less than the maximum allowable unfiltered leakage. | 1 hour |
| | <u>AND</u> | |
| | D.1.2 Verify by field walkdown that ECCS leakage is less than the maximum allowable unfiltered leakage. | Once per 12 hours thereafter |
| | <u>AND</u> | |
| | D.1.3 Restore ECCS pump room boundary to OPERABLE status. | 14 days |
| | <u>OR</u> | |
| | D.2 Restore ECCS pump room boundary to OPERABLE status. | 24 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 5. | 36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.12.1 | Operate each ECCS PREACS train for ≥ 15 continuous minutes with the heaters operating. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.12.2 | Actuate each ECCS PREACS train by aligning Safeguards Area exhaust flow and Auxiliary Building Central exhaust flow through the Auxiliary Building HEPA filter and charcoal adsorber assembly. | In accordance with the Surveillance Frequency Control Program |
| SR 3.7.12.3 | Perform required ECCS PREACS filter testing in accordance with the Ventilation Filter Testing Program (VFTP). | In accordance with the VFTP |
| SR 3.7.12.4 | Verify Safeguards Area exhaust flow is diverted and each Auxiliary Building filter bank is actuated on an actual or simulated actuation signal. | In accordance with the Surveillance Frequency Control Program |
| SR 3.7.12.5 | Verify one ECCS PREACS train can maintain a negative pressure relative to adjacent areas during post accident mode of operation. | In accordance with the Surveillance Frequency Control Program |

## 3.7 PLANT SYSTEMS

### 3.7.13 Not Used

## 3.7 PLANT SYSTEMS

### 3.7.14 Not Used

## 3.7 PLANT SYSTEMS

### 3.7.15 Fuel Building Ventilation System (FBVS)

LCO 3.7.15 The FBVS shall be OPERABLE and in operation.

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

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

ACTIONS

------------------------- NOTE -------------------------
LCO 3.0.3 is not applicable.
--------------------------------------------------------

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. FBVS inoperable.<br><br><u>OR</u><br><br>FBVS not in operation. | A.1 Suspend movement of recently irradiated fuel assemblies in the fuel building. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.15.1 | Verify the FBVS can maintain a pressure ≤ -0.125 inches water gauge with respect to atmospheric pressure. | In accordance with the Surveillance Frequency Control Program |

## 3.7 PLANT SYSTEMS

### 3.7.16 Fuel Storage Pool Water Level

LCO 3.7.16 The fuel storage pool water level shall be ≥ 23 ft over the top of irradiated fuel assemblies seated in the storage racks.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.16.1 | Verify the fuel storage pool water level is ≥ 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

### 3.7.17 Fuel Storage Pool Boron Concentration

LCO 3.7.17 The fuel storage pool boron concentration shall be ≥ 2600 ppm.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

## 3.7 PLANT SYSTEMS

### 3.7.18 Spent Fuel Pool Storage

LCO 3.7.18 The combination of initial enrichment, burnup and cooling time of each fuel assembly stored in the fuel storage pool shall be in accordance with the following:

a. Region 1 Fuel Storage Locations:

I. Fuel assemblies stored in Region 1 shall be stored in a 2-out-of-4 checkerboard arrangement with empty cells per Figure 3.7.18-1:

i. Empty cells shall remain empty with the exception of a Rod Cluster Control Assembly (RCCA) and/or a cell blocker.

II. A Region 1 checkerboard is a rectangle of assemblies that can be placed anywhere in the spent fuel pool with the following restrictions:[1]

i. All 4 corners of a Region 1 block shall be an empty cell location.

ii. There shall be a minimum of two (2) Region 2 rows between two Region 1 blocks.

iii. Region 1 shall NOT cross a spent fuel rack module boundary.

iv. Spent Fuel Pool Locations AA21, AA22, BB21, BB22, CC21, and CC22 shall NOT be contained in a Region 1 block.

III. There are no restrictions on burnup and cooling time on fuel of initial enrichment of less than or equal to 5.0 weight percent (wt%) U-235

b. Region 2 Fuel Storage Locations:

I. Irradiated fuel assemblies with a combination of initial enrichment and burnup in the "Acceptable" burnup domain in Figure 3.7.18-2 may be stored in Region 2.

II. Irradiated fuel assemblies cooled three (3) or more years with a combination of initial enrichment and burnup in the "Acceptable" burnup domain in Figure 3.7.18-3 may be stored in Region 2.

(continued)

1. Rack modules that are adjacent to the spent fuel pool wall may credit the wall region as empty cells for the purposes of meeting the Region 1 requirements of LCO 3.7.18.a.II.i and 3.7.18.a.II.iii.

b. (continued)

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

Regarding fuel assemblies that contain a full length RCCA - if the enrichment, burnup, and cooling time of such an assembly stored in Region 2 is NOT in the "Acceptable" burnup domain in Figure 3.7.18-2 or 3.7.18-3 (e.g., the assembly requires a full length RCCA for storage in Region 2), then the assembly must be in a Region 1 storage location when its RCCA is inserted or removed.

------------------------------------

III. There are no restrictions on initial enrichment, burnup, and cooling time on a fuel assembly stored in Region 2 if the assembly contains a full length RCCA.

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. | A.1 --------NOTE---------<br>LCO 3.0.3 is not applicable.<br>---------------------<br>Initiate action to move the noncomplying fuel assembly to an acceptable location. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.18.1 | Verify by a combination of visual inspection and administrative means that the initial enrichment, burnup, cooling time, RCCA placement, and location of the assembly are acceptable. | Prior to storing the fuel assembly in the spent fuel pool |

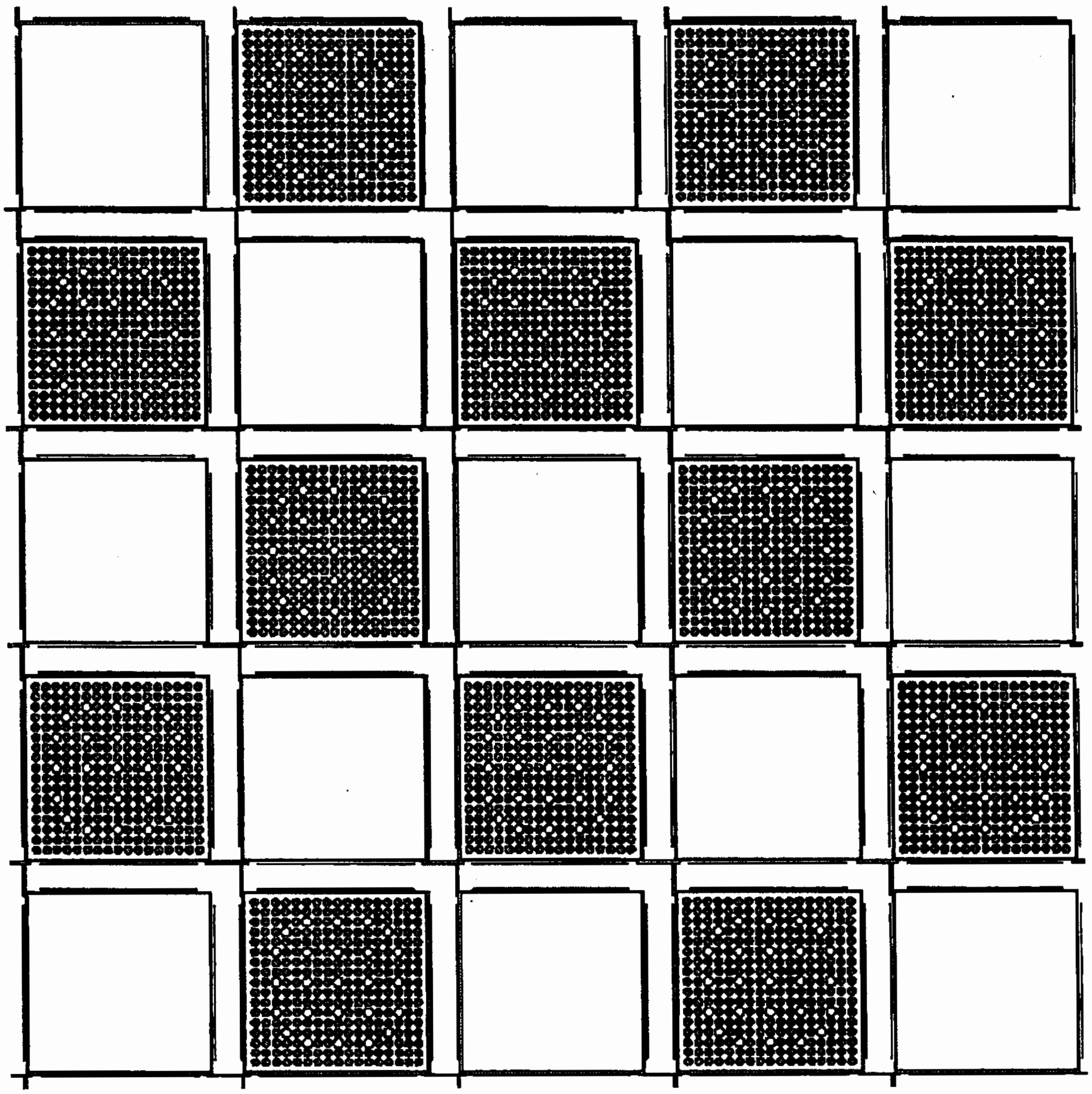

Figure 3.7.18-1 (page 1 of 1)
Typical Region 1 Checkerboard

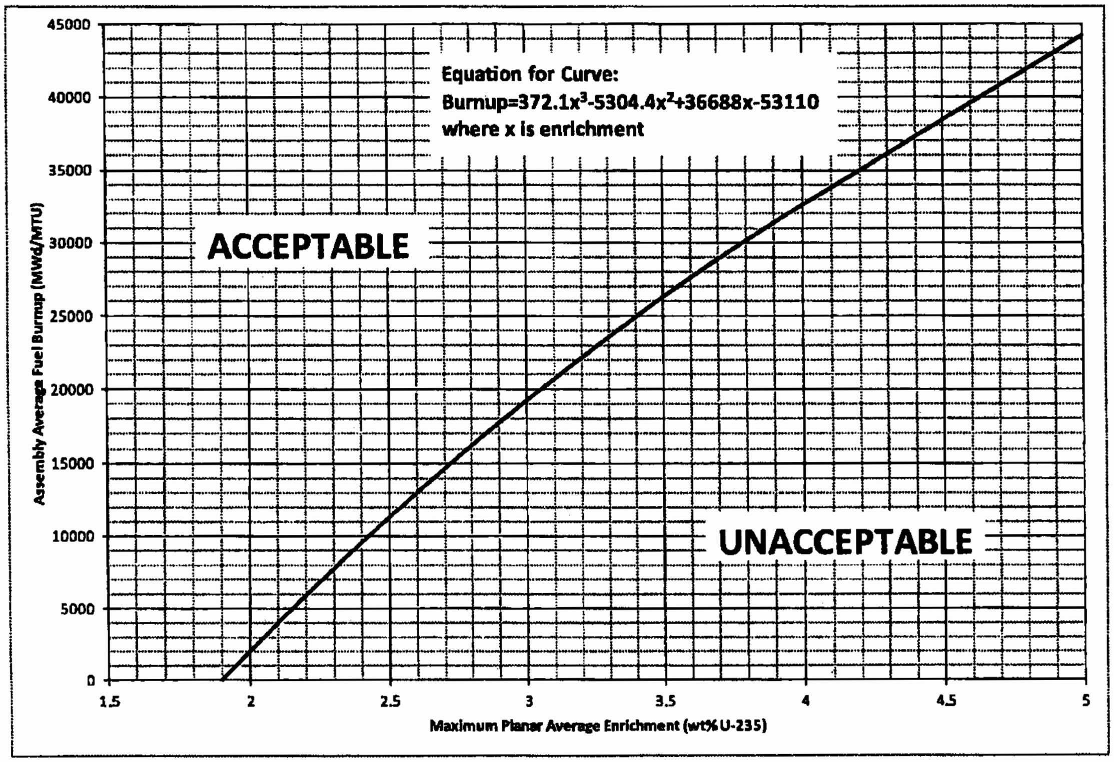


Figure 3.7.18-2 (page 1 of 1)
Minimum Burnup Requirements for Region 2 With No Credit for Cooling

