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

FLORIDA POWER & LIGHT COMPANY

DOCKET NO. 50-250

TURKEY POINT NUCLEAR GENERATING UNIT NO. 3

SUBSEQUENT RENEWED FACILITY OPERATING LICENSE NO. DPR-31

The U.S. Nuclear Regulatory Commission (the Commission) having previously made the findings set forth in Renewed License No. DPR-31 issued on June 6, 2002, has now found that:

a. The application for Subsequent Renewed Facility Operating License No. DPR-31 filed by Florida Power and Light Company, 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 subsequent 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 subsequent renewed operating license will continue to be conducted in accordance with the current licensing basis, as defined in 10 CFR 54.3, for the Turkey Point Unit 3 plant, and that any changes made to the plant's current licensing basis in order to comply with 10 CFR 54.29(a) are in accord with the Act and the Commission's regulations;

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

d. There is reasonable assurance (i) that the facility can be operated at steady state power levels up to 2644 megawatts thermal in accordance with this subsequent renewed operating license 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. Florida Power and Light Company is technically and financially qualified to engage in the activities authorized by this subsequent renewed operating license in accordance with the rules and regulations of the Commission;

f. The applicable provisions of 10 CFR Part 140 have been satisfied;

g. The subsequent renewal of this renewed operating license will not be inimical to the common defense and security or to the health and safety of the public; and

h. After weighing the environmental, economic, technical and other benefits of the facility against environmental costs and considering available alternatives, the issuance of Subsequent Renewed Facility Operating License No. DPR-31 is in accordance with

10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

On the basis of the foregoing findings regarding this facility, Renewed Facility Operating License No. DPR-31, issued on June 6, 2002, is superseded by Subsequent Renewed Facility Operating License No. DPR-31, which is hereby issued to Florida Power and Light Company (FPL), to read as follows:

1. This subsequent renewed operating license applies to the Turkey Point Nuclear Generating Unit No. 3 nuclear power reactor, a pressurized, light water moderated and cooled reactor, and associated steam generators and electrical generating equipment (the facility). The facility is located on the applicant's Turkey Point site in Miami-Dade County, about 25 miles south of Miami, Florida, and is described in the Final Safety Analysis Report as supplemented and amended, and the Environmental Report as supplemented and amended.

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

   A. Pursuant to Section 104b of the Atomic Energy Act of 1954, as amended (the Act), and 10 CFR Part 50, "Licensing of Production and Utilization Facilities," to possess, use, and operate the facility as a utilization facility at the designated location on the Turkey Point site, in accordance with the procedures and limitations set forth in this subsequent renewed operating license;

   B. Pursuant to the Act and 10 CFR Part 70, to receive, possess, and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;

   C. Pursuant to the Act and 10 CFR Parts 30, 40, and 70 to receive, possess, and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

   D. Pursuant to the Act and 10 CFR Part 30 to receive, possess, and use at any time 100 millicuries each of any byproduct material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactively contaminated apparatus;

   E. Pursuant to the Act and 10 CFR Parts 40 and 70 to receive, possess, and use at any time 100 milligrams each of any source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactively contaminated apparatus;

   F. Pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of Turkey Point Units Nos. 3 and 4.

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

applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect, and is subject to the additional conditions specified below:

A. Maximum Power Level

The applicant is authorized to operate the facility at reactor core power levels not in excess of 2644 megawatts (thermal).

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 301, are hereby incorporated into this subsequent renewed license. The Environmental Protection Plan contained in Appendix B is hereby incorporated into this subsequent renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

C. Deleted

D. Fire Protection

FPL shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the licensee amendment requests dated June 28, 2012 and October 17, 2018 (and supplements dated September 19, 2012; March 18, April 16, and May 15, 2013; January 7, April 4, June 6, July 18, September 12, November 5, and December 2, 2014; and February 18, 2015; October 24, and December 3, 2018; and January 31, 2019), and as approved in the safety evaluations dated May 28, 2015 and March 27, 2019. Except where NRC approval for changes or deviations is required by 10 CFR 50.48(c), and provided no other regulation, technical specification, license condition or requirement would require prior NRC approval, the licensee may make changes to the fire protection program without prior approval of the Commission if those changes satisfy the provisions set forth in 10 CFR 50.48(a) and 10 CFR 50.48(c), the change does not require a change to a technical specification or a license condition, and the criteria listed below are satisfied.

Risk-Informed Changes that May Be Made Without Prior NRC Approval

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

(a) Prior NRC review and approval is not required for changes that clearly result in a decrease in risk. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. The change may be implemented following completion of the plant change evaluation.

(b) Prior NRC review and approval is not required for individual changes that result in a risk increase less than $1x10^{-7}$/year (yr) for CDF and less than 1×10^{-8}/yr for LERF. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. The change may be implemented following completion of the plant change evaluation.

Other Changes that May Be Made Without Prior NRC Approval

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

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

   The licensee may use an engineering evaluation to demonstrate that changes to certain NFPA 805, Chapter 3, elements are acceptable because the alternative is "adequate for the hazard." Prior NRC review and approval would not be required for alternatives to four specific sections of NFPA 805, Chapter 3, for which an engineering evaluation demonstrates that the alternative to the Chapter 3 element is adequate for the hazard. A qualified fire protection engineer shall perform the engineering evaluation and conclude that the change has not affected the functionality of the component, system, procedure, or physical arrangement, using a relevant technical requirement or standard. The four specific sections of NFPA 805, Chapter 3, are as follows:

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

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

2. Fire Protection Program Changes that Have No More than Minimal Risk Impact

Prior NRC review and approval are not required for changes to the licensee's fire protection program that have been demonstrated to have no more than a minimal risk impact. The licensee may use its screening process as approved in the NRC safety evaluation dated May 28, 2015, to determine that certain fire protection program changes meet the minimal criterion. The licensee shall ensure that fire protection defense-in-depth and safety margins are maintained when changes are made to the fire protection program.

E. The licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provision of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contains Safeguards Information protected under 10 CFR 73.21, is entitled: "Florida Power and Light Turkey Point Nuclear Plant Physical Security Plan, Training and Qualification Plan, Safeguards Contingency Plan, and Independent Spent Fuel Storage Installation Security Program - Revision 15" submitted by letter dated August 3, 2012.

The licensee shall fully implement and maintain in effect all provisions of the Commission-approved cyber security plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The Turkey Point Nuclear Generating Station CSP was approved by License Amendment No. 245 as supplemented by a change approved by Amendment Nos. 256 and 266.

F. 1. The licensee shall restrict the combined number of fuel assemblies loaded in the existing spent fuel pool storage racks and cask pit rack to no more than the capacity of the spent fuel pool storage racks. This condition applies at all times, except during activities associated with a reactor core offload/reload refueling condition. This restriction will ensure the capability to unload and remove the cask pit rack when cask loading operations are necessary.

2. The licensee shall establish two hold points within the rack installation procedure to ensure proper orientation of the cask rack in each unit's spent fuel pool. Verification of proper cask pit rack orientation will be implemented by an authorized Quality Control inspector during installation of the racks to ensure consistency with associated spent fuel pool criticality analysis assumptions.

G. <u>Mitigation Strategy License Condition</u>

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

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

1. Pre-defined coordinated fire response strategy and guidance
2. Assessment of mutual aid fire fighting assets
3. Designated staging areas for equipment and materials
4. Command and control
5. Training of response personnel

(b) Operations to mitigate fuel damage considering the following

1. Protection and use of personnel assets
2. Communications
3. Minimizing fire spread
4. Procedures for implementing integrated fire response strategy
5. Identification of readily-available pre-staged equipment
6. Training on integrated fire response strategy
7. Spent fuel pool mitigation measures

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

1. Water spray scrubbing
2. Dose to onsite responders

H. Deleted

I. FPL is authorized to implement the Risk Informed Completion Time Program as approved in License Amendment No. 284 subject to the following conditions:

1. Deleted.

2. The risk assessment approach and methods, shall be acceptable to the NRC, be based on the as-built, as-operated, and maintained plant, and reflect the operating experience of the plant as specified in RG 1.200. Methods to assess the risk from extending the completion times must be PRA methods accepted as part of this license amendment, or other methods approved by the NRC for generic use. If the licensee wishes to change its methods, and the change is outside the bounds of this license condition, the licensee will seek prior NRC approval via a license amendment.

J. Subsequent License Renewal License Conditions

1. The information in the Final Safety Analysis Report (FSAR) supplement submitted pursuant to 10 CFR 54.21(d), as revised during the subsequent license renewal application review process, and FPL commitments as listed in Appendix A of the "Safety Evaluation Report Related to the Subsequent License Renewal of Turkey Point Generating Units 3 and 4," dated July 22, 2019, are collectively the "Subsequent License Renewal FSAR Supplement." This Supplement is henceforth part of the FSAR, which will be updated in accordance with 10 CFR 50.71(e). As such, FPL may make changes to the programs, activities, and commitments described in the Subsequent License Renewal FSAR Supplement, provided FPL evaluates such changes pursuant to the criteria set forth in 10 CFR 50.59, "Changes, Tests, and Experiments," and otherwise complies with the requirements in that section.