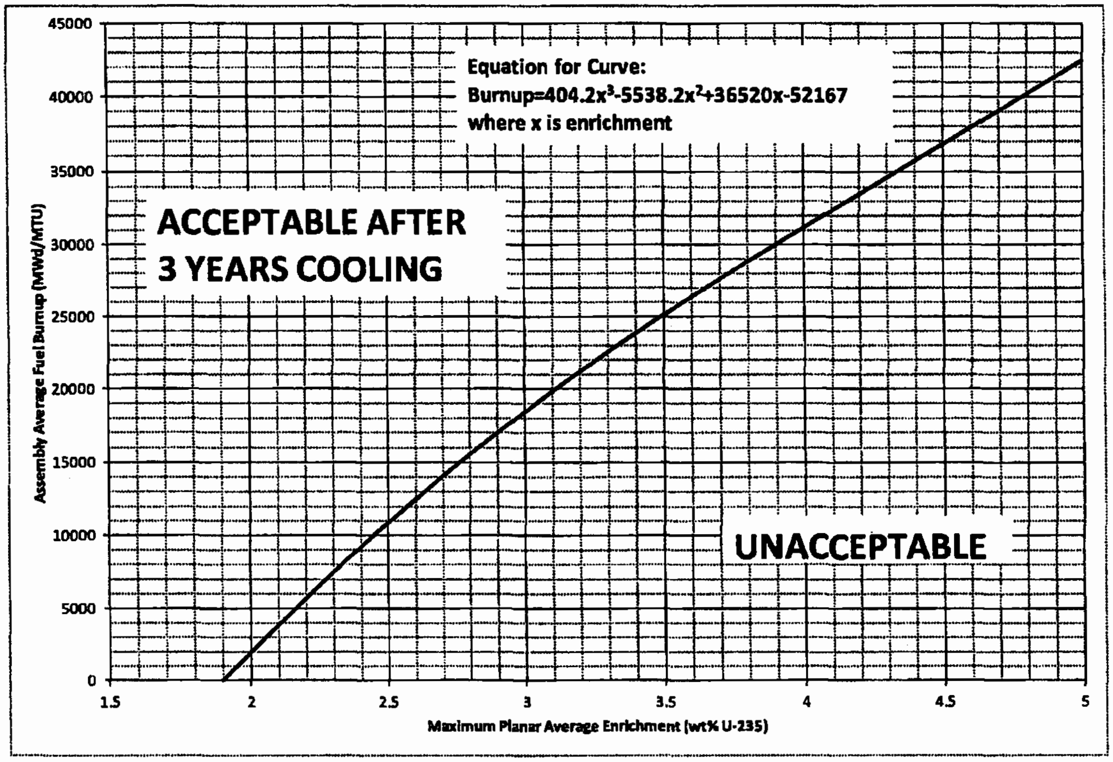


Figure 3.7.18-3 (page 1 of 1)
Minimum Burnup Requirements for Region 2 for Assemblies Cooled
3 Years or More

## 3.7 PLANT SYSTEMS

### 3.7.19 Component Cooling Water (CC) System

LCO 3.7.19 Three CC subsystems shall be OPERABLE.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One required CC subsystem inoperable. | A.1 Restore required CC subsystem to OPERABLE status. | 7 days |
| B. Required Action and associated Completion Time of Condition A not met. | B.1 Be in MODE 3.<br><u>AND</u><br>B.2 Be in MODE 5. | 6 hours<br><br>30 hours |
| C. Two required CC subsystems inoperable. | C.1 Be in MODE 4.<br><u>AND</u><br>C.2 Initiate actions to be in MODE 5. | 12 hours<br><br>13 hours |
| D. No CC water available to supply the residual heat removal heat exchangers. | D.1 Be in MODE 4.<br><u>AND</u><br>D.2 Implement an alternate means of decay heat removal.<br><u>AND</u><br>D.3 Initiate actions to be in MODE 5. | 12 hours<br><br>Immediately<br><br>Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.19.1 | Verify each CC manual, power operated, and automatic valve in the flow path servicing the residual heat removal system, that is not locked, sealed, or otherwise secured in position, is in the correct position. | 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 Class 1E AC Electrical Power Distribution System;

b. Two emergency diesel generators (EDGs) capable of supplying the onsite Class 1E power distribution subsystem(s);

c. One qualified circuit between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System and one EDG capable of supplying the onsite Class 1E AC power distribution subsystem on the other unit for each required shared component; and

d. Required sequencing timing relays.

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

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One LCO 3.8.1.a offsite circuit inoperable. | A.1 | Perform SR 3.8.1.1 for required OPERABLE offsite circuit(s). | 1 hour<br><br>AND<br><br>Once per 8 hours thereafter |
| | AND | | |
| | | | (continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. (continued) | A.2 | Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable. | 24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s) |
| | <u>AND</u> | | |
| | A.3 | Restore offsite circuit to OPERABLE status. | 72 hours<br><u>AND</u><br>17 days from discovery of failure to meet LCO |
| B. One LCO 3.8.1.b EDG inoperable. | B.1 | Perform SR 3.8.1.1 for the required offsite circuits. | 1 hour<br><u>AND</u><br>Once per 8 hours thereafter |
| | <u>AND</u> | | |
| | B.2 | Declare required feature(s) supported by the inoperable EDG inoperable when its required redundant feature(s) is inoperable. | 4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s) |
| | <u>AND</u> | | (continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B. (continued) | B.3.1 Determine OPERABLE LCO 3.8.1.b EDG is not inoperable due to common cause failure. | 24 hours |
| | <u>OR</u> | |
| | B.3.2 Perform SR 3.8.1.2 for OPERABLE LCO 3.8.1.b EDG. | 24 hours |
| | <u>AND</u> | |
| | B.4 Restore EDG to OPERABLE status. | 14 days<br><u>AND</u><br>17 days from discovery of failure to meet LCO |
| C. --------NOTE---------- Only applicable if Alternate AC (AAC) diesel generator (DG) or one or more EDG on the other unit is inoperable. ----------------------<br>One LCO 3.8.1.b EDG inoperable. | C.1.1 Restore inoperable AAC DG to OPERABLE status. | 72 hours |
| | <u>AND</u> | |
| | C.1.2 Restore inoperable EDG(s) on other unit to OPERABLE status. | 72 hours |
| | <u>OR</u> | |
| | C.2 Restore EDG to OPERABLE status. | 72 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| D. --------NOTE---------- Separate Condition entry is allowed for each offsite circuit. --------------------- One or more required LCO 3.8.1.c offsite circuit(s) inoperable. | D.1 | Perform SR 3.8.1.1 for required OPERABLE offsite circuit(s). | 1 hour <br> AND <br> Once per 8 hours thereafter |
| | AND | | |
| | D.2 | Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable. | 24 hours from discovery of no offsite power to a train concurrent with inoperability of redundant required feature(s) |
| | AND | | |
| | D.3 | Declare associated shared component inoperable. | 72 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| E. One required LCO 3.8.1.c EDG inoperable. | E.1 | Perform SR 3.8.1.1 for required offsite circuit(s). | 1 hour<br><br>AND<br><br>Once per 8 hours thereafter |
| | AND | | |
| | E.2 | Declare required feature(s) supported by the inoperable EDG inoperable when its redundant required feature(s) is inoperable. | 4 hours from discovery of Condition E concurrent with inoperability of redundant required feature(s) |
| | AND | | |
| | E.3 | Declare associated shared component inoperable. | 14 days |
| F. --------NOTE----------<br>Only applicable if one or more LCO 3.8.1.b EDG(s) or AAC DG is inoperable.<br>----------------------<br><br>One required LCO 3.8.1.c EDG inoperable. | F.1.1 | Restore inoperable AAC DG to OPERABLE status. | 72 hours |
| | AND | | |
| | F.1.2 | Restore inoperable LCO 3.8.1.b EDG (s) to OPERABLE status. | 72 hours |
| | OR | | |
| | F.2 | Declare associated shared component inoperable. | 72 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| G. Two LCO 3.8.1.a offsite circuits inoperable. | G.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable. | 12 hours from discovery of Condition G concurrent with inoperability of redundant required features |
| | AND | |
| | G.2 Restore one offsite circuit to OPERABLE status. | 24 hours |
| H. One LCO 3.8.1.a offsite circuit inoperable.<br><br>AND<br><br>One LCO 3.8.1.b EDG inoperable. | ------------NOTE------------<br>Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems—Operating," when Condition H is entered with no AC power source to any train.<br>---------------------------- | |
| | H.1 Restore offsite circuit to OPERABLE status. | 12 hours |
| | OR | |
| | H.2 Restore EDG to OPERABLE status. | 12 hours |
| I. Two LCO 3.8.1.b EDGs inoperable. | I.1 Restore one EDG to OPERABLE status. | 2 hours |
| J. Two required LCO 3.8.1.c EDGs inoperable. | J.1 Declare associated shared components inoperable. | Immediately |

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| K. --------NOTE---------- Separate Condition entry is allowed for each sequencing timing relay. ---------------------- One or more required sequencing timing relay(s) inoperable. | K.1 | Enter appropriate Conditions and Required Actions for any component made inoperable by inoperable sequencing timing relay(s). | Immediately |
| | AND | | |
| | K.2.1 | Place the component(s) with the inoperable sequencing timing relay in a condition where it cannot be automatically loaded to associated emergency electrical bus. | Immediately |
| | OR | | |
| | K.2.2 | Declare the associated EDG inoperable. | Immediately |
| L. Required Action and associated Completion Time of Condition A, B, C, G, H, or I not met. | L.1 | Be in MODE 3. | 6 hours |
| | AND | | |
| | L.2 | Be in MODE 5. | 36 hours |
| M. Three or more of LCO 3.8.1.a and LCO 3.8.1.b AC sources inoperable. | M.1 | Enter LCO 3.0.3. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.1 | Verify correct breaker alignment and indicated power availability for each required offsite circuit. | In accordance with the Surveillance Frequency Control Program |
| SR 3.8.1.2 | -------------------NOTES---------------<br>1. All EDG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading.<br>2. A modified EDG 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.<br>---------------------------------------<br><br>Verify each required EDG starts from standby conditions and achieves steady state voltage ≥ 3740 V and ≤ 4400 V, and frequency ≥ 59.5 Hz and ≤ 60.5 Hz. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.3 | -------------------NOTES--------------- <br>1. EDG loadings may include gradual loading as recommended by the manufacturer.<br>2. Momentary transients outside the load range do not invalidate this test.<br>3. This Surveillance shall be conducted on only one EDG at a time.<br>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.<br>-------------------------------------- <br><br>Verify each required EDG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 2500 kW and ≤ 2600 kW. | In accordance with the Surveillance Frequency Control Program |
| SR 3.8.1.4 | Verify each required day tank contains ≥ 450 gal of fuel oil. | In accordance with the Surveillance Frequency Control Program |
| SR 3.8.1.5 | Check for and remove accumulated water from each required day tank. | In accordance with the Surveillance Frequency Control Program |
| SR 3.8.1.6 | Verify each required fuel oil transfer pump operates to transfer fuel oil from the storage tank to the day tank. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.7 | -------------------NOTE---------------<br>All EDG starts may be preceded by an engine prelube period.<br>--------------------------------------<br><br>Verify each required EDG starts from standby condition and achieves<br><br>a. In ≤ 10 seconds, voltage ≥ 3960 V and frequency ≥ 59.5 Hz; and<br><br>b. Steady state voltage ≥ 3740 V and ≤ 4400 V, and frequency ≥ 59.5 Hz and ≤ 60.5 Hz. | In accordance with the Surveillance Frequency Control Program |
| SR 3.8.1.8 | -------------------NOTE--------------<br>This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced.<br>-----------------------------------<br><br>Verify manual transfer of AC power sources from the normal offsite circuit to the alternate required offsite circuit. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.9 | ------------------NOTE----------------<br>If performed with EDG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable.<br>--------------------------------------<br><br>Verify each required EDG rejects a load greater than or equal to its associated single largest post-accident load, and:<br><br>a. Following load rejection, the frequency is ≤ 66 Hz;<br><br>b. Within 3 seconds following load rejection, the voltage is ≥ 3740 V and ≤ 4400V; and<br><br>c. Within 3 seconds following load rejection, the frequency is ≥ 59.5 Hz and ≤ 60.5 Hz. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.10 | -------------------NOTES---------------<br>1. All EDG starts may be preceded by an engine prelube period.<br>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 unit is maintained or enhanced.<br>--------------------------------------- | |
| | Verify on an actual or simulated loss of offsite power signal:<br>a. De-energization of emergency buses;<br>b. Load shedding from emergency buses;<br>c. Each required EDG auto-starts from standby condition and:<br>1. energizes permanently connected loads in ≤ 10 seconds,<br>2. energizes auto-connected shutdown loads through sequencing timing relays,<br>3. maintains steady state voltage ≥ 3740 V and ≤ 4400 V,<br>4. maintains steady state frequency ≥ 59.5 Hz and ≤ 60.5 Hz, and<br>5. supplies permanently connected and auto-connected shutdown loads for ≥ 5 minutes. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.11 | -------------------NOTES---------------<br>1. All EDG starts may be preceded by prelube period.<br>2. This Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced.<br>-------------------------------------<br><br>Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each LCO 3.8.1.b EDG auto-starts from standby condition and:<br><br>a. In ≤ 10 seconds after auto-start and during tests, achieves voltage ≥ 3960 V and frequency ≥ 59.5 Hz;<br><br>b. Achieves steady state voltage ≥ 3740 V and ≤ 4400 V and frequency ≥ 59.5 Hz and ≤ 60.5 Hz;<br><br>c. Operates for ≥ 5 minutes;<br><br>d. Permanently connected loads remain energized from the offsite power system; and<br><br>e. Emergency loads are energized or auto-connected through the sequencing timing relays from the offsite power system. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.12 | -------------------NOTE----------------<br>This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced.<br>--------------------------------------<br><br>Verify each required EDG's automatic trips are bypassed on actual or simulated automatic start signals except:<br><br>a. Engine overspeed; and<br><br>b. Generator differential current. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.13 | -------------------NOTES---------------<br>1. Momentary transients outside the load and power factor ranges do not invalidate this test.<br>2. This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced.<br>3. If performed with EDG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable.<br>--------------------------------------- | |
| | Verify each required EDG operates for ≥ 24 hours:<br>a. For ≥ 2 hours loaded ≥ 2900 kW and ≤ 3000 kW; and<br>b. For the remaining hours of the test loaded ≥ 2500 kW and ≤ 2600 kW. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.14 | -------------------NOTES------------------<br>1. This Surveillance shall be performed within 5 minutes of shutting down the EDG after the EDG has operated $\geq$ 2 hours loaded $\geq$ 2500 kW and $\leq$ 2600 kW or after operating temperatures have stabilized.<br><br>Momentary transients outside of load range do not invalidate this test.<br><br>2. All EDG starts may be preceded by an engine prelube period.<br>------------------------------------------<br><br>Verify each required EDG starts and achieves<br><br>a. In $\leq$ 10 seconds, voltage $\geq$ 3960 V and frequency $\geq$ 59.5 Hz; and<br><br>b. Steady state voltage $\geq$ 3740 V, and $\leq$ 4400 V and frequency $\geq$ 59.5 Hz and $\leq$ 60.5 Hz. | In accordance with the Surveillance Frequency Control Program |
| SR 3.8.1.15 | -------------------NOTE-------------------<br>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 unit is maintained or enhanced.<br>------------------------------------------<br><br>Verify each required EDG:<br><br>a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power;<br><br>b. Transfers loads to offsite power source; and<br><br>c. Returns to ready-to-load operation. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.16 | -------------------NOTE-------------------<br>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 unit is maintained or enhanced.<br>------------------------------------------<br><br>Verify each required sequencing timing relay is within the design tolerance. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.17 | -------------------NOTES-------------------<br>1. All EDG starts may be preceded by an engine prelube period.<br>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 unit is maintained or enhanced.<br>------------------------------------------- | |
| | Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal:<br>a. De-energization of emergency buses;<br>b. Load shedding from emergency buses; and<br>c. Each LCO 3.8.1.b EDG auto-starts from standby condition and:<br>1. energizes permanently connected loads in ≤ 10 seconds,<br>2. energizes auto-connected emergency loads through load sequencing timing relays,<br>3. achieves steady state voltage ≥ 3740 V and ≤ 4400 V,<br>4. achieves steady state frequency ≥ 59.5 Hz and ≤ 60.5 Hz, and<br>5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.18 | -------------------NOTE------------------- All EDG starts may be preceded by an engine prelube period. ------------------------------------------ <br><br> Verify when started simultaneously from standby condition, each LCO 3.8.1.b EDG achieves: <br><br> a. in ≤ 10 seconds, voltage ≥ 3960 V and frequency ≥ 59.5 Hz; and <br><br> b. steady state voltage ≥ 3740 V and ≤ 4400 V, and frequency ≥ 59.5 Hz and ≤ 60.5 Hz. | In accordance with the Surveillance Frequency Control Program |

## 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 Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems–Shutdown"; and

b. One emergency diesel generators (EDG) capable of supplying one train of the onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.10.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One required offsite circuit inoperable. | ------------NOTE------------<br>Enter applicable Conditions and Required Actions of LCO 3.8.10, with required trains de-energized as a result of Condition A.<br>---------------------------- | |
| | A.1 Declare affected required feature(s) with no offsite power available inoperable. | Immediately |
| | OR | |
| | A.2.1 Suspend CORE ALTERATIONS. | Immediately |
| | AND | |
| | A.2.2 Suspend movement of recently irradiated fuel assemblies. | Immediately |
| | AND | |
| | | (continued) |

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.2.1 | -------------------NOTE-------------------- The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.6, SR 3.8.1.9, SR 3.8.1.10, SR 3.8.1.12, SR 3.8.1.13, SR 3.8.1.14, SR 3.8.1.15, and SR 3.8.1.16. ------------------------------------------- | |
| | For AC sources required to be OPERABLE, the following SRs are applicable:<br><br>SR 3.8.1.1 SR 3.8.1.6 SR 3.8.1.13<br>SR 3.8.1.2 SR 3.8.1.7 SR 3.8.1.14<br>SR 3.8.1.3 SR 3.8.1.9 SR 3.8.1.15<br>SR 3.8.1.4 SR 3.8.1.10 SR 3.8.1.16<br>SR 3.8.1.5 SR 3.8.1.12 | In accordance with applicable SRs |

## 3.8 ELECTRICAL POWER SYSTEMS

### 3.8.3 Diesel Fuel Oil and Starting Air

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

APPLICABILITY: When associated EDG(s) is required to be OPERABLE.

ACTIONS

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

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One fuel oil storage tank inoperable to perform an inspection or repairs. | A.1 | Verify replacement fuel oil is available. | Prior to removing tank from service |
| | AND | | |
| | A.2 | Verify remaining fuel oil storage tank contains $\geq$ 45,000 gal. | Once per 12 hours |
| | AND | | |
| | A.3 | Verify above ground fuel oil tank contains $\geq$ 100,000 gal. | Once per 12 hours |
| | AND | | (continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. (continued) | A.4 Restore fuel oil storage tank to within limits. | ------NOTE------<br>The Completion Time for cleaning and recoating each fuel oil storage tank in preparation for use of ultra low sulfur diesel fuel oil is 14 days, to be used once per tank<br>----------------<br><br>7 days |
| B. One or more EDGs with fuel oil inventory < 90,000 gal and > 77,200 gal for reasons other than Condition A. | B.1 Restore fuel oil inventory to within limits. | 48 hours |
| C. One or more EDGs with stored fuel oil total particulates not within limit. | C.1 Restore fuel oil total particulates within limit. | 7 days |
| D. One or more EDGs with new fuel oil properties not within limits. | D.1 Restore stored fuel oil properties to within limits. | 30 days |
| E. One or more EDGs with the required starting air receiver pressure < 175 psig and ≥ 150 psig. | E.1 Restore starting air receiver pressure to ≥ 175 psig. | 48 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| F. Required Action and associated Completion Time not met.<br><br><u>OR</u><br><br>One or more EDGs diesel fuel oil or starting air subsystem not within limits for reasons other than Condition A, B, C, D, or E. | F.1 Declare associated EDG(s) inoperable. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.3.1 | Verify fuel oil inventory ≥ 90,000 gal. | In accordance with the Surveillance Frequency Control Program |
| SR 3.8.3.2 | 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 3.8.3.3 | Verify each EDG air start receiver pressure is ≥ 175 psig. | In accordance with the Surveillance Frequency Control Program |
| SR 3.8.3.4 | Check for and remove accumulated water from each stored 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 The following DC electrical power sources shall be OPERABLE:

a. The Train H and Train J DC electrical power subsystems;

b. The Emergency Diesel Generator (EDG) DC systems for each required EDG; and

c. One DC electrical power subsystem on the other unit for each required shared component.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One LCO 3.8.4.a DC electrical power subsystem inoperable. | A.1 Restore DC electrical power subsystem to OPERABLE status. | 2 hours |
| B. Required Action and Associated Completion Time for Condition A not met. | B.1 Be in MODE 3.<br><br><u>AND</u><br><br>B.2 Be in MODE 5. | 6 hours<br><br><br><br>36 hours |
| C. --------NOTE----------<br>Separate Condition entry is allowed for each EDG DC system.<br>----------------------<br><br>One or more required EDG DC system(s) inoperable. | C.1 Enter applicable Conditions and Required Actions for associated EDG(s) made inoperable. | Immediately |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| D. --------NOTE---------- Separate Condition entry is allowed for each DC subsystem. ---------------------- <br><br> One or more required LCO 3.8.4.c DC electrical power subsystem(s) inoperable. | D.1 Declare associated shared component(s) inoperable. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.4.1 | Verify for each required Station and EDG battery, terminal voltage is ≥ 129 V on float charge. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