2. The Subsequent License Renewal FSAR Supplement, as defined in renewed license condition (J)(1) above, describes programs to be implemented and activities to be completed prior to the subsequent period of extended operation, which is the period following the July 19, 2032, expiration of the initial renewed license.

   a. FPL shall implement those new programs and enhancements to existing programs no later than 6 months before the subsequent period of extended operation.

   b. FPL shall complete those activities by the 6-month date prior to the subsequent period of extended operation or by the end of the last refueling outage before the subsequent period of extended operation, whichever occurs later.

   c. FPL shall notify the NRC in writing within 30 days after having accomplished item (2)(a) above and include the status of those activities that have been or remain to be completed in item (2)(b) above.

3. FPL shall complete the replacement of a portion of the existing containment spray system carbon steel piping with stainless steel piping by December 1, 2024, so that any remaining carbon steel piping will not normally be internally exposed to borated water during the subsequent period of extended operation. The scope of replacement is the carbon steel piping from the stainless steel to the carbon steel dissimilar metal weld for the two containment

spray piping headers (3A and 3B) at penetrations P-19A and P-19B to a minimum plant elevation of 65 feet inside containment. FPL shall notify the NRC in writing within 60 days following completion of the refueling outage during which the piping replacement is completed. The notification will confirm the elevation of the air-to-borated-water interface inside the piping and confirm that the installation of the stainless steel piping exceeds this elevation.

4. This subsequent renewed license is effective as of the date of issuance, and shall expire at midnight July 19, 2052.

K. <u>Improved Technical Specifications Implementation License Conditions</u>

1. Relocation of Certain Technical Specification Requirements

License Amendment 297 authorizes the relocation of certain Technical Specifications previously included in Appendix A to other licensee-controlled documents. Implementation of this amendment shall include relocation of the requirements to the specified documents, as described in Table R, Relocated Specifications and Removed Detail Changes, attached to the NRC staff's Safety Evaluation, which is enclosed in this amendment.

2. Schedule for New and Revised Surveillance Requirements (SRs)

The schedule for performing SRs that are new or revised in License Amendment 297 shall be as follows:

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

b. 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.

c. 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.

d. 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 THE NUCLEAR REGULATORY COMMISSION

/RA/

Ho K. Nieh, Director
Office of Nuclear Reactor Regulation

Attachments:
Appendix A - Technical Specifications for Unit 3
Appendix B - Environmental Protection Plan

Date of Issuance: December 4, 2019

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, and each step must be performed within the Frequency in the Surveillance Frequency Control Program for the devices included in the step.
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.

1.1 Definitions

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, and each step must be performed within the Frequency in the Surveillance Frequency Control Program for the devices included in the step.
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 5.6.3. 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 thyroid dose conversion factors from Table 2.1 of EPA Federal Guidance Report No. 11, 1988, "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion."
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."

1.1 Definitions

INSERVICE TESTING PROGRAM	The INSERVICE TESTING PROGRAM is the licensee program that fulfills the requirements of 10 CFR 50.55a(f).

LEAKAGE

LEAKAGE shall be:

a. Identified LEAKAGE

1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) seal water injection or leakoff), that is captured and conducted to collection systems or a sump or collecting tank;

2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known to not interfere with the operation of leakage detection systems; or

3. Reactor Coolant System (RCS) LEAKAGE through a steam generator to the Secondary System (primary to secondary LEAKAGE);

b. Unidentified LEAKAGE

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

c. Pressure Boundary LEAKAGE

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

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.

1.1 Definitions

OPERABLE – OPERABILITY	A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).
PHYSICS TESTS	PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation. These tests are: a. Described in Section 13.5, Reload Physics Testing of the UFSAR; b. Authorized under the provisions of 10 CFR 50.59; or c. Otherwise approved by the Nuclear Regulatory Commission.
QUADRANT POWER TILT RATIO (QPTR)	QPTR shall be the ratio of the maximum upper excore detector calibrated output to the average of the upper excore detector calibrated outputs, or the ratio of the maximum lower excore detector calibrated output to the average of the lower excore detector calibrated outputs, whichever is greater.
RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 2644 MWt.
SHUTDOWN MARGIN (SDM)	SDM shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming: a. All rod cluster control assemblies (RCCAs) are fully inserted except for the single RCCA of highest reactivity worth, which is assumed to be fully withdrawn. With any RCCA not capable of being fully inserted, the reactivity worth of the RCCA must be accounted for in the determination of SDM; and b. In MODES 1 and 2, the fuel and moderator temperatures are changed to the nominal zero power design limit.

1.1 Definitions

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 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, and each step must be performed within the Frequency in the Surveillance Frequency Control Program for the devices included in the step.

Table 1.1-1 (page 1 of 1)
MODES

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

(a) Excluding decay heat.

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

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

1.0 USE AND APPLICATION

1.2 Logical Connectors

PURPOSE

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

Logical connectors are used in Technical Specifications (TS) to discriminate between, and yet connect, discrete Conditions, Required Actions, Completion Times, Surveillances, and Frequencies. The only logical connectors that appear in TS are <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.

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.

EXAMPLES

The following examples illustrate the use of logical connectors.

<u>EXAMPLE 1.2-1</u>

ACTIONS

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

In this example the logical connector <u>AND</u> 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 . . . OR A.2.1 Verify . . . AND A.2.2.1 Reduce . . . OR A.2.2.2 Perform . . . OR 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 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.

Unless otherwise specified, the Completion Time begins when a senior licensed operator on the operating shift crew with responsibility for plant operations makes the determination that an LCO is not met and an ACTIONS Condition is entered. The "otherwise specified" exceptions are varied, such as a Required Action Note or Surveillance Requirement Note that provides an alternative time to perform specific tasks, such as testing, without starting the Completion Time. While utilizing the Note, should a Condition be applicable for any reason not addressed by the Note, the Completion Time begins. Should the time allowance in the Note be exceeded, the Completion Time begins at that point. The exceptions may also be incorporated into the Completion Time. For example, LCO 3.8.1, "AC Sources - Operating," Required Action C.2, requires declaring required feature(s) supported by an inoperable emergency diesel generator, inoperable when the redundant required feature(s) are inoperable. The Completion Time states, "4 hours from discovery of Condition C concurrent with inoperability of redundant required feature(s)." In this case the Completion Time does not begin until the conditions in the Completion Time are satisfied.

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

1.3 Completion Times

DESCRIPTION (continued)

Completion Times are tracked for each Condition starting from the discovery of the situation that required entry into the Condition, unless otherwise specified.

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

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

a. Must exist concurrent with the first inoperability and

b. Must remain inoperable or not within limits after the first inoperability is resolved.

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

a. The stated Completion Time, as measured from the initial entry into the Condition, plus an additional 24 hours or

b. The stated Completion Time as measured from discovery of the subsequent inoperability.

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.

1.3 Completion Times

DESCRIPTION (continued)

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 . . ."

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. AND B.2 Be in MODE 5.	6 hours 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. AND B.2 Be in MODE 5.	6 hours 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, Conditions 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.

1.3 Completion Times

EXAMPLES (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.

EXAMPLE 1.3-3

ACTIONS

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

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

1.3 Completion Times

EXAMPLES (continued)

train starting from the time each train was declared inoperable and the Condition was entered. A separate Completion Time is established for Condition C and tracked from the time the second train was declared inoperable (i.e., the time the situation described in Condition C was discovered).

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

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

<u>EXAMPLE 1.3-4</u>

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. <u>AND</u> B.2 Be in MODE 4.	6 hours 12 hours

1.3 Completion Times

EXAMPLES (continued)

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.

<u>EXAMPLE 1.3-5</u>

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(s) to OPERABLE status.	4 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 4.	6 hours 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,

1.3 Completion Times

EXAMPLES (continued)

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

1.3 Completion Times

EXAMPLES (continued)

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

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

<u>EXAMPLE 1.3-7</u>

ACTIONS

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

1.3 Completion Times

EXAMPLES (continued)

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

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

EXAMPLE 1.3-8

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One subsystem inoperable.	A.1 Restore subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

1.3 Completion Times

EXAMPLES (continued)

When a subsystem is declared inoperable, Condition A is entered. The 7 day Completion Time may be applied as discussed in Example 1.3-2. However, the licensee may elect to apply the Risk Informed Completion Time Program which permits calculation of a Risk Informed Completion Time (RICT) that may be used to complete the Required Action beyond the 7 day Completion Time. The RICT cannot exceed 30 days. After the 7 day Completion Time has expired, the subsystem must be restored to OPERABLE status within the RICT or Condition B must also be entered.