<table>
<tr><th colspan="2">SURVEILLANCE</th><th>FREQUENCY</th></tr>
<tr><td>SR 3.8.4.2</td><td>Verify for each required Station and EDG battery, there is no visible corrosion at battery terminals and connectors.<br><br><u>OR</u><br><br>Verify battery connection resistance is ≤ 1.5E-4 ohm for inter-cell connections, ≤ 1.5E-4 ohm for inter-rack connections, ≤ 1.5E-4 ohm for inter-tier connections, and ≤ 1.5E-4 ohm for terminal connections.<br><br><u>AND</u><br><br>Verify total connection resistance for each Station battery is less than or equal to the value listed below.<br><br><table><tr><th colspan="2">Total Battery Connection Resistance</th></tr><tr><td>Station Battery</td><td>Maximum Allowable Total Battery Connection Resistance</td></tr><tr><td>1-I, 1-III, 2-I, 2-III</td><td>≤ 2.5E-3 ohm</td></tr><tr><td>1-II</td><td>≤ 0.9E-3 ohm</td></tr><tr><td>1-IV, 2-II, 2-IV</td><td>≤ 1.5E-3 ohm</td></tr></table></td><td>In accordance with the Surveillance Frequency Control Program</td></tr>
<tr><td>SR 3.8.4.3</td><td>Verify for each required Station and EDG battery, cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration that could degrade battery performance.</td><td>In accordance with the Surveillance Frequency Control Program</td></tr>
<tr><td>SR 3.8.4.4</td><td>For each required Station and EDG battery, remove visible terminal corrosion, verify battery cell to cell and terminal connections are clean and coated with anti-corrosion material.</td><td>In accordance with the Surveillance Frequency Control Program</td></tr>
</table>

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.4.5 | Verify for each required Station and EDG battery, connection resistance is ≤ 1.5E-4 ohm for inter-cell connections, ≤ 1.5E-4 ohm for inter-rack connections, ≤ 1.5E-4 ohm for inter-tier connections, and ≤ 1.5E-4 ohm for terminal connections.<br><br><u>AND</u><br><br>Verify total connection resistance for each Station battery is less than or equal to the value listed below. | In accordance with the Surveillance Frequency Control Program |
| SR 3.8.4.6 | Verify each required Station battery charger supplies ≥ 270 amps at ≥ 125 V for ≥ 4 hours. | In accordance with the Surveillance Frequency Control Program |
| SR 3.8.4.7 | Verify each required EDG battery charger supplies ≥ 10 amps at ≥ 125 V for ≥ 4 hours. | In accordance with the Surveillance Frequency Control Program |

Total Battery Connection Resistance

| Station Battery | Maximum Allowable Total Battery Connection Resistance |
|---|---|
| 1-I, 1-III, 2-I, 2-III | ≤ 2.5E-3 ohm |
| 1-II | ≤ 0.9E-3 ohm |
| 1-IV, 2-II, 2-IV | ≤ 1.5E-3 ohm |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.4.9 | -------------------NOTE--------------- This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4 for Station batteries. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced. -------------------------------------<br><br>Verify for each required Station and EDG battery, capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test. | In accordance with the Surveillance Frequency Control Program<br><br><u>AND</u><br><br>18 months when battery shows degradation or has reached 85% of expected life |

# 3.8 ELECTRICAL POWER SYSTEMS

## 3.8.5 DC Sources–Shutdown

LCO 3.8.5 DC electrical power subsystem(s) shall be OPERABLE to support the DC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems–Shutdown," and EDG DC system shall be OPERABLE for the EDG required by LCO 3.8.2, "AC Sources–Shutdown."

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more required DC electrical power subsystems inoperable. | A.1.1 Declare affected required feature(s) inoperable. | Immediately |
| | OR | |
| | A.2.1 Suspend CORE ALTERATIONS. | Immediately |
| | AND | |
| | A.2.2 Suspend movement of recently irradiated fuel assemblies. | Immediately |
| | AND | |
| | A.2.3 Suspend operations involving positive reactivity additions that could result in a loss of required SDM or boron concentration. | Immediately |
| | AND | (continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. (continued) | A.2.4 | Initiate action to restore required DC electrical power subsystems to OPERABLE status. | Immediately |
| B. Required EDG DC system inoperable. | B.1 | Enter applicable Conditions and Required Actions for associated EDG made inoperable. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.5.1 | -------------------NOTE-------------------<br>The following SRs are not required to be performed: SR 3.8.4.4, SR 3.8.4.7, SR 3.8.4.8, and SR 3.8.4.9.<br>--------------------------------------------<br><br>For DC sources required to be OPERABLE, the following SRs are applicable:<br><br>SR 3.8.4.1 SR 3.8.4.4 SR 3.8.4.7<br>SR 3.8.4.2 SR 3.8.4.5 SR 3.8.4.8<br>SR 3.8.4.3 SR 3.8.4.6 SR 3.8.4.9 | In accordance with applicable SRs |

## 3.8 ELECTRICAL POWER SYSTEMS

### 3.8.6 Battery Cell Parameters

LCO 3.8.6 Battery cell parameters for the following batteries shall be within limits:

a. The Train H and Train J DC electrical power subsystems;

b. The Emergency Diesel Generator (EDG) DC systems for each required EDG; and

c. One DC electrical power subsystem on the other unit for each required shared component.

APPLICABILITY: When associated DC electrical power subsystem(s) or EDG DC system(s) are required to be OPERABLE.

ACTIONS

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

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more Station or EDG batteries with one or more battery cell parameters not within Table 3.8.6-1 Category A or B limits. | A.1 Verify pilot cell electrolyte level and float voltage meet Table 3.8.6-1 Category C limits. | 1 hour |
| | <u>AND</u> | |
| | A.2 Verify battery cell parameters meet Table 3.8.6-1 Category C limits. | 24 hours<br><br><u>AND</u><br><br>Once per 7 days thereafter |
| | <u>AND</u> | (continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. (continued) | A.3 | Restore battery cell parameters to Table 3.8.6-1 Category A and B limits. | 31 days |
| B. Required Action and associated Completion Time of Condition A not met.<br><br><u>OR</u><br><br>One or more Station batteries with average electrolyte temperature of the representative cells < 60°F.<br><br><u>OR</u><br><br>One or more Station or EDG batteries with one or more battery cell parameters not within Table 3.8.6-1 Category C values. | B.1 | Declare associated battery inoperable. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.6.1 | Verify for each required Station and EDG battery cell parameters meet Table 3.8.6-1 Category A limits. | In accordance with the Surveillance Frequency Control Program |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.6.2 | Verify for each required Station and EDG battery cell parameters meet Table 3.8.6-1 Category B limits. | In accordance with the Surveillance Frequency Control Program<br><br>AND<br><br>Once within 24 hours after a battery discharge < 110 V<br><br>AND<br><br>Once within 24 hours after a battery overcharge > 150 V |
| SR 3.8.6.3 | Verify average electrolyte temperature of representative cells for each required Station battery is ≥ 60°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 ≤ ¼ inch above maximum level indication mark(a) | > Minimum level indication mark, and ≤ ¼ inch above maximum level indication mark(a) | Above top of plates, and not overflowing |
| Float Voltage | ≥ 2.13 V | ≥ 2.13 V | > 2.07 V |
| Specific Gravity(b)(c) | ≥ 1.200 | ≥ 1.195<br><br>AND<br><br>Average of all connected cells > 1.205 | Not more than 0.020 below average of all connected cells<br><br>AND<br><br>Average of all connected cells ≥ 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 for Station batteries when battery charging is < 2 amps when on float charge.

(c) Station batteries only: 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 following inverters shall be OPERABLE.

a. The Train H and Train J inverters; and

b. The necessary inverters on the other unit for each required shared component.

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

One inverter may be disconnected from its associated DC bus for ≤ 24 hours to perform an equalizing charge on its associated battery, provided:

a. The associated AC vital bus is energized from its constant voltage source transformer; and

b. All other required AC vital buses are energized from their associated OPERABLE inverters.

----------------------------------

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One inverter required by LCO 3.8.7.a inoperable. | A.1 ---------NOTE--------<br>Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems—Operating" with any vital bus de-energized.<br>----------------------<br><br>Restore inverter to OPERABLE status. | <br><br><br><br><br><br><br><br><br><br>7 days |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B. One or more inverters required by LCO 3.8.7.b inoperable. | B.1 ---------NOTE--------<br>Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems–Operating" with any vital bus de-energized.<br>----------------------<br>Declare associated shared components inoperable. | <br><br><br><br><br>7 days |
| C. Required Action and associated Completion Time of Condition A not met. | C.1 Be in MODE 3.<br><br>AND<br><br>C.2 Be in MODE 5. | 6 hours<br><br><br><br>36 hours |

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 Inverter(s) shall be OPERABLE to support the onsite Class 1E AC vital bus electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems–Shutdown."

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more required inverters inoperable. | A.1 Declare affected required feature(s) inoperable. | Immediately |
| | <u>OR</u> | |
| | A.2.1 Suspend CORE ALTERATIONS. | Immediately |
| | <u>AND</u> | |
| | A.2.2 Suspend movement of recently irradiated fuel assemblies. | Immediately |
| | <u>AND</u> | |
| | A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration. | Immediately |
| | <u>AND</u> | |
| | A.2.4 Initiate action to restore required inverters to OPERABLE status. | Immediately |

SURVEILLANCE REQUIREMENTS

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

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems—Operating

LCO 3.8.9 The following distribution subsystems shall be OPERABLE:

a. The Train H and Train J AC, DC, and AC vital buses; and

b. The necessary AC, DC and AC vital buses on the other unit for each required shared component.

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

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One or more LCO 3.8.9.a AC electrical power distribution subsystem(s) inoperable. | A.1 | ---------NOTE--------<br>Enter applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources—Operating," for DC train(s) made inoperable by inoperable distribution subsystem(s).<br>---------------------<br><br>Restore AC electrical power distribution subsystem(s) to OPERABLE status. | 8 hours<br><br><u>AND</u><br><br>16 hours from discovery of failure to meet LCO |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B. One or more LCO 3.8.9.a AC vital bus(es) inoperable. | B.1 Restore AC vital bus subsystem(s) to OPERABLE status. | 2 hours<br><br><u>AND</u><br><br>16 hours from discovery of failure to meet LCO |
| C. One or more LCO 3.8.9.a DC electrical power distribution subsystem(s) inoperable. | C.1 Restore DC electrical power distribution subsystem(s) to OPERABLE status. | 2 hours<br><br><u>AND</u><br><br>16 hours from discovery of failure to meet LCO |
| D. --------NOTE----------<br>Separate Condition entry is allowed for each AC subsystem.<br>---------------------<br><br>One or more required LCO 3.8.9.b AC electrical power distribution subsystem(s) inoperable. | D.1 Declare associated shared component(s) inoperable. | Immediately |
| E. --------NOTE----------<br>Separate Condition entry is allowed for each DC subsystem.<br>---------------------<br><br>One or more required LCO 3.8.9.b DC electrical power distribution subsystem(s) inoperable. | E.1 Declare associated shared component(s) inoperable. | Immediately |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| F. --------NOTE---------- Separate Condition entry is allowed for each AC vital subsystem. ---------------------- One or more required LCO 3.8.9.b AC vital electrical power distribution subsystem(s) inoperable. | F.1 Declare associated shared components inoperable. | Immediately |
| G. Required Action and associated Completion Time for Condition A, B, or C not met. | G.1 Be in MODE 3.<br>AND<br>G.2 Be in MODE 5. | 6 hours<br><br>36 hours |
| H. Two or more LCO 3.8.9.a electrical power distribution subsystems inoperable that result in a loss of safety function. | H.1 Enter LCO 3.0.3. | Immediately |

SURVEILLANCE REQUIREMENTS

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

## 3.8 ELECTRICAL POWER SYSTEM

### 3.8.10 Distribution Systems–Shutdown

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

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

ACTIONS

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.10.1 | Verify correct breaker alignments and voltage to required AC, DC, and AC vital bus electrical power distribution subsystems. | 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 (RCS), the refueling canal, and the refueling cavity shall be maintained within the limit specified in the COLR.

APPLICABILITY: MODE 6.

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

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 the COLR. | In accordance with the Surveillance Frequency Control Program |

## 3.9 REFUELING OPERATIONS

### 3.9.2 Primary Grade Water Flow Path Isolation Valves—MODE 6

LCO 3.9.2 Each valve used to isolate primary grade water flow paths shall be secured in the closed position.

------------------------------ NOTE ------------------------------
Primary grade water flow path isolation valves may be opened under administrative control for planned boron dilution or makeup activities.
------------------------------------------------------------------

APPLICABILITY: MODE 6.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. ---------NOTE---------<br>Required Action A.3 must be completed whenever Condition A is entered.<br>----------------------<br><br>One or more valves not secured in closed position. | A.1 Suspend CORE ALTERATIONS.<br><br><u>AND</u><br><br>A.2 Secure valves in closed position.<br><br><u>AND</u><br><br>A.3 Perform SR 3.9.1.1. | Immediately<br><br><br><br>15 minutes<br><br><br><br>4 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.9.2.1 | Verify each valve in the affected flow path that isolates primary grade water flow paths is locked, sealed, or otherwise secured in the closed position. | Within 15 minutes following a boron dilution or makeup activity |

## 3.9 REFUELING OPERATIONS

### 3.9.3 Nuclear Instrumentation

LCO 3.9.3 Two source range neutron flux monitors shall be OPERABLE.

APPLICABILITY: MODE 6.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

## 3.9 REFUELING OPERATIONS

### 3.9.4 Containment Penetrations

LCO 3.9.4 The containment penetrations shall be in the following status:

a. The equipment hatch closed and held in place by four bolts;

b. One door in each air lock is 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. capable of being closed by an OPERABLE containment purge and exhaust isolation valve.

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

Penetration flow path(s) providing direct access from the containment atmosphere to the outside atmosphere may be unisolated under administrative controls.

--------------------------------

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 3.9.4.1 | Verify each required containment penetration is in the required status. | In accordance with the Surveillance Frequency Control Program |
| SR 3.9.4.2 | -------------------NOTE-------------------<br>Not required to be met for containment purge and exhaust valve(s) in penetrations closed to comply with LCO 3.9.4.c.1.<br>------------------------------------------<br><br>Verify each required containment purge and exhaust valve actuates to the isolation position on manual initiation. | In accordance with the Surveillance Frequency Control Program |

## 3.9 REFUELING OPERATIONS

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

LCO 3.9.5 One RHR loop shall be OPERABLE and in operation.

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

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

------------------------------------------------------------------

APPLICABILITY: MODE 6 with the water level ≥ 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 into the RCS, coolant 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 equipment hatch and secure with four bolts. | 4 hours |
| | AND | |
| | A.5 Close one door in each installed air lock. | 4 hours |
| | AND | |
| | 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 |
| | OR | |
| | A.6.2 Verify each penetration is capable of being closed by an OPERABLE Containment Purge and Exhaust Isolation System. | 4 hours |

SURVEILLANCE REQUIREMENTS

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

## 3.9 REFUELING OPERATIONS

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

LCO 3.9.6 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°F below saturation temperature;

   b. No operations are permitted that would cause a reduction of the Reactor Coolant System boron concentration; and

   c. No draining operations to further reduce RCS volume are permitted.

2. One required RHR loop may be inoperable for up to 2 hours for surveillance testing, provided that the other 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 |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B. No RHR loop in operation. | B.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1. | Immediately |
| | <u>AND</u> | |
| | B.2 Initiate action to restore one RHR loop to operation. | Immediately |
| | <u>AND</u> | |
| | B.3 Close equipment hatch and secure with four bolts. | 4 hours |
| | <u>AND</u> | |
| | B.4 Close one door in each installed 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> | (continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B. (continued) | B.5.2 Verify each penetration is capable of being closed by an OPERABLE Containment Purge and Exhaust Isolation System. | 4 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.9.6.1 | Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of:<br><br>a. ≥ 3000 gpm, or<br><br>b. ≥ 2000 gpm if RCS temperature ≤ 140°F and time since entry into MODE 3 ≥ 100 hours. | In accordance with the Surveillance Frequency Control Program |
| SR 3.9.6.2 | -------------------NOTE--------------------<br>Not required to be performed until 24 hours after a required RHR pump is not in operation.<br>------------------------------------------<br><br>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 |

## 3.9 REFUELING OPERATIONS

### 3.9.7 Refueling Cavity Water Level

LCO 3.9.7 Refueling cavity water level shall be maintained ≥ 23 ft above the top of reactor vessel flange.

APPLICABILITY: 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 movement of irradiated fuel assemblies within containment. | Immediately |

SURVEILLANCE REQUIREMENTS

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

# 4.0 DESIGN FEATURES

## 4.1 Site Location

The North Anna Power Station is located in the north-central portion of Virginia in Louisa County and is approximately 40 miles north-northwest of Richmond, 36 miles east of Charlottesville; 22 miles southwest of Fredericksburg; and 70 miles southwest of Washington, D.C. The site is on a peninsula on the southern shore of Lake Anna at the end of State Route 700.

## 4.2 Reactor Core

### 4.2.1 Fuel Assemblies

The reactor shall contain 157 fuel assemblies. Each assembly shall consist of a matrix of Zircaloy, ZIRLO, Optimized ZIRLO, or M5 fuel rods with an initial composition of natural or slightly enriched uranium dioxide ($UO_2$) as fuel material. Limited substitutions of 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 locations.

### 4.2.2 Control Rod Assemblies

The reactor core shall contain 48 control rod assemblies. The control material shall be silver indium cadmium, as approved by the NRC.

## 4.3 Fuel Storage

### 4.3.1 Criticality

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

a. Fuel assemblies having a maximum U-235 enrichment of 5.0 weight percent;

## 4.0 DESIGN FEATURES

4.3.1.1 (continued)

b. $k_{eff} < 1.0$ if fully flooded with unborated water, which includes an allowance for uncertainties and biases calculated in accordance with the methodology described in UFSAR Section 9.1;

c. $k_{eff} \leq 0.95$ if fully flooded with water borated to 900 ppm, which includes an allowance for uncertainties and biases calculated in accordance with the methodology described in UFSAR Section 9.1; and

d. A nominal 10 9/16 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 U-235 enrichment of 5.0 weight percent;

b. $k_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties and biases;

c. $k_{eff} \leq 0.98$ if moderated by aqueous foam, which includes an allowance for uncertainties and biases; 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 285 feet, 9 inches, Mean Sea Level, USGS datum.

### 4.3.3 Capacity

The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 1737 fuel assemblies.

# 5.0 ADMINISTRATIVE CONTROLS

## 5.1 Responsibility

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.

The plant manager or his designee shall approve, prior to implementation, each proposed test, experiment or modification to systems or equipment that affect nuclear safety.

5.1.2 The Shift Manager (SM) shall be responsible for the control room command function. During any absence of the SM from the control room while the unit is in MODE 1, 2, 3, or 4, an individual with an active Senior Reactor Operator (SRO) license shall be designated to assume the control room command function. During any absence of the SM 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.

# 5.0 ADMINISTRATIVE CONTROLS

## 5.2 Organization

### 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 QA Program. The plant-specific titles of those personnel fulfilling the responsibilities of the positions delineated in these Technical Specifications shall be maintained in appropriate administrative documents;

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. A specified corporate officer shall have corporate 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; and

d. The individuals who train the operating staff, carry out health physics, 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 Organization

### 5.2.2 Unit Staff

The unit staff organization shall include the following:

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

   Two unit sites with both units shutdown or defueled require a total of three auxiliary operators for the two units.

b. 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.f 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.

c. 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.

d. Deleted

## 5.2 Organization

5.2.2 Unit Staff (continued)

e. The operations manager shall hold (or have previously held) a Senior Reactor Operator License for North Anna or a similar design Pressurized Water Reactor plant. The Supervisor Nuclear Shift Operations shall hold an active Senior Reactor Operator License for North Anna Power Station.

f. An individual shall provide advisory technical support to the unit operations shift crew in the areas of thermal hydraulics, reactor engineering, and plant analysis with regard to the safe operation of the unit. This individual shall meet the qualifications specified by the Commission Policy Statement on Engineering Expertise on Shift.

## 5.0 ADMINISTRATIVE CONTROLS

### 5.3 Unit Staff Qualifications

5.3.1 Each member of the unit staff shall meet or exceed the minimum qualifications referenced for comparable positions as specified in the Nuclear Facility Quality Assurance Program Description. The SM, Unit Supervisor, Control Room Operator, and the individual providing advisory technical support to the unit operations shift crew, shall meet or exceed the minimum qualifications of 10 CFR 55.59(c) and 55.31(a)(4).

5.3.2 For the purpose of 10 CFR 55.4, a licensed SRO and a licensed RO are those individuals who, in addition to meeting the requirements of TS 5.3.1, perform the functions described in 10 CFR 50.54(m).

# 5.0 ADMINISTRATIVE CONTROLS

## 5.4 Procedures

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 NUREG-0737, Supplement 1, as stated in Generic Letter 82-33;

c. Quality assurance for effluent and environmental monitoring;

d. Fire Protection Program implementation; and

e. All programs specified in Specification 5.5.

# 5.0 ADMINISTRATIVE CONTROLS

## 5.5 Programs and Manuals

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

5.5.1 Offsite Dose Calculation Manual (ODCM)

a. 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; and

b. The ODCM shall also contain the radioactive effluent controls and radiological environmental monitoring activities, and descriptions of the information that should be included in the Annual Radiological Environmental Operating, and Annual Radioactive Effluent Release Reports required by Specification 5.6.2 and Specification 5.6.3.

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) maintain the levels of radioactive effluent control required by 10 CFR 20.1302, 40 CFR 190, 10 CFR 50.36a, and 10 CFR 50, Appendix I, and not adversely impact the accuracy or reliability of effluent, dose, or setpoint calculations;

b. Shall become effective after the approval of the plant 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 Programs and Manuals

### 5.5.2 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 Recirculation Spray, Safety Injection, Chemical and Volume Control, gas stripper, and Hydrogen Recombiner. The program shall include the following:

a. Preventive maintenance and periodic visual inspection requirements; and

b. Integrated leak test requirements for each system at least once per 18 months.

The provisions of SR 3.0.2 are applicable.

### 5.5.3 Reserved

### 5.5.4 Radioactive Effluent Controls Program

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 the ODCM, 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:

a. 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;

b. Limitations on the concentrations of radioactive material released in liquid effluents to unrestricted areas, conforming to ten times the concentration values in Appendix B, Table 2, Column 2 to 10 CFR 20.1001-20.2402;

c. 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;

5.5 Programs and Manuals

5.5.4 Radioactive Effluent Controls Program (continued)

d. 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;

e. Determination of cumulative 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. Determination of projected dose contributions from radioactive effluents in accordance with the methodology in the ODCM at least every 31 days;

f. 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;

g. Limitations on the dose rate resulting from radioactive material released in gaseous effluents from the site to areas at or beyond the site boundary shall be in accordance with the following:

   1. For noble gases: a dose rate ≤ 500 mrem/yr to the whole body and a dose rate ≤ 3000 mrem/yr to the skin, and

   2. For iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half-lives greater than 8 days: a dose rate ≤ 1500 mrem/yr to any organ;

h. 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;

i. 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; and

## 5.5 Programs and Manuals

5.5.4 Radioactive Effluent Controls Program (continued)

j. Limitations on the annual dose or dose commitment to any member of the public, beyond the site boundary, due to releases of radioactivity and to radiation from uranium fuel cycle sources, conforming to 40 CFR 190.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Radioactive Effluent Controls Program surveillance frequency.