The Risk Informed Completion Time Program requires recalculation of the RICT to reflect changing plant conditions. For planned changes, the revised RICT must be determined prior to implementation of the change in configuration. For emergent conditions, the revised RICT must be determined within the time limits of the Required Action Completion Time (i.e., not the RICT) or 12 hours after the plant configuration change, whichever is less.

If the 7 day Completion Time clock of Condition A has expired and subsequent changes in plant condition result in exiting the applicability of the Risk Informed Completion Time Program without restoring the inoperable subsystem to OPERABLE status, Condition B is also entered and the Completion Time clocks for Required Actions B.1 and B.2 start.

If the RICT expires or is recalculated to be less than the elapsed time since the Condition was entered and the inoperable subsystem has not been restored to OPERABLE status, Condition B is also entered and the Completion Time clocks for Required Actions B.1 and B.2 start. If the inoperable subsystems are restored to OPERABLE status after Condition B is entered, Condition A is exited, and therefore, the Required Actions of Condition B may be terminated.

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.

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:

1.4 Frequency

DESCRIPTION (continued)

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 discuss 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.

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Perform CHANNEL CHECK.	12 hours

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

If the interval as specified by SR 3.0.2 is exceeded while the unit is not in a MODE or other specified condition in the Applicability of the LCO for which performance of the SR is required, then SR 3.0.4 becomes applicable. The Surveillance must be performed within the Frequency requirements of SR 3.0.2, as modified by SR 3.0.3, prior to entry into the MODE or other specified condition or the LCO is considered not met (in accordance with SR 3.0.1) and LCO 3.0.4 becomes applicable.

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-2

SURVEILLANCE REQUIREMENTS

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

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

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

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
-----------------------------NOTE--------------------------- Not required to be performed until 12 hours after ≥ 25% RTP. ---	
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 (plus the extension allowed by SR 3.0.2) with power ≥ 25% RTP.

Once the unit reaches 25% RTP, 12 hours would be allowed for completing the Surveillance. If the Surveillance were not performed within this 12 hour interval (plus the extension allowed by SR 3.0.2), 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 1.4-4

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 to 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 this 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 3.0.4 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--------------------------- Not required to be met in MODE 3. --- 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 was 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 ≥ 1.17 for the WRB-1 DNB correlation.

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.

2.1.2 Reactor Coolant System Pressure SL

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

2.2 SAFETY LIMIT 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 specified condition in the Applicability for an unlimited period of time;

b. After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate (exceptions to this Specification are stated in the individual Specifications); or

3.0 LCO Applicability

LCO 3.0.4 (continued)

c. When an allowance is stated in the individual value, parameter, or other Specification.

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

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 5.5.12, "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.

LCO 3.0.7

Test Exception LCO 3.1.8 allows 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.

3.0 LCO Applicability

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. 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 LCO Applicability

LCO 3.0.10 LCO Conditions and the associated Required Actions shall apply to each unit individually unless otherwise indicated as follows:

a. Whenever the LCO refers to systems or components which are shared by both units, the Conditions and Required Actions will apply to both units simultaneously;

b. Whenever the LCO applies to only one unit, this will be identified in the Applicability section of the Specification; and

c. Whenever certain portions of a Specification contain operating parameters, setpoints, etc., which are different for each unit, this will be identified in parentheses, Notes, or body of the requirement.

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.
SR 3.0.2	The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met. For Frequencies specified as "once," the above interval extension does not apply. If a Completion Time requires periodic performance on a "once per . . ." basis, the above Frequency extension applies to each performance after the initial performance. Exceptions to this Specification are stated in the individual Specifications.
SR 3.0.3	If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater. This delay period is permitted to allow performance of the Surveillance. The delay period is only applicable when there is a reasonable expectation the Surveillance will be met when performed. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours and the risk impact shall be managed. If the Surveillance is not performed within the delay period, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered. When the Surveillance is performed within the delay period and the Surveillance is not met, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.
SR 3.0.4	Entry into a MODE or other specified condition in the Applicability of an LCO shall only be made when the LCO's Surveillances have been met within their specified Frequency, except as provided by SR 3.0.3. When an LCO is not met due to Surveillances not having been met, entry into a MODE or other specified condition in the Applicability shall only be made in accordance with LCO 3.0.4.

3.0 SR Applicability

SR 3.0.4 (continued)	
	This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.
SR 3.0.5	Surveillance Requirements shall apply to each unit individually unless otherwise indicated as stated in LCO 3.0.10 for individual Specifications or whenever certain portions of a Specification contain Surveillance parameters different for each unit, which will be identified in parentheses, notes, or body of the requirement.

3.1 REACTIVITY CONTROL SYSTEMS

3.1.1 SHUTDOWN MARGIN (SDM)

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

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.1.1	Verify SDM to be within the limits specified in the COLR.	In accordance with the Surveillance Frequency Control Program

3.1 REACTIVITY CONTROL SYSTEMS

3.1.2 Core Reactivity

LCO 3.1.2 The measured core reactivity shall be within ± 1% $\Delta k/k$ 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
	AND		
	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---------------------------------- The predicted reactivity values may be adjusted (normalized) to correspond to the measured core reactivity prior to exceeding a fuel burnup of 60 effective full power days (EFPD) after each fuel loading. --- Verify measured core reactivity is within ± 1% Δk/k of predicted values.	Once prior to entering MODE 1 after each refueling AND --------NOTE-------- Only required after 60 EFPD ------------------------ 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 maximum upper limit shall be + 5.0 X 10^{-5} $\Delta k/k°F$.

APPLICABILITY: MODE 1 and MODE 2 with keff ≥ 1.0 for the beginning of life (BOL) MTC limit,
MODES 1, 2, and 3 for the end of life (EOL) MTC limit.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. MTC not within BOL 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 EOL limit.	C.1	Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.3.1	Verify MTC is within BOL limit.	Prior to entering MODE 1 after each refueling

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.1.3.2	---------------------------NOTES-------------------------------- 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. 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. 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. 4. Measurement of MTC may be suspended provided the benchmark criteria and the revised prediction specified in the COLR are satisfied. --- Verify MTC is within EOL 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.

<u>AND</u>

Rod misalignment between analog rod position indication and group step counter demand position shall be:

a. $\pm$ 18 steps with THERMAL POWER $\leq$ 90% RTP, and

b. $\pm$ 12 steps with THERMAL POWER > 90% RTP.

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 specified in the COLR. <u>OR</u> A.1.2 Initiate boration to restore SDM to within limit. <u>AND</u> A.2 Be in MODE 3.	1 hour 1 hour 6 hours
B. One rod not within alignment limits.	B.1.1 Verify SDM to be within the limits specified in the COLR. <u>OR</u>	1 hour

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.1.2	Initiate boration to restore SDM to within limit.	1 hour
	AND		
	B.2	Reduce THERMAL POWER to ≤ 75% RTP.	2 hours
	AND		
	B.3	Verify SDM is within the limits specified in the COLR.	Once per 12 hours
	AND		
	B.4.1	-------------NOTE------------- Not required to be performed when F_Q^P exceeds F_Q^L and THERMAL POWER is > P_T. -----------------------------------	
		Perform SR 3.2.1.1.	72 hours
	OR		
	B.4.2	-------------NOTE------------- Only required to be performed when F_Q^P exceeds F_Q^L and THERMAL POWER is > P_T. -----------------------------------	
		Perform SR 3.2.1.2.	72 hours
	AND		

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.5 Perform SR 3.2.2.1. AND B.6 Re-evaluate safety analyses and confirm results remain valid for duration of operation under these conditions.	72 hours 5 days
C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 3.	6 hours
D. More than one rod not within alignment limit.	D.1.1 Verify SDM is within the limits specified in the COLR. OR D.1.2 Initiate boration to restore required SDM to within limit. AND D.2 Be in MODE 3.	1 hour 1 hour 6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.4.1	----------------------------- NOTES ----------------------------- 1. Not required to be performed for rods associated with inoperable rod position indicator or demand position indicator. 2. Not required to be performed until 1 hour after associated rod motion. --- Verify position of individual rods 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 ≤ 2.4 seconds from the beginning of decay of stationary gripper coil voltage to dashpot entry, with: a. T_{avg} ≥ 500°F and b. All reactor coolant pumps operating.	Prior to 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.

---NOTE---
Not applicable to shutdown banks inserted while performing SR 3.1.4.2.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One shutdown bank inserted ≤ 20 steps beyond the insertion limits specified in the COLR.	A.1 Verify all control banks are within the insertion limits specified in the COLR.	1 hour
	AND	
	A.2.1 Verify SDM is within the limits specified in the COLR.	1 hour
	OR	
	A.2.2 Initiate boration to restore SDM to within limit.	1 hour
	AND	
	A.3 Restore the shutdown bank to within the insertion limits specified in the COLR.	24 hours
B. One or more shutdown banks not within limits for reasons other than Condition A.	B.1.1 Verify SDM is within the limits specified in the COLR.	1 hour
	OR	

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.1.2 Initiate boration to restore SDM to within limit. <u>AND</u> B.2 Restore shutdown banks to within limits.	1 hour 2 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.5.1	---------------------------- NOTE ------------------------------ Not required to be performed until 1 hour after associated rod motion. --- 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.

---NOTE---
Not applicable to control banks inserted while performing SR 3.1.4.2.

APPLICABILITY: MODE 1,
MODE 2 with k_{eff} ≥1.0.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Control bank A, B, or C inserted ≤ 20 steps beyond the insertion, sequence, or overlap limits specified in the COLR.	A.1 Verify all shutdown banks are within the insertion limits specified in the COLR.	1 hour
	AND	
	A.2.1 Verify SDM is within the limits specified in the COLR.	1 hour
	OR	
	A.2.2 Initiate boration to restore SDM to within limit.	1 hour
	AND	
	A.3 Restore the control bank to within the insertion, sequence, and overlap limits specified in the COLR.	24 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Control bank insertion limits not met for reasons other than Condition A.	B.1.1 Verify SDM is within the limits specified in the COLR. OR B.1.2 Initiate boration to restore SDM to within limit. AND B.2 Restore control bank(s) to within limits.	1 hour 1 hour 2 hours
C. Control bank sequence or overlap limits not met for reasons other than Condition A.	C.1.1 Verify SDM is within the limits specified in the COLR. OR C.1.2 Initiate boration to restore SDM to within limit. AND C.2 Restore control bank sequence and overlap to within limits.	1 hour 1 hour 2 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 limits specified in the COLR.	Within 4 hours prior to achieving criticality
SR 3.1.6.2	---------------------------- NOTE ------------------------------ Not required to be performed until 1 hour after associated rod motion. --- Verify each control bank insertion is within the insertion limits specified in the COLR.	In accordance with the Surveillance Frequency Control Program
SR 3.1.6.3	---------------------------- NOTE ------------------------------ Not required to be performed until 1 hour after associated rod motion. --- Verify sequence and overlap limits specified in the COLR are met for control banks not fully withdrawn from the core.	In accordance with the Surveillance Frequency Control Program

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.

------------------------------------ NOTE ------------------------------------
Individual RPIs are not required to be OPERABLE for 1 hour following movement of the associated rods.

APPLICABILITY: MODES 1 and 2.

ACTIONS

------------------------------------NOTE------------------------------------
Separate Condition entry is allowed for each inoperable RPI and each demand position indicator.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RPI per group inoperable in one or more groups.	A.1 Verify the position of the rods with inoperable RPI indirectly by using movable incore detectors.	Once per 8 hours
	<u>OR</u>	
	A.2 Verify the position of the rods with inoperable RPI indirectly by using the moveable incore detectors.	8 hours <u>AND</u> Once per 31 EFPD thereafter <u>AND</u>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)		8 hours after discovery of each unintended rod movement <u>AND</u> 8 hours after each movement of rod with inoperable RPI > 12 steps <u>AND</u> Prior to THERMAL POWER exceeding 50% RTP <u>AND</u> 8 hours after reaching RTP
	<u>OR</u>	
	A.3 Reduce THERMAL POWER to < 75% RTP.	8 hours
B. More than one RPI per group inoperable in one or more groups.	B.1 Place the control rods under manual control.	Immediately
	<u>AND</u>	
	B.2 Restore inoperable RPIs to OPERABLE status such that a maximum of one RPI per group is inoperable.	24 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One or more RPI inoperable in one or more groups and associated rod has been moved > 24 steps in one direction since the last determination of the rod's position.	C.1	Verify the position of the rods with inoperable RPIs indirectly by using movable incore detectors.	8 hours
	<u>OR</u>		
	C.2	Reduce THERMAL POWER to < 75% RTP.	8 hours
D. One or more demand position indicators per bank inoperable in 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 within required rod misalignment limits.	Once per 8 hours
	<u>OR</u>		
	D.2	Reduce THERMAL POWER to < 75% 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	----------------------------- NOTE ------------------------------ RPI detectors are excluded from CHANNEL CALIBRATION. -- Perform CHANNEL CALIBRATION of each RPI.	Once prior to criticality after each removal of the reactor head

3.1 REACTIVITY CONTROL SYSTEMS

3.1.8 PHYSICS TESTS Exceptions – MODE 2

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

LCO 3.1.3, "Moderator Temperature Coefficient;"
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 and 17.d, may be reduced to 3 required channels, provided:

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

b. SDM is within the limits specified 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. AND A.2 Suspend PHYSICS TESTS exceptions.	15 minutes 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 (continued)

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.8.1	Perform a CHANNEL OPERATIONAL TEST on power range and intermediate range channels per SR 3.3.1.7, SR 3.3.1.8, and Table 3.3.1-1.	Prior to initiation of PHYSICS TESTS
SR 3.1.8.2	Verify the RCS lowest loop average temperature is ≥ 531°F.	In accordance with the Surveillance Frequency Control Program
SR 3.1.8.3	Verify THERMAL POWER is ≤ 5% RTP.	In accordance with the Surveillance Frequency Control Program
SR 3.1.8.4	Verify SDM is within the limits specified in the COLR.	In accordance with the Surveillance Frequency Control Program

3.2 POWER DISTRIBUTION LIMITS

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

LCO 3.2.1 $F_Q(Z)$, shall be within the limits specified in the COLR.

AND

With predicted F_Q (F_Q^P) > F_Q limit (F_Q^L) and THERMAL POWER > predicted threshold power (P_T) calculated as specified in the COLR, THERMAL POWER shall be less than the following limit calculated as specified in the COLR:

a. Base load power limit (P_{BL}) during base load operation, and

b. Radial burndown power limit (P_{RB}) during radial burndown conditions.

APPLICABILITY: MODE 1.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ------------NOTE------------ Required Action A.4 shall be completed whenever this Condition is entered. ---------------------------------	A.1 Reduce THERMAL POWER ≥ 1% RTP for each 1% $F_Q(Z)$ exceeds limit.	15 minutes after each $F_Q(Z)$ determination
	AND	
$F_Q(Z)$ not within limit when determined by SR 3.2.1.1.	A.2 Reduce Power Range Neutron Flux - High trip setpoints ≥ 1% for each 1% $F_Q(Z)$ exceeds limit.	72 hours after each $F_Q(Z)$ determination
	AND	
	A.3 Reduce Overpower ΔT trip setpoints ≥ 1% for each 1% $F_Q(Z)$ exceeds limit.	72 hours after each $F_Q(Z)$ determination
	AND	

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.4	Perform SR 3.2.1.1.	Prior to increasing THERMAL POWER above the limit of Required Action A.1
B. ------------NOTE------------ Required Action B.4 shall be completed whenever this Condition is entered. --------------------------------- $F_Q(Z)$ not within limit when determined per SR 3.2.1.2 and $F_j(Z)$ exceeds limit by ≤ 4%.	B.1	Reduce THERMAL POWER ≥ 1% RTP for each 1% $F_j(Z)$ exceeds limit.	15 minutes
	<u>AND</u>		
	B.2	Reduce Power Range Neutron Flux - High trip setpoints ≥ 1% RTP for each 1% $F_j(Z)$ exceeds limit.	72 hours
	<u>AND</u>		
	B.3	Reduce Overpower ΔT trip setpoints ≥ 1% RTP for each 1% $F_j(Z)$ exceeds limit.	72 hours
	<u>AND</u>		
	B.4	Perform SR 3.2.1.2.	Prior to increasing THERMAL POWER above the limit of Required Action B.1
C. $F_Q(Z)$ not within limits when determined per SR 3.2.1.2 and $F_j(Z)$ exceeds limit by > 4%.	C.1	Reduce THERMAL POWER ≤ P_T.	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. $F_Q^P > F_Q^L$ and THERMAL POWER $> P_{BL}$ specified in the COLR. OR $F_Q^P > F_Q^L$ and THERMAL POWER $> P_{RB}$ specified in the COLR.	D.1 Reduce THERMAL POWER $\leq P_T$. OR D.2 Initiate action to perform SR 3.2.1.2 using augmented calculation.	15 minutes 15 minutes
E. Required Action and associated Completion Time not met.	E.1 Be in MODE 2.	6 hours

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE		FREQUENCY
SR 3.2.1.1	-----NOTE----- Not required to be performed when F_Q^P exceeds F_Q^L and THERMAL POWER is > P_T. ----- Verify $F_Q(Z)$ is within limit.	Once after each refueling prior to THERMAL POWER exceeding 75% RTP AND In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.2.1.2	------------------------------NOTE------------------------------ Only required to be performed when F_Q^P exceeds F_Q^L and THERMAL POWER is > P_T. --- Verify $F_Q(Z)$ is within limit specified in the COLR using calculation for base load operation or radial burndown conditions, or augmented calculation.	Within 2, 4, and 8 hours following THERMAL POWER exceeding P_T <u>AND</u> Within 2, 4, and 8 hours following movement of Control Bank D more than accumulated total of 15 steps in any direction <u>AND</u> Once within 24 hours of entering base load operation <u>AND</u> 31 EFPDs thereafter during base load operation <u>AND</u> In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.2.1.3	------------------------------NOTE------------------------------ Only required to be performed when F_Q^P exceeds F_Q^L and THERMAL POWER is > P_T. --	
	Calculate P_{BL}.	Prior to entering base load operation

3.2 POWER DISTRIBUTION LIMITS

3.2.2 Nuclear Enthalpy Rise Hot Channel Factor ($F^N_{\Delta H}$)

LCO 3.2.2 $F^N_{\Delta H}$ shall be within the limits specified in the COLR.