5.5.5 Component Cyclic or Transient Limit

This program provides controls to track the UFSAR, Section 5.2, cyclic and transient occurrences to ensure that components are maintained within the design limits.

5.5.6 Reactor Coolant Pump Flywheel Inspection Program

This program shall provide for the inspection of each reactor coolant pump flywheel once every 20 years by a qualified inplace UT examination over the volume from the inner bore of the flywheel to the circle of one-half the outer radius or a surface examination (MT and/or PT) of exposed surfaces defined by the volume of disassembled flywheels.

## 5.5 Programs and Manuals

### 5.5.7 Inservice Testing Program

This program provides controls for inservice testing of ASME Code Class 1, 2, and 3 components. The program shall include the following:

a. Testing frequencies specified in the ASME Code for Operation and Maintenance of Nuclear Power Plants and applicable Addenda as follows:

| ASME Code for Operation and Maintenance of Nuclear Power Plants and applicable Addenda terminology for inservice testing activities | Required Frequencies for performing inservice testing activities |
|---|---|
| Weekly | At least once per 7 days |
| Monthly | At least once per 31 days |
| Quarterly or every 3 months | At least once per 92 days |
| Semiannually or every 6 months | At least once per 184 days |
| Every 9 months | At least once per 276 days |
| Yearly or annually | At least once per 366 days |
| Biennially or every 2 years | At least once per 731 days |

b. The provisions of SR 3.0.2 are applicable to the above required Frequencies for performing inservice testing activities;

c. The provisions of SR 3.0.3 are applicable to inservice testing activities; and

d. Nothing in the ASME Code for Operation and Maintenance of Nuclear Power Plants shall be construed to supersede the requirements of any TS.

### 5.5.8 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 condition of the tubing during a SG inspection outage, as determined from the inservice

(continued)

5.5 Programs and Manuals

5.5.8 Steam Generator (SG) Program

a. (continued)

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 in-service SG tubes shall retain structural integrity over the full range of normal operating conditions (including startup, operation in the power range, hot standby, and cool down), and all anticipated transients included in the design specification, 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 1 gpm for all SGs.

3. The operational LEAKAGE performance criterion is specified in LCO 3.4.13, "RCS Operational LEAKAGE."

5.5 Programs and Manuals

5.5.8 Steam Generator (SG) Program (continued)

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.

d. Provisions for SG tube inspections. Periodic SG tube inspections shall be performed. The number and portions of the tubes inspected and methods of inspection shall be performed with the objective of detecting flaws of any type (e.g., 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. In addition to meeting the requirements of d.1, d.2, and d.3 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.

1. Inspect 100% of the tubes in each SG during the first refueling outage following SG installation.

2. 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. 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. 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 a crack(s), then the indication need not be treated as a crack.

## 5.5 Programs and Manuals

5.5.8 Steam Generator (SG) Program (continued)

e. Provisions for monitoring operational primary to secondary LEAKAGE.

5.5.9 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.

5.5.10 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 general conformance with the frequencies and requirements of Regulatory Positions C.5.a, C.5.c, C.5.d, and C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, and ANSI N510-1975.

a. Demonstrate for each of the ESF systems that an inplace test of the high efficiency particulate air (HEPA) filters shows a penetration and system bypass < 1.0% when tested in accordance

(continued)

5.5 Programs and Manual

5.5.10 Ventilation Filter Testing Program (VFTP)

a. (continued)

with Regulatory Positions C.5.a and C.5.c of Regulatory Guide 1.52, Revision 2, March 1978, and ANSI N510-1975 at the system flowrate specified below.

| ESF Ventilation System | Flowrate |
|---|---|
| Main Control Room/Emergency Switchgear Room (MCR/ESGR) Emergency Ventilation System (EVS) | 1000 ± 10% cfm |
| Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS) | Nominal accident flow for a single train actuation |

Nominal accident flow for a single train actuation is greater than the minimum required cooling flow for ECCS equipment operation, and ≤ 39,200 cfm, which is the maximum flow rate providing an adequate residence time within the charcoal adsorber.

b. Demonstrate for each of the ESF systems that an inplace test of the charcoal adsorber shows a penetration and system bypass < 1.0% when tested in accordance with Regulatory Positions C.5.a and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and ANSI N510-1975 at the system flowrate specified below.

| ESF Ventilation System | Flowrate |
|---|---|
| MCR/ESGR EVS | 1000 ± 10% cfm |
| ECCS PREACS | Nominal accident flow for a single train actuation |

Nominal accident flow for a single train actuation is greater than the minimum required cooling flow for ECCS equipment operation, and ≤ 39,200 cfm, which is the maximum flow rate providing an adequate residence time within the charcoal adsorber.

c. Demonstrate for each of the ESF systems that a laboratory test of a sample of the charcoal adsorber, when obtained as described in Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, shows the methyl iodide penetration less than the

(continued)

## 5.5 Programs and Manuals

### 5.5.10 Ventilation Filter Testing Program (VFTP)

c. (continued)

value specified below when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86°F) and relative humidity specified below.

| ESF Ventilation System | Penetration | RH |
|---|---|---|
| MCR/ESGR EVS | 2.5% | 95% |
| ECCS PREACS | 5% | 70% |

d. Demonstrate for each of the ESF systems that the pressure drop across the combined HEPA filters, the prefilters, and the charcoal adsorbers is less than the value specified below when tested in accordance with ANSI N510-1975 at the system flowrate specified below.

| ESF Ventilation System | Delta P | Flowrate |
|---|---|---|
| MCR/ESGR EVS | 4 inches W.G. | 1000 ± 10% cfm |
| ECCS PREACS | 5 inches W.G. | ≤ 39,200 cfm |

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the VFTP test frequencies.

### 5.5.11 Explosive Gas and Storage Tank Radioactivity Monitoring Program

This program provides controls for potentially explosive gas mixtures contained in the Gaseous Waste System, the quantity of radioactivity contained in gas storage tanks, 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

(continued)

## 5.5 Programs and Manuals

5.5.11 Explosive Gas and Storage Tank Radioactivity Monitoring Program (continued)

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".

The program shall include:

a. The limits for concentrations of hydrogen and oxygen in the Gaseous Waste 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 is less than the amount that would result in a whole body exposure of ≥ 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 each of the following outdoor 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 liquid radwaste ion exchanger system is less than the amount that would result in concentrations greater than the limits of 10 CFR 20, Appendix B, Table 2, Column 2, excluding tritium, 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:

    1. Refueling Water Storage Tank;

    2. Casing Cooling Storage Tank;

    3. PG Water Storage Tank;

    4. Boron Recovery Test Tank; and

    5. Any Outside Temporary Tank.

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 Programs and Manuals

### 5.5.12 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

    3. water and sediment ≤ 0.05%.

b. Within 31 days following addition of the new fuel oil to storage tanks verify that the properties of the new fuel oil, other than those addressed in a. above, are within limits for ASTM 2D fuel oil;

c. Total particulate concentration of the stored fuel oil is ≤ 10 mg/l when tested every 92 days; and

d. The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Diesel Fuel Oil Testing Program testing Frequencies.

### 5.5.13 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

(continued)

5.5 Programs and Manuals

5.5.13 Technical Specifications (TS) Bases Control Program (continued)

b. (continued)

2. a change to the UFSAR 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 5.5.13b 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).

5.5.14 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, no concurrent loss of offsite power or loss of onsite diesel generator(s), a safety function assumed in the accident

(continued)

## 5.5 Programs and Manuals

5.5.14 Safety Function Determination Program (SFDP) (continued)

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. When a loss of safety function is caused by the inoperability of a single Technical Specification support system, the appropriate Conditions and Required Actions to enter are those of the support system.

5.5.15 Containment Leakage Rate Testing Program

a. A program shall establish 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, Revision 3-A, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," dated July 2012 and Section 4.1 "Limitations and Conditions for NEI TR 94-01, Revision 2" of the NRC Safety Evaluation Report in NEI 94-01, Revision 2A, dated October 2008.

b. The calculated peak containment internal pressure for the design basis loss of coolant accident, $P_a$, is 42.7 psig. The containment design pressure is 45 psig.

c. The maximum allowable containment leakage rate, $L_a$, at $P_a$, shall be 0.1% of containment air weight per day.

(continued)

5.5 Programs and Manuals

5.5.15 Containment Leakage Rate Testing Program (continued)

d. Leakage Rate acceptance criteria are:

1. Prior to entering a MODE where containment OPERABILITY is required, the containment leakage rate acceptance criteria are:

   $\leq 0.60\ L_a$ for the Type B and Type C tests on a Maximum Path Basis and $\leq 0.75\ L_a$ for Type A tests.

   During operation where containment OPERABILITY is required, the containment leakage rate acceptance criteria are:

   $\leq 1.0\ L_a$ for overall containment leakage rate and $\leq 0.60\ L_a$ for the Type B and Type C tests on a Minimum Path Basis.

2. Overall air lock leakage rate testing acceptance criterion is $\leq 0.05\ L_a$ when tested at $\geq P_a$.

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

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

5.5.16 Main Control Room/Emergency Switchgear Room (MCR/ESGR) Envelope Habitability Program

A MCR/ESGR Envelope Habitability Program shall be established and implemented to ensure that MCR/ESGR envelope habitability is maintained such that, with an OPERABLE MCR/ESGR EVS, MCR/ESGR envelope 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 MCR/ESGR envelope under design basis accident conditions without

(continued)

## 5.5 Programs and Manuals

5.5.16 Main Control Room/Emergency Switchgear Room Envelope Habitability Program (MCR/ESGR) (continued)

personnel receiving radiation exposures in excess of 5 rem total effective dose equivalent for the duration of the accident. The program shall include the following elements:

a. The definition of the MCR/ESGR envelope and the MCR/ESGR envelope boundary.

b. Requirements for maintaining the MCR/ESGR envelope boundary in its design condition including configuration control and preventive maintenance.

c. Requirements for (i) determining the unfiltered air inleakage past the MCR/ESGR envelope into the MCR/ESGR envelope 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 MCR/ESGR envelope habitability at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

   The following is an exception to Section C.2 of Regulatory Guide 1.197, Revision 0:

   - 2.C.1 Licensing Bases - Vulnerability assessments for radiological, hazardous chemical and smoke, and emergency ventilation system testing were completed as documented in the UFSAR. The exceptions to the Regulatory Guides (RG) referenced in RG 1.196 (i.e., RG 1.52, RG 1.78, and RG 1.183), which were considered in completing the vulnerability assessments, are documented in the UFSAR/current licensing basis. Compliance with these RGs is consistent with the current licensing basis as described in the UFSAR.

d. Measurement, at designated locations, of the MCR/ESGR envelope pressure relative to all external areas adjacent to the MCR/ESGR envelope boundary during the pressurization mode of operation by one train of the MCR/ESGR EVS, operating at the flow rate required by the VFTP, at a Frequency of 18 months on a STAGGERED TEST BASIS. The results shall be trended and used as part of the assessment of the MCR/ESGR envelope boundary.