APPLICABILITY: MODE 1.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ------------NOTE------------ Required Actions A.2 and A.3 must be completed whenever Condition A is entered. -------------------------------- $F^N_{\Delta H}$ not within limit.	A.1.1 Restore $F^N_{\Delta H}$ to within limit. OR A.1.2.1 Reduce THERMAL POWER to < 50% RTP. AND A.1.2.2 Reduce Power Range Neutron Flux - High trip setpoints to ≤ 55% RTP. AND A.2 Perform SR 3.2.2.1. AND	4 hours 4 hours 72 hours 24 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.3	--------------NOTE-------------- THERMAL POWER does not have to be reduced to comply with this Required Action. ------------------------------------- Perform SR 3.2.2.1.	Prior to THERMAL POWER exceeding 50% RTP <u>AND</u> Prior to THERMAL POWER exceeding 75% RTP <u>AND</u> 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 <u>AND</u> 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 during base load operation ≥ P_T.	A.1 Reduce THERMAL POWER to < P_T.	30 minutes
	<u>OR</u>	
	A.2 Discontinue base load operation.	30 minutes
B. AFD not within limits for reasons other than Condition A.	B.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
	AND	
	A.2 Determine QPTR.	Once per 12 hours
	AND	
	A.3 Perform SR 3.2.1.1, or SR 3.2.1.2, as applicable, and SR 3.2.2.1.	24 hours after achieving equilibrium conditions from a THERMAL POWER reduction per Required Action A.1 AND Once per 7 days thereafter
	AND	

ACTIONS (continued)

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 limit.	Prior to increasing THERMAL POWER above the limit of Required Action A.1
	AND		
	A.6	---------------NOTE-------------- Perform Required Action A.6 only after Required Action A.5 is completed. -------------------------------------	
		Perform SR 3.2.1.1, or SR 3.2.1.2, as applicable, 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

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
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---------------------------- 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. 2. SR 3.2.4.2 may be performed in lieu of this Surveillance. --- Verify QPTR is within limit by calculation.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

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
SR 3.2.4.3	------------------------------NOTES----------------------------- 1. Only applicable when one Power Range Neutron Flux channel is inoperable. 2. Not required to be performed until 12 hours after input from one Power Range Neutron Flux channel is inoperable with THERMAL POWER > 75% RTP. --- Verify QPTR is within limit using incore thermocouple map.	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.	48 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
C. One channel or train inoperable.	C.1 Restore channel or train to OPERABLE status.	48 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One Power Range Neutron Flux - High channel inoperable.	-------------------NOTE-------------------- The inoperable channel may be bypassed for up to 4 hours for surveillance testing and setpoint adjustment of other channels. --	
	D.1.1 Reduce THERMAL POWER to ≤ 75% RTP.	4 hours
	AND	
	D.1.2 Place channel in trip.	6 hours
	OR	
	D.2.1 Place channel in trip.	6 hours
	AND	
	D.2.2 --------------NOTE-------------- Only required to be performed when the Power Range Neutron Flux input to QPTR is inoperable. -------------------------------------	
	Perform SR 3.2.4.2 or SR 3.2.4.3.	Once per 12 hours
E. One channel inoperable.	--------------------NOTE------------------- The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. --	
	E.1 Place channel in trip.	6 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
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.	G.1	--------------NOTE-------------- Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM. ------------------------------------	
		Suspend operations involving positive reactivity additions.	Immediately
	AND		
	G.2	Reduce THERMAL POWER to < P-6.	2 hours
H. One Source Range Neutron Flux channel inoperable.	H.1	--------------NOTE-------------- Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM. ------------------------------------	
		Suspend operations involving positive reactivity additions.	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
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
K. Required Action and associated Completion Time of Condition C or J not met.	K.1 Initiate action to fully insert all rods. AND K.2 Place the Rod Control System in a condition incapable of rod withdrawal.	Immediately 1 hour
L. One channel inoperable.	L.1 Place channel in trip.	6 hours
M. Required Action and associated Completion Time of Condition L not met.	M.1 Reduce THERMAL POWER to < P-7.	6 hours
N. One channel inoperable.	N.1 Be in MODE 2.	6 hours
O. One train inoperable.	--------------------NOTE------------------- One train may be bypassed for up to 2 hours for surveillance testing provided the other train is OPERABLE. --- O.1 Be in MODE 3.	 6 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
P. One or more channels inoperable.	P.1	Verify interlock is in required state for existing unit conditions.	1 hour
Q. One or more channels inoperable.	Q.1	Verify interlock is in required state for existing unit conditions.	1 hour
R. Required Action and associated Completion Time of Condition Q not met.	R.1	Be in MODE 2.	6 hours
S. One trip mechanism inoperable for one RTB.	S.1	Restore trip mechanism to OPERABLE status.	48 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
T. Required Action and associated Completion Time of Condition B, D, E, P, or S not met.	T.1	Be in MODE 3.	6 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------------------------------ Not required to be performed until 12 hours after THERMAL POWER is ≥ 15% RTP. -- Compare results of calorimetric heat balance calculation to power range channel output. Adjust power range channel output if calorimetric heat balance calculations results exceed power range channel output by more than +2% RTP.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.3	--------------------------NOTE------------------------------ Not required to be performed until 24 hours after THERMAL POWER is ≥ 15% RTP. -- Compare results of the incore detector measurements to Nuclear Instrumentation System (NIS) AFD. Adjust NIS channel if absolute difference is ≥ 3%.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.4	------------------------------NOTE------------------------------ This Surveillance must be performed on the reactor trip bypass breaker prior to placing the bypass breaker in service. -- Perform TADOT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.5	Perform ACTUATION LOGIC TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.6	----------------------------NOTE-------------------------------- Not required to be performed until 24 hours after THERMAL POWER is ≥ 75% RTP. -- Calibrate excore channels to agree with incore detector measurements.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.7	------------------------------NOTE------------------------------ Not required to be performed for source range instrumentation prior to entering MODE 3 from MODE 2 until 4 hours after entry into MODE 3. --- Perform COT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.8	------------------------------NOTE------------------------------ This Surveillance shall include verification that interlocks P-6 and P-10 are in their required state for existing unit conditions. --- Perform COT.	--------NOTE-------- Only required when not performed within the Frequency specified in the Surveillance Frequency Control Program ------------------------ Prior to reactor startup <u>AND</u> In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.9	------------------------------NOTE------------------------------ Neutron detectors are excluded from CHANNEL CALIBRATION. -- Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.10	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.11	Perform COT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.12	------------------------------NOTE------------------------------ Verification of setpoint is not required. -- Perform TADOT.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.13	------------------------------NOTE------------------------------- Verification of setpoint is not required. --- Perform TADOT.	Prior to exceeding the P-7 interlock whenever the unit has been in MODE 3, if not performed within the previous 31 days

Table 3.3.1-1 (page 1 of 10)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT
1. Manual Reactor Trip	1,2	2	B	SR 3.3.1.12	NA	NA
	3[(a)],4[(a)],5[(a)]	2	C	SR 3.3.1.12	NA	NA
2. Power Range Neutron Flux						
a. High	1,2	4	D	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.7[(b)(c)] SR 3.3.1.9[(b)(c)]	≤ 108.6% RTP	108.0% RTP
b. Low	1[(d)],2	4	E	SR 3.3.1.1 SR 3.3.1.8[(b)(c)] SR 3.3.1.9[(b)(c)]	≤ 25.6% RTP	≤ 25% RTP
3. Intermediate Range Neutron Flux	1[(d)],2	2	F, G	SR 3.3.1.1 SR 3.3.1.8[(b)(c)] SR 3.3.1.9[(b)(c)]	≤ 25.6% RTP	≤ 25% RTP
4. Source Range Neutron Flux	2[(e)]	2	H, I	SR 3.3.1.1 SR 3.3.1.8[(b)(c)] SR 3.3.1.9[(b)(c)]	≤ 1.05 E5 cps	≤ 1.0 E5 cps
	3[(a)],4[(a)],5[(a)]	2	I, J	SR 3.3.1.1 SR 3.3.1.7[(b)(c)] SR 3.3.1.9[(b)(c)]	≤ 1.05 E5 cps	≤ 1.0 E5 cps

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

(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodology used to determine the as-found and as-left tolerances are specified in UFSAR Section 7.2.

(d) Below the P-10 (Power Range Neutron Flux) interlocks.

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

(f) Deleted

(g) Deleted

Table 3.3.1-1 (page 2 of 10)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT
5. Overtemperature ΔT	1,2	3	E	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.6 SR 3.3.1.7[(b)(c)] SR 3.3.1.10[(b)(c)]	Refer to Note 2 (Page 3.3.1-18)	Refer to Note 1 (Page 3.3.1-17)
6. Overpower ΔT	1,2	3	E	SR 3.3.1.1 SR 3.3.1.7[(b)(c)] SR 3.3.1.10[(b)(c)]	Refer to Note 4 (Page 3.3.1-20)	Refer to Note 3 (Page 3.3.1-19)
7. Pressurizer Pressure - Low	1[(h)]	3	L	SR 3.3.1.1 SR 3.3.1.7[(b)(c)] SR 3.3.1.10[(b)(c)]	≥ 1830 psig	≥ 1835 psig
8. Pressurizer Pressure - High	1,2	3	L	SR 3.3.1.1 SR 3.3.1.7[(b)(c)] SR 3.3.1.10[(b)(c)]	≤ 2390 psig	≤ 2385 psig
9. Pressurizer Water Level - High	1[(h)]	3	L	SR 3.3.1.1 SR 3.3.1.7[(b)(c)] SR 3.3.1.10[(b)(c)]	≤ 92.2%	≤ 92.0%
10. Reactor Coolant Flow - Low						
a. Single Loop	1[(i)]	3 per loop	L	SR 3.3.1.1 SR 3.3.1.7[(b)(c)] SR 3.3.1.10[(b)(c)]	≥ 89.6%	90.0%

(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodology used to determine the as-found and as-left tolerances are specified in UFSAR Section 7.2.

(f) Deleted

(g) Deleted

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

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

Table 3.3.1-1 (page 3 of 10)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT
10. Reactor Coolant Flow – Low (continued)						
b. Two Loops	1(j)	3 per loop	L	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c)	≥ 89.6%	90.0%
11. Steam Generator (SG) Water Level – Low Low	1,2	3 per SG	L	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c)	≥ 15.5%	16.0%
12. SG Water Level – Low	1,2	2 per SG	L	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c)	≥ 15.5%	16.0%
Coincident with Steam Flow/Feedwater Flow Mismatch	1,2	2 per SG	L	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c)	≤ 20.7% below rated steam flow	20.0% below rated steam flow
13. Undervoltage – 4.16 kV Buses A and B	1(h)	2 per bus	L	SR 3.3.1.10(b)(c)	≥ 69% bus voltage	≥ 70% bus voltage
14 Underfrequency RCPs Breakers Open	1(h)	2 per bus	N	SR 3.3.1.10(b)(c)	≥ 56.08 Hz	≥ 56.1 Hz

(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodology used to determine the as-found and as-left tolerances are specified in UFSAR Section 7.2.

(f) Deleted

(g) Deleted

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

(j) Above the P-7 (Low Power Reactor Trips Block) interlock and below the P-8 (Power Range neutron Flux) interlock.

Table 3.3.1-1 (page 4 of 10)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT
15. Turbine Trip						
a. Emergency Trip Header Pressure	1(h)	3	L	SR 3.3.1.10(b)(c) SR 3.3.1.13	≥ 901 psig	1000 psig
b. Turbine Stop Valve Closure	1(h)	2	L	SR 3.3.1.10 SR 3.3.1.13	Fully Closed	Fully Closed
16. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)	1,2	2 trains	O	SR 3.3.1.12	NA	NA
17. Reactor Trip System Interlocks						
a. Intermediate Range Neutron Flux, P-6	2(e)	2	P	SR 3.3.1.9(b)(c) SR 3.3.1.11(b)(c)	≥ 6E-11 amp	Nominal 1E-10 amp
b. Low Power Reactor Trips Block, P-7						
1) P10 Input	1	4	Q	SR 3.3.1.9(b)(c) SR 3.3.1.11(b)(c)	≤ 13% RTP	Nominal 10% RTP
2) Turbine Inlet Pressure.	1	2	Q	SR 3.3.1.9(b)(c) SR 3.3.1.11(b)(c)	≤ 13% turbine power	Nominal 10% turbine power

(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodology used to determine the as-found and as-left tolerances are specified in UFSAR Section 7.2.

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

(f) Deleted

(g) Deleted

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

Table 3.3.1-1 (page 5 of 10)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT
17. Reactor Trip System Interlocks (continued)						
c. Power Range Neutron Flux, P-8	1	4	Q	SR 3.3.1.9[(f)(g)] SR 3.3.1.11[(f)(g)]	≤ 48% RTP	Nominal 45% RTP
d. Power Range Neutron Flux, P-10	1,2	4	P	SR 3.3.1.9[(f)(g)] SR 3.3.1.11[(f)(g)]	≥ 7% RTP	Nominal 10% RTP
18. Reactor Coolant Pump (RCP) Breaker Position						
a. Single Loop	1[(i)]	1 per RCP breaker	N	SR 3.3.1.12	NA	NA
b. Two Loops	1[(j)]	1 per RCP breaker	N	SR 3.3.1.12	NA	NA
19. Reactor Trip Breakers (RTBs)						
a. Reactor Trip Breakers[(k)]	1,2	2 trains	O	SR 3.3.1.4	NA	NA
	3[(a)],4[(a)],5[(a)]	2 trains	C	SR 3.3.1.4	NA	NA

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

(f) The instrument channel setpoint shall be reset to a value within the calibration tolerance of the Trip Setpoint at the completion of the surveillance; otherwise, the channel shall be declared inoperable.

(g) If the instrument channel setpoint is less conservative than the Allowable Value, the setpoint shall be reset consistent with the Trip Setpoint and within 12 hours determine the affected channel is OPERABLE; otherwise, the channel shall be declared inoperable.

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

(j) Above the P-7 (Low Power Reactor Trips Block) interlock and below the P-8 (Power Range neutron Flux) interlock.

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

Table 3.3.1-1 (page 6 of 10)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT
19. Reactor Trip Breakers (RTBs) (continued)						
b. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms	1,2	1 each per RTB	S	SR 3.3.1.4	NA	NA
	3[(a)],4[(a)],5[(a)]	1 each per RTB	C	SR 3.3.1.4	NA	NA
20. Automatic Trip Logic	1,2	2 trains	O	SR 3.3.1.5	NA	NA
	3[(a)],4[(a)],5[(a)]	2 trains	C	SR 3.3.1.5	NA	NA

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

Table 3.3.1-1 (page 7 of 10)
Reactor Trip System Instrumentation

Note 1: Overtemperature ΔT

Overtemperature ΔT Trip Setpoint (Those values denoted with [*] are specified in the COLR.)

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

Where: ΔT	=	Measured ΔT by RTD Instrumentation
$\frac{1+\tau_1 S}{1+\tau_2 S}$	=	Lead/Lag compensator on measured ΔT; τ_1 = [*]s, τ_2 = [*]s
$\frac{1}{1+\tau_3 S}$	=	Lag compensator on measured ΔT; τ_3 = [*]s
ΔT_0	=	Indicated ΔT at RATED THERMAL POWER
K_1	=	[*];
K_2	=	[*]/°F;
$\frac{1+\tau_4 S}{1+\tau_5 S}$	=	The function generated by the lead-lag compensator for T_{avg} dynamic compensation;
τ_4 , τ_5	=	Time constants utilized in the lead-lag compensator for T_{avg}, τ_4 = [*]s, τ_5 = [*]s;
T	=	Average temperature, °F;
$\frac{1}{1+\tau_6 S}$	=	Lag compensator on measured T_{avg}; τ_6 = [*]s
T'	$\leq$	[*]°F (Indicated Loop T_{avg} at RATED THERMAL POWER);
K_3	=	[*]/psi;
P	=	Pressurizer pressure, psig;
P'	$\geq$	[*] psig (Nominal RCS operating pressure);
S	=	Laplace transform operator, s^{-1};

Table 3.3.1-1 (page 8 of 10)
Reactor Trip System Instrumentation

Note 1: Overtemperature ΔT (continued)

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

1. For $q_t - q_b$ between – [*]% and + [*]%, f1(ΔI) = 0, where q_t and q_b are percent RATED THERMAL POWER in the top and bottom halves of the core respectively, and $q_t + q_b$ is total THERMAL POWER in percent of RATED THERMAL POWER;

2. For each percent that the magnitude of $q_t - q_b$ exceeds – [*]%, the ΔT Trip Setpoint shall be automatically reduced by [*]% of its value at RATED THERMAL POWER; and

3. For each percent that the magnitude of $q_t - q_b$ exceeds + [*]%, the ΔT Trip Setpoint shall be automatically reduced by [*]% of its value at RATED THERMAL POWER.

Note 2: Overtemperature ΔT

The Overtemperature ΔT Allowable Value shall not exceed the Trip Setpoint by more than 0.5% ΔT span for the ΔT channel, 0.2% ΔT span for the Pressurizer Pressure channel, and 0.4% ΔT span for the f(ΔI) channel.