(continued)

## 5.5 Programs and Manuals

5.5.16 Main Control Room/Emergency Switchgear Room Envelope Habitability Program (MCR/ESGR) (continued)

e. The quantitative limits on unfiltered air inleakage into the MCR/ESGR envelope. These limits shall be stated in a manner to allow direct comparison to the unfiltered air inleakage measured by the testing described in paragraph c. The unfiltered air inleakage limit for radiological challenges is the inleakage flow rate assumed in the licensing basis analyses of design basis accident consequences. Unfiltered air inleakage limits for hazardous chemicals must ensure that exposure of MCR/ESGR envelope 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 MCR/ESGR envelope habitability, determining MCR/ESGR envelope unfiltered inleakage, and measuring MCR/ESGR envelope pressure and assessing the MCR/ESGR envelope boundary as required by paragraphs c and d, respectively.

5.5.17 Surveillance Frequency Control Program

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

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

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

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

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# 5.0 ADMINISTRATIVE CONTROLS

## 5.6 Reporting Requirements

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 1 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 the Offsite Dose Calculation Manual (ODCM), 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 the results of analyses of all radiological environmental samples and of all environmental radiation measurements taken during the period pursuant to the locations specified in the table and figures in the ODCM, as well as summarized and tabulated results of these analyses and measurements commensurate with the format in the ODCM. 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 Annual Radioactive Effluent Release Report

--------------------------------NOTE--------------------------------
A single submittal may be made for a multiple unit station. The submittal shall 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 Annual 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

(continued)

## 5.6 Reporting Requirements

5.6.3 Annual Radioactive Effluent Release Report (continued)

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 the ODCM and Process Control Program and in conformance with 10 CFR 50.36a and 10 CFR Part 50, Appendix I, Section IV.B.1.

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. Safety Limits,
2. SHUTDOWN MARGIN,
3. Moderator Temperature Coefficient,
4. Shutdown Bank Insertion Limits,
5. Control Bank Insertion Limits,
6. AXIAL FLUX DIFFERENCE limits,
7. Heat Flux Hot Channel Factor,
8. Nuclear Enthalpy Rise Hot Channel Factor,
9. Power Factor Multiplier,
10. Reactor Trip System Instrumentation - OTΔT and OPΔT Trip Parameters,
11. RCS Pressure, Temperature, and Flow DNB Limits, and
12. Boron Concentration.

5.6 Reporting Requirements

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. VEP-FRD-42-A, "Reload Nuclear Design Methodology."

2. Plant-specific adaptation of WCAP-16009-P-A, "Realistic Large Break LOCA Evaluation Methodology Using the Automated Statistical Treatment of Uncertainty Method (ASTRUM)," as approved by NRC Safety Evaluation Report dated February 29, 2012.

3. EMF-2328(P)(A), "PWR Small Break LOCA Evaluation Model S-RELAP5 Based," as supplemented by ANP-3467P, "North Anna Fuel-Vendor Independent Small Break LOCA Analysis," as approved by NRC Safety Evaluation Report dated March 19, 2021.

4. WCAP-12610, "VANTAGE+ FUEL ASSEMBLY—REFERENCE CORE REPORT."

5. VEP-NE-2-A, "Statistical DNBR Evaluation Methodology."

6. VEP-NE-1-A, "VEPCO Relaxed Power Distribution Control Methodology and Associated FQ Surveillance Technical Specifications."

7. WCAP-8745-P-A, "Design Bases for Thermal Overpower Delta-T and Thermal Overtemperature Delta-T Trip Function."

8. WCAP-14483-A, "Generic Methodology for Expanded Core Operating Limits Report."

5.6 Reporting Requirements

5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

b. (continued)

9. DOM-NAF-2-A, "Reactor Core Thermal-Hydraulics Using the VIPRE-D Computer Code," including Appendix C, "Qualification of the Westinghouse WRB-2M CHF Correlation in the Dominion VIPRE-D Computer Code," and Appendix D, "Qualification of the ABB-NV and WLOP CHF Correlations in the Dominion VIPRE-D Computer Code."

10. WCAP-12610-P-A and CENPD-404-P-A, Addendum 1-A, "Optimized ZIRLO" (Westinghouse Proprietary).

11. WCAP-16996P-A, "Realistic LOCA Evaluation Methodology Applied to the Full Spectrum of Break Sizes (FULL SPECTRUM LOCA Methodology)," (Westinghouse Proprietary).

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.

5.6.6 PAM Report

When a report is required by Condition B of LCO 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days. The report shall outline the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

## 5.6 Reporting Requirements

### 5.6.7 Steam Generator Tube Inspection Report

A report shall be submitted within 180 days after the initial entry into MODE 4 following completion of an inspection performed in accordance with the Specification 5.5.8, "Steam Generator (SG) Program." 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; and

f. The results of any SG secondary side inspections.

# 5.0 ADMINISTRATIVE CONTROLS

## 5.7 High Radiation Area

As provided in paragraph 20.1601(c) of 10 CFR Part 20, the following controls shall be applied to high radiation areas in place of the controls required by paragraph 20.1601(a) and (b) of 10 CFR Part 20:

5.7.1 <u>High Radiation Areas with Dose Rates Not Exceeding 1.0 rem/hour at 30 Centimeters from the Radiation Source or from any Surface Penetrated by the Radiation</u>

a. Each entryway to such an area shall be barricaded and conspicuously posted as a high radiation area. Such barricades may be opened as necessary to permit entry or exit of personnel or equipment.

b. Access to, and activities in, each such area shall be controlled by means of Radiation Work Permit (RWP) or equivalent that includes specification of radiation dose rates in the immediate work area(s) and other appropriate radiation protection equipment and measures.

c. Individuals qualified in radiation protection procedures and personnel continuously escorted by such individuals may be exempted from the requirement for an RWP or equivalent while performing their assigned duties provided that they are otherwise following plant radiation protection procedures for entry to, exit from, and work in such areas.

d. Each individual or group entering such an area shall possess:

1. A radiation monitoring device that continuously displays radiation dose rates in the area; or

2. A radiation monitoring device that continuously integrates the radiation dose rates in the area and alarms when the device's dose alarm setpoint is reached, with an appropriate alarm setpoint, or

3. A radiation monitoring device that continuously transmits dose rate and cumulative dose information to a remote receiver monitored by radiation protection personnel responsible for controlling personnel radiation exposure within the area, or

(continued)

## 5.7 High Radiation Area

5.7.1 <u>High Radiation Areas with Dose Rates Not Exceeding 1.0 rem/hour at 30 Centimeters from the Radiation Source or from any Surface Penetrated by the Radiation</u>

d. (continued)

4. A self-reading dosimeter (e.g., pocket ionization chamber or electronic dosimeter) and,

(i) Be under the surveillance, as specified in the RWP or equivalent, while in the area, of an individual qualified in radiation protection procedures, equipped with a radiation monitoring device that continuously displays radiation dose rates in the area; who is responsible for controlling personnel exposure within the area, or

(ii) Be under the surveillance as specified in the RWP or equivalent, while in the area, by means of closed circuit television, of personnel qualified in radiation protection procedures, responsible for controlling personnel radiation exposure in the area, and with the means to communicate with individuals in the area who are covered by such surveillance.

e. Except for individuals qualified in radiation protection procedures, or personnel continuously escorted by such individuals, entry into such areas shall be made only after dose rates in the area have been determined and entry personnel are knowledgeable of them. These continuously escorted personnel will receive a pre-job briefing prior to entry into such areas. This dose rate determination, knowledge, and pre-job briefing does not require documentation prior to initial entry.

## 5.7 High Radiation Area

5.7.2 High Radiation Areas with Dose Rates Greater than 1.0 rem/hour at 30 Centimeters from the Radiation Source or from any Surface Penetrated by the Radiation, but less than 500 rads/hour at 1 Meter from the Radiation Source or from any Surface Penetrated by the Radiation

a. Each entryway to such an area shall be conspicuously posted as a high radiation area and shall be provided with a locked or continuously guarded door or gate that prevents unauthorized entry, and, in addition:

   1. All such door and gate keys shall be maintained under the administrative control of the radiation protection shift supervisor, radiation protection manager, or his or her designee.

   2. Doors and gates shall remain locked except during periods of personnel or equipment entry or exit.

b. Access to, and activities in, each such area shall be controlled by means of an RWP or equivalent that includes specification of radiation dose rates in the immediate work area(s) and other appropriate radiation protection equipment and measures.

c. Individuals qualified in radiation protection procedures may be exempted from the requirement for an RWP or equivalent while performing radiation surveys in such areas provided that they are otherwise following plant radiation protection procedures for entry to, exit from, and work in such areas.

d. Each individual or group entering such an area shall possess:

   1. A radiation monitoring device that continuously integrates the radiation rates in the area and alarms when the device's dose alarm setpoint is reached, with an appropriate alarm setpoint, or

   2. A radiation monitoring device that continuously transmits dose rate and cumulative dose information to a remote receiver monitored by radiation protection personnel responsible for controlling personnel radiation exposure within the area with the means to communicate with and control every individual in the area, or

(continued)

## 5.7 High Radiation Area

5.7.2 <u>High Radiation Areas with Dose Rates Greater than 1.0 rem/hour at 30 Centimeters from the Radiation Source or from any Surface Penetrated by the Radiation, but less than 500 rads/hour at 1 Meter from the Radiation Source or from any Surface Penetrated by the Radiation</u>

d. (continued)

3. A self-reading dosimeter (e.g., pocket ionization chamber or electronic dosimeter) and,

    (i) Be under the surveillance, as specified in the RWP or equivalent, while in the area, of an individual qualified in radiation protection procedures, equipped with a radiation monitoring device that continuously displays radiation dose rates in the area; who is responsible for controlling personnel exposure within the area, or

    (ii) Be under the surveillance as specified in the RWP or equivalent, while in the area, by means of closed circuit television, of personnel qualified in radiation protection procedures, responsible for controlling personnel radiation exposure in the area, and with the means to communicate with and control every individual in the area.

4. In those cases where options (2) and (3), above, are impractical or determined to be inconsistent with the "As Low As is Reasonably Achievable" principle, a radiation monitoring device that continuously displays radiation dose rates in the area.

e. Except for individuals qualified in radiation protection procedures, or personnel continuously escorted by such individuals, entry into such areas shall be made only after dose rates in the area have been determined and entry personnel are knowledgeable of them. These continuously escorted personnel will receive a pre-job briefing prior to entry into such areas. This dose rate determination, knowledge, and pre-job briefing does not require documentation prior to initial entry.

f. Such individual areas that are within a larger area where no enclosure exists for the purpose of locking and where no enclosure can reasonably be constructed around the individual

(continued)

## 5.7 High Radiation Area

5.7.2 High Radiation Areas with Dose Rates Greater than 1.0 rem/hour at 30 Centimeters from the Radiation Source or from any Surface Penetrated by the Radiation, but less than 500 rads/hour at 1 Meter from the Radiation Source or from any Surface Penetrated by the Radiation

f. (continued)

area need not be controlled by a locked door or gate, nor continuously guarded, but shall be barricaded, conspicuously posted, and a clearly visible flashing light shall be activated at the area as a warning device.

APPENDIX B

TO FACILITY OPERATING LICENSE NO. NPF-4

NORTH ANNA POWER STATION, UNIT NO. 1

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-338

# ENVIRONMENTAL PROTECTION PLAN

NORTH ANNA POWER STATION
ENVIRONMENTAL PROTECTION PLAN
(NON-RADIOLOGICAL)
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## 1.0 Objectives of the Environmental Protection Plan

The Environmental Protection Plan (EPP) provides for protection of the environment during the operational phase of the nuclear facility. The principal objectives of the EPP are as follows:

(a) Verify that the plant is operated in an environmentally acceptable manner, as established by the Final Environmental Statement (FES) and other NRC environmental impact assessments.