Table 3.3.1-1 (page 9 of 10)
Reactor Trip System Instrumentation

<u>Note 3: Overpower ΔT</u>

Overpower ΔT Trip Setpoint (Those values denoted with [*] are specified in the COLR.)

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

Where: ΔT = As defined in Note 1,

$\frac{1+\tau_1 S}{1+\tau_2 S}$ = As defined in Note 1,

$\frac{1}{1+\tau_3 S}$ = As defined in Note 1,

ΔT_0 = As defined in Note 1,

K_4 = [*],

K_5 ≥ [*]/°F for increasing average temperature and [*]/°F for decreasing average temperature,

$\frac{\tau_7 s}{1+\tau_7 S}$ = The function generated by the lead-lag compensator for T_{avg} dynamic compensation;

τ_7 = Time constants utilized in the lead-lag compensator for T_{avg}, $\tau_7 \ge$ [*] s,

$\frac{1}{1+\tau_6 S}$ = As defined in Note 1,

K_6 = [*]/°F for T > T”

= [*] for T ≤ T”,

Table 3.3.1-1 (page 10 of 10)
Reactor Trip System Instrumentation

Note 3: Overpower ΔT (continued)

T	= As defined in Note 1,
T”	≤ [*]°F (indicated loop T_{avg} at RTP)
S	= As defined in Note 1, and
f_2 (ΔI)	= [*]

Note 4: Overpower ΔT

The Overpower ΔT Allowable Value shall not exceed the Trip Setpoint by more than 0.5% of ΔT span for the ΔT channel.

3.3 INSTRUMENTATION

3.3.2 Engineered Safety Features 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> In accordance with the Risk Informed Completion Time Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One train inoperable.	--------------------NOTE------------------ One train may be bypassed for up to 8 hours for surveillance testing provided the other train is OPERABLE. -- C.1 Restore train to OPERABLE status.	 6 hours
D. One train inoperable.	-------------------NOTE------------------- One train may be bypassed for up to 8 hours for surveillance testing provided the other train is OPERABLE. -- D.1 Restore train to OPERABLE status.	 6 hours
E. One channel inoperable.	E.1 Place channel in trip.	6 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
F. One channel or train inoperable.	F.1 Restore channel or train to OPERABLE status.	48 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
G. One channel per bus inoperable.	G.1	Restore channel to OPERABLE status.	48 hours
H. One Main Feedwater Pumps trip channel inoperable.	H.1	Restore channel to OPERABLE status.	48 hours
I. One channel inoperable.	I.1	Place channel in trip.	6 hours
J. One Steam Line Isolation Manual Initiation channel or train inoperable.	J.1	Restore channel or train to OPERABLE status.	48 hours
	<u>OR</u>		
	J.2	Declare associated valve inoperable.	48 hours
K. One or more channels inoperable.	K.1	Verify interlock is in required state for existing unit condition.	1 hour
L. Required Action and associated Completion Time of Conditions B or F not met.	L.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	L.2	-------------- NOTE ------------- LCO 3.0.4.a is not applicable when entering MODE 4. -------------------------------------	
		Be in MODE 4.	12 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
M. Required Action and associated Completion Time of Conditions D, E, G, I, J, or K not met.	M.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	M.2	Be in MODE 4.	12 hours
N. Required Action and associated Completion Time of Condition H not met.	N.1	Be in MODE 3.	6 hours
O. Required Action and associated Completion Time of Condition C not met.	O.1	Be in MODE 3.	12 hours
	<u>AND</u>		
	O.2	-------------- NOTE ------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	18 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	------------------------------NOTE------------------------------ Not required to be performed until 96 hours after entering MODE 3. -- Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.2	------------------------------NOTE------------------------------ Not required to be performed for Functions 1.b and 4.b, until 96 hours after entering MODE 3. -- Perform ACTUATION LOGIC TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.3	Perform COT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.4	------------------------------NOTE------------------------------ Verification of relay setpoints not required. -- Perform TADOT.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.2.5	------------------------------NOTE------------------------------ Verification of setpoint not required for manual initiation functions. -- Perform TADOT.	 In accordance with the Surveillance Frequency Control Program
SR 3.3.2.6	------------------------------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

Table 3.3.2-1 (page 1 of 7)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT
1. Safety Injection						
a. Manual Initiation	1,2,3,4	2	B	SR 3.3.2.5	NA	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2	NA	NA
c. Containment Pressure - High	1,2,3	3	E	SR 3.3.2.2 SR 3.3.2.6[b][c]	≤ 4.5 psig	≤ 4.0 psig
d. Pressurizer Pressure - Low	1,2,3[a]	3	E	SR 3.3.2.1 SR 3.3.2.3[b][c] SR 3.3.2.6[b][c]	≥ 1725 psig	≥ 1730 psig
e. High Differential Pressure Between Steam Line Header and any Steam Generator (SG)	1,2,3[a]	3 per steam line	E	SR 3.3.2.1 SR 3.3.2.3[b][c] SR 3.3.2.6[b][c]	≤ 107 psi	≤ 100 psi

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

(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodology used to determine the as-found and as-left tolerances are specified in UFSAR Section 7.2.

Table 3.3.2-1 (page 2 of 7)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT
1. Safety Injection (continued)						
f. Steam Line Flow - High	1,2,3[(d)]	2 per steam line	E	SR 3.3.2.1 SR 3.3.2.3[(b)(c)] SR 3.3.2.6[(b)(c)]	(e)	(f)
Coincident with T_{avg} - Low	1,2,3[(d)]	1 per loop	E	SR 3.3.2.1 SR 3.3.2.3[(b)(c)] SR 3.3.2.6[(b)(c)]	≥ 542.7°F	≥ 543.0°F
g. Steam Line Flow - High	1,2,3[(d)]	2 per steam line	E	SR 3.3.2.1 SR 3.3.2.3[(b)(c)] SR 3.3.2.6[(b)(c)]	(e)	(f)
Coincident with Steam Generator Pressure – Low	1,2,3[(d)]	1 per SG	E	SR 3.3.2.1 SR 3.3.2.3[(b)(c)] SR 3.3.2.6[(b)(c)]	≥ 607 psig[(i)]	614 psig[(i)]
2. Containment Spray						
a. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2	NA	NA

(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodology used to determine the as-found and as-left tolerances are specified in UFSAR Section 7.2.

(d) Above the (T_{avg} - Low) interlock.

(e) Less than or equal to a function defined as ΔP corresponding to 41.2% steam flow at 0% load, and increasing linearly from 20% load to 114.4% steam flow at 100% load.

(f) Less than or equal to a function defined as ΔP corresponding to 40.0% steam flow at 0% load, and increasing linearly from 20% load to 114.0% steam flow at 100% load.

(i) Time constants used in the lead/lag controller are $t_1 \geq 50$ seconds and $t_2 \leq 5$ seconds.

Table 3.3.2-1 (page 3 of 7)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT
2. Containment Spray (continued)						
b. Containment Pressure - High High	1,2,3	3	E	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6[(b)(c)]	≤ 20.7 psig	≤ 20.0 psig
Coincident with Containment Pressure – High	1,2,3	3	E	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6[(b)(c)]	≤ 4.5 psig	≤ 4.0 psig
3. Containment Isolation						
a. Phase A Isolation						
(1) Manual Initiation	1,2,3,4	2	B	SR 3.3.2.5	NA	NA
(2) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2	NA	NA
(3) Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
b. Phase B Isolation						
(1) Manual Initiation	1,2,3,4	2	F	SR 3.3.2.5	NA	NA
(2) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2	NA	NA

(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodology used to determine the as-found and as-left tolerances are specified in UFSAR Section 7.2.

Table 3.3.2-1 (page 4 of 7)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT
3. Containment Isolation						
b. Phase B Isolation (continued)						
(3) Containment Pressure High High	1,2,3	3	I	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6(b)(c)	≤ 20.7 psig	≤ 20.0 psig
Coincident with Containment Pressure - High	1,2,3	3	I	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6(b)(c)	≤ 4.5 psig	≤ 4.0 psig
4. Steam Line Isolation						
a. Manual Initiation	1,2(j),3(j)	1 per steam line	J	SR 3.3.2.5	NA	NA
b. Automatic Actuation Logic and Actuation Relays	1,2(j),3(j)	2 trains	D	SR 3.3.2.2	NA	NA
c. Containment Pressure - High - High	1,2(j),3(j)	3	I	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6(b)(c)	≤ 20.7 psig	≤ 20.0 psig
Coincident with Containment Pressure – High	1,2(j),3(j)	3	I	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6(b)(c)	≤ 4.5 psig	≤ 4.0 psig

(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodology used to determine the as-found and as-left tolerances are specified in UFSAR Section 7.2

(j) Except when all MSIVs are closed and deactivated.