(b) Coordinate NRC requirements and maintain consistency with other Federal, State and local requirements for environmental protection.

(c) Keep NRC informed of the environmental effects of facility construction and operation and of actions taken to control those effects.

Environmental concerns identified in the FES which relate to water quality matters are regulated by way of the licensee's Virginia Pollutant Discharge Elimination System (VPDES) permit.

## 2.0 Environmental Protection Issues

In the Final Environmental Statement – Operating License (FES–OL) dated April 1973 the staff considered the environmental impacts associated with the operation of the North Anna Power Station. Certain environmental issues were identified which required study or license conditions to resolve environmental concerns and to assure adequate protection of the environment.

### 2.1 Aquatic Issues

The monitoring programs and special studies raised by the FES–OL were completed during the initial years of facility operation. Continued monitoring is addressed by the requirements contained in the effective VPDES permit issued by the Commonwealth of Virginia, Department of Environmental Quality. Further aquatic issues are addressed by the June 24, 1986 Section 316(a) submittal and subsequent agreements reached with the Department of Environmental Quality (previously the State Water Control Board). The NRC relies on this agency for regulation of matters involving water quality and aquatic biota.

### 2.2 Terrestrial Issues

Specific terrestrial issues raised by the staff in the FES–OL were:

(a) The need for controlled use of herbicides on transmission rights-of-way.

(b) The need to control erosion resulting from modification activities, use of herbicides, and/or transmission line maintenance on transmission corridor rights-of-way.

(c) Potential impacts on the terrestrial environment associated with use of the Waste Heat Treatment Facility.

NRC requirements with regard to the above terrestrial issues are specified in Subsection 4.2 of this EPP.

## 3.0 Consistency Requirements

### 3.1 Plant Design and Operation

The licensee may make changes in station design or operation or perform tests or experiments affecting the environment provided such changes, tests or experiments do not involve an unreviewed environmental question, and do not involve a change in the Environmental Protection Plan. Changes in plant design or operation or performance of tests or experiments which do not affect the environment are not subject to the requirements of this EPP. Activities governed by Section 3.3 are not subject to the requirements of this section.

Before engaging in additional construction or operational activities which may affect the environment, the licensee shall prepare and record an environmental evaluation of such activity. When the evaluation indicates that such activity involves an unreviewed environmental question, the licensee shall provide a written evaluation of such activities and obtain prior approval from the Director, Office of Nuclear Reactor Regulation. When such activity involves a change in the Environmental Protection Plan, such activity and change to the Environmental Protection Plan may be implemented only in accordance with an appropriate license amendment as set forth in Section 5.3.

A proposed change, test or experiment shall be deemed to involve an unreviewed environmental question if it concerns (a) a matter which may result in a significant increase in any adverse environmental impact previously evaluated in the final environmental statement (FES) as modified by staff's testimony to the Atomic Safety and Licensing Board, supplements to the FES, environmental impact appraisals, or in any decisions of the Atomic Safety and Licensing Board; or (b) a significant change in effluents or power level [in accordance with 10 CFR Part 51.60(b)(2)] or (c) a matter not previously reviewed and evaluated in the documents specified in (a) of this Subsection, which may have a significant adverse environmental impact.

The licensee shall maintain records of changes in facility design or operation and of tests and experiments carried out pursuant to this Subsection. These records shall include a written evaluation which provides bases for the determination that the change, test, or experiment does not involve an unreviewed environmental question nor constitute a decrease in the effectiveness of this EPP to meet the objectives specified in Section 1.0. The licensee shall include as part of his Annual Environmental Operating Report (per Subsection 5.4.1) brief descriptions, analyses, interpretations, and evaluations of such changes, tests and experiments.

## 3.2 Reporting Related to the VPDES Permits and State Certifications

Violations of the VPDES Permit or the State certification (pursuant to Section 401 of the Clean Water Act) shall be reported to the NRC by submittal of copies of the reports required by the VPDES Permit or certification.

Changes and additions to the VPDES Permit or the State certification shall be reported to the NRC within 30 days following the date the change is approved. If a permit or certification, in part or in its entirety, is appealed and stayed, the NRC shall be notified within 30 days following the date the stay is granted.

The NRC shall be notified of changes to the effective VPDES Permit proposed by the licensee by providing NRC with a copy of the proposed change at the same time it is submitted to the permitting agency. The notification of a licensee-initiated change shall include a copy of the requested revision submitted to the permitting agency. The licensee shall provide the NRC a copy of the application for renewal of the VPDES permit at the same time the application is submitted to the permitting agency.

## 3.3 Changes Required for Compliance with Other Environmental Regulations

Changes in plant design or operation and performance of tests or experiments which are required to achieve compliance with other Federal, State, or local environmental regulations are not subject to the requirements of Section 3.1.

## 4.0 Environmental Conditions

### 4.1 Unusual or Important Environmental Events

Any occurrence of an unusual or important event that indicates or could result in significant environmental impact causally related to plant operation shall be recorded and promptly reported to the NRC in accordance with 10 CFR 50.72(b)(2)(xi) followed by a written report as specified in Subsection 5.4.2. The following are examples: excessive bird impaction events, onsite plant or animal disease outbreaks, mortality or unusual occurrence of any species protected by the Endangered Species Act of 1973, fish kills, significant increase in nuisance organisms or conditions and unanticipated or emergency discharge of waste water or chemical substances.

### 4.2 Environmental Monitoring

#### 4.2.1 Herbicide Application

The use of herbicides within the corridor rights-of-way as described and evaluated in the FES-OL dated April 1973 shall conform to the approved use of selected herbicides as registered by the Environmental Protection Agency and approved by State authorities and applied as directed by said authorities.

Records shall be maintained in the appropriate division office concerning herbicide use. Such records shall include the following information: commercial and chemical names of materials used; concentration of active material in formulations diluted for field use; diluting substances other than water; rates of application; method and frequency of application; location; and the date of application. Such records shall be maintained for a period of 5 years and be made readily available to the NRC upon request. There shall be no routine reporting requirement associated with this condition.

4.2.2 Erosion Control Inspection

Routine inspection of the station site and transmission corridor rights-of-way shall include examination for evidence of erosion. Abnormal erosion conditions within the corridor rights-of-way related to transmission activities and within the site boundaries shall be identified and recorded.

4.2.2.1 Erosion Control Inspection – Site

Field inspections of the site for evidence of erosion shall be conducted at approximately 12-month intervals. This requirement shall be applicable during the nuclear facility's operational phase and shall apply to the site as described and evaluated in the FES-OL dated April 1973.

A summary of the filed inspection program and procedures implemented to control abnormal erosion conditions associated with the nuclear facility site shall be reported in the Annual Environmental Operating Report as described in Subsection 5.4.1. Field logs indicating locations of erosion damage, measures taken to mitigate erosion problems, and estimation of the effectiveness of these mitigative measures shall be kept and made available for a period of five years. Results reported in accordance with Subsection 5.4.1 shall contain information encompassing, but not limited to, inspection date, estimated size of erosion problem area, type of stabilization program, and date of effective stabilization, as appropriate.

#### 4.2.2.2 Erosion and Sediment Control Program – Corridor Rights-of-Way

Measures to identify and address issues concerning erosion and sediment control within the transmission line corridor rights-of-way shall be in accordance with the Erosion and Sediment Control Specification approved by the Virginia Soil and Water Conservation Board in accordance with Title 10.1, Chapter 5, Article 4, Section 10.1-563(D) of the Code of Virginia and applicable portions of the Erosion and Sediment Control Regulations, VR 625-02-00. The NRC relies on the Virginia Soil and Water Conservation Board for regulation of matters involving erosion and sediment control within the North Anna transmission line corridor rights-of-way.

Appropriate records shall be kept indicatingthe nature and effectiveness of corrective measures. The results of any field inspections and mitigative measures implemented to control abnormal erosion conditions associated with transmission line construction, modification, or maintenance activities or the use of herbicides shall be reported in the Annual Environmental Operating Report as described in Subsection 5.4.1.

### 4.2.3 Vegetation Studies

A vegetation monitoring program completed in 1981, determined that power station operation did not result in any adverse environmental impacts on the vegetation types and vegetation production in two plots adjacent to the Waste Heat Treatment Facility, two plots adjacent to Lake Anna, and one plot downstream near the Lake Anna Dam. Therefore, the non-radiological vegetation monitoring program was terminated after 1981.

## 5.0 Administrative Procedures

### 5.1 Review and Audit

The licensee shall provide for review and audit of compliance with the Environmental Protection Plan. The audits shall be conducted in accordance with the approved Operational Quality Assurance Program.

### 5.2 Records Retention

Records and logs relative to the environmental aspects of plant operation shall be made and retained in a manner convenient for review and inspection. These records and logs shall be made available to NRC on request.

Records of modifications to plant structures, systems and components determined to potentially affect the continued protection of the environment shall be retained for the life of the plant. All other records, data and logs relating to this EPP shall be retained for five years or, where applicable, in accordance with the requirements of other agencies.

### 5.3 Changes in Environmental Protection Plan

Request for change in the Environmental Protection Plan shall include an assessment of the environmental impact of the proposed change and a supporting justification. Implementation of such changes in the EPP shall not commence prior to NRC approval of the proposed changes in the form of a license amendment incorporating the appropriate revision to the Environmental Protection Plan.

5.4 Plant Reporting Requirements

5.4.1 Routine Reports

An Annual Environmental Operating Report describing implementation of this EPP for the previous year shall be submitted to the NRC prior to May 1 of each year. The initial report shall be submitted prior to May 1 of the year following issuance of the operating license. The period of the first report shall begin with the date of issuance of the operating license.

The report shall include summaries and analyses of the results of the environmental protection activities required by Subsection 4.2 of this Environmental Protection Plan for the report period, including a comparison with preoperational studies, operational controls (as appropriate), and previous nonradiological environmental monitoring reports, and an assessment of the observed impacts of the plant operation on the environment. If harmful effects or evidence of trends towards irreversible damage to the environment are observed, the licensee shall provide a detailed analysis of the data and a proposed course of action to alleviate the problem.

The Annual Environmental Operating Report shall also include:

(a) A list of EPP noncompliances and the corrective actions taken to remedy them.

(b) A list of all changes in station design or operation, tests, and experiments made in accordance with Subsection 3.1 which involved a potentially significant unreviewed environmental issue.

(c) A list of nonroutine reports submitted in accordance with Subsection 5.4.2.

In the event that some results are not available by the report due date, the report shall be submitted noting and explaining the missing results. The missing data shall be submitted as soon as possible in a supplementary report.

5.4.2 Nonroutine Reports

A written report shall be submitted to the NRC within 30 days of occurrence of a nonroutine event. The report shall (a) describe, analyze, and evaluate the event, including extent and magnitude of the impact and plant operating characteristics, (b) describe the probable cause of the event, (c) indicate the action taken to correct the reported event, (d) indicate the corrective active taken to preclude repetition of the event and to prevent similar occurrences involving similar components or systems, and (e) indicate the agencies notified and their preliminary responses.

Events reportable under this subsection which also require reports to other Federal, State or local agencies shall be reported in accordance with those reporting requirements in lieu of the requirements of this subsection. The NRC shall be provided a copy of such report at the same time it is submitted to the other agency.