Table 3.3.2-1 (page 5 of 7)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT
4. Steam Line Isolation (continued)						
d. Steam Line Flow – High	1,2[j],3[j]	2 per steam line	I	SR 3.3.2.1 SR 3.3.2.3[b][c] SR 3.3.2.6[b][c]	(e)	(f)
Coincident with T_{avg} – Low	1,2[j],3[j]	1 per loop	E	SR 3.3.2.1 SR 3.3.2.3[b][c] SR 3.3.2.6[b][c]	≥ 542.7°F	≥ 543.0°F
e. Steam Line Flow – High	1,2[j],3[j]	2 per steam line	I	SR 3.3.2.1 SR 3.3.2.3[b][c] SR 3.3.2.6[b][c]	(e)	(f)
Coincident with Steam Generator Pressure – Low	1,2[j],3[j]	1 per SG	I	SR 3.3.2.1 SR 3.3.2.3[b][c] SR 3.3.2.6[b][c]	≥ 607 psig[i]	614 psig[i]

(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodology used to determine the as-found and as-left tolerances are specified in UFSAR Section 7.2.

(e) Less than or equal to a function defined as ΔP corresponding to 41.2% steam flow at 0% load, and increasing linearly from 20% load to 114.4% steam flow at 100% load.

(f) Less than or equal to a function defined as ΔP corresponding to 40.0% steam flow at 0% load, and increasing linearly from 20% load to 114.0% steam flow at 100% load.

(i) Time constants used in the lead/lag controller are $t_1 \geq 50$ seconds and $t_2 \leq 5$ seconds.

(j) Except when all MSIVs are closed and deactivated.

Table 3.3.2-1 (page 6 of 7)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT
5. Feedwater Isolation						
a. Automatic Actuation Logic and Actuation Relays	1,2(k),3(k)	2 trains	D	SR 3.3.2.2	NA	NA
b. SG Water Level – High High	1,2(k),3(k)	3 per SG	I	SR 3.3.2.1 SR 3.3.2.3(b)(c) SR 3.3.2.6(b)(c)	≤ 80.5%	80.0%
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
6. Auxiliary Feedwater						
a. Automatic Actuation Logic and Actuation Relays	1,2,3	2 trains	D	SR 3.3.2.2	NA	NA
b. SG Water Level - Low Low	1,2,3	3 per SG	E	SR 3.3.2.1 SR 3.3.2.3(b)(c) SR 3.3.2.6(b)(c)	≥ 15.5%	16.0%
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
d. Bus Stripping	1,2,3	1 per bus	G	SR 3.3.2.4 SR 3.3.2.6	NA	See LCO 3.3.5, "LOP EDG Start Instrumentation," for Trip Setpoints
e. Trip of all Main Feedwater Pumps Breakers	1,2	1 per breaker	H	SR 3.3.2.4	NA	NA

(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodology used to determine the as-found and as-left tolerances are specified in UFSAR Section 7.2.

(k) Except when 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 7 of 7)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT
7. ESFAS Interlocks						
a. Pressurizer Pressure, P-11	1,2,3	2	K	SR 3.3.2.3 SR 3.3.2.6	≤ 2018 psig	Nominal 2000 psig
b. T_{avg} - Low	1,2,3	2	K	SR 3.3.2.3 SR 3.3.2.6	≥ 542.5°F	Nominal 543 psig

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 5.6.4.	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	Enter the Condition referenced in Table 3.3.3-1 for the channel.	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. As required by Required Action D.1 and referenced in Table 3.3.3-1.	E.1 Be in MODE 3. AND E.2 Be in MODE 4.	6 hours 12 hours
F. As required by Required Action D.1 and referenced in Table 3.3.3-1.	F.1 Initiate action in accordance with Specification 5.6.4.	Immediately

SURVEILLANCE REQUIREMENTS

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

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

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

	FUNCTION	REQUIRED CHANNELS	CONDITION REFERENCED FROM REQUIRED ACTION D.1
1.	Neutron Flux (Wide Range)	2	E
2.	Containment Pressure (Narrow Range)	2	E
3.	Reactor Coolant System (RCS) T_{HOT} Temperature (Wide Range)	2	E
4.	RCS T_{COLD} Temperature (Wide Range)	2	E
5.	RCS Pressure (Wide Range)	2	E
6.	Reactor Vessel Level Monitoring System	2	F
7.	Containment Water Level (Wide Range)	2	E
8.	Containment Pressure (Wide Range)	2	E
9.	Penetration Flow Path Containment Isolation Valve Position	2 per penetration flow path[(a)(b)]	E
10.	Containment Area Radiation (High Range)	2	F
11.	Pressurizer Water Level	2	E
12.	Steam Generator Water Level (Narrow Range)	2 per steam generator	E
13.	Condensate Storage Tank Level	2	E
14.	Core Exit Temperature – Quadrant 1	2[(c)]	E
15.	Core Exit Temperature – Quadrant 2	2[(c)]	E
16.	Core Exit Temperature – Quadrant 3	2[(c)]	E
17.	Core Exit Temperature – Quadrant 4	2[(c)]	E
18.	RWST Water Level	2	E
19.	Steam Generator Pressure	2 per steam generator	E
20.	Emergency Diesel Generator (EDG) Output	1 per required EDG	N/A
21.	4 kV Bus Voltage	1 per required bus	N/A
22.	Safety Injection Pump Status	1 per required pump	N/A

(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 Control Room Emergency Ventilation System (CREVS) Actuation Instrumentation

LCO 3.3.4 The CREVS actuation instrumentation in Table 3.3.4-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.4-1.

ACTIONS

--NOTE--

Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One channel inoperable.	A.1 Place CREVS in recirculation mode.	7 days
B. Two channels inoperable.	B.1.1 Place CREVS in recirculation mode.	Immediately
	<u>AND</u>	
	B.1.2 Restore one channel to OPERABLE status.	7 days
	<u>OR</u>	
	B.2 Place CREVS in recirculation mode with both control room emergency recirculating fans operating.	7 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
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.	6 hours
	AND		
	C.2	--------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. -------------------------------------	
		Be in MODE 4.	12 hours
D. Required Action and associated Completion Time for Condition A or B not met during movement of irradiated fuel assemblies within containment.	D.1	Suspend movement of irradiated fuel assemblies within containment.	Immediately

SURVEILLANCE REQUIREMENTS

---NOTE---
Refer to Table 3.3.4-1 to determine which SRs apply for each CREVS Actuation Function.

SURVEILLANCE		FREQUENCY
SR 3.3.4.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.4.2	Perform COT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.4.3	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program

Table 3.3.4-1 (page 1 of 1)
CREVS Actuation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT
1. Control Room Air Intake Radiation Level	1, 2, 3, 4, 5, 6, (a)	2	SR 3.3.4.1 SR 3.3.4.2[(b)(c)] SR 3.3.4.3[(b)(c)]	≤ 2.83 mR/hr	≤ 2.00 mR/hr
2. Containment Isolation Manual Phase A or Manual Phase B	Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 3, for manual initiation functions and requirements.				
3. Safety Injection	Refer to LCO 3.3.2, Function 1, for all initiation functions and requirements.				

(a) During movement of irradiated fuel assemblies within containment.

(b) The instrument channel setpoint shall be reset to a value within the calibration tolerance of the Trip Setpoint at the completion of the surveillance; otherwise, the channel shall be declared inoperable.

(c) If the instrument channel setpoint is less conservative than the Allowable Value, the setpoint shall be reset consistent with the Trip Setpoint and within 12 hours determine the affected channel is OPERABLE; otherwise, the channel shall be declared inoperable.

3.3 INSTRUMENTATION

3.3.5 Loss of Power (LOP) Emergency Diesel Generator (EDG) Start Instrumentation

LCO 3.3.5 Two channels per bus of the LOP EDG start instrumentation for each Function in Table 3.3.5-1 shall be OPERABLE for each EDG required by LCO 3.8.1, "AC Sources – Operating."

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

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one channel inoperable.	A.1 --------------NOTE-------------- Inoperable channel of one load center may be bypassed for up to 8 hours for surveillance testing of other channels. ------------------------------------ Place channel in trip.	6 hours
B. One or more Functions with two channels per bus inoperable.	B.1 --------------NOTE-------------- Both channels of one load center may be bypassed for up to 8 hours for surveillance testing. ------------------------------------ Restore one channel per bus to OPERABLE status.	1 hour

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
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

---NOTE---

Refer to Table 3.3.5-1 to determine which SRs apply for each LOP EDG Start Function.

SURVEILLANCE		FREQUENCY
SR 3.3.5.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.2	Perform TADOT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.3	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program

Table 3.3.5-1 (page 1 of 1)
Loss of Power (LOP) Emergency Diesel Generator (EDG) Start Instrumentation

FUNCTION	SURVEILLANCE REQUIREMENTS	TRIP SETPOINT
1. 4.16 kV Busses A and B (Loss of Voltage)		
a. Bus Undervoltage	SR 3.3.5.2 SR 3.3.5.3	NA
2. 480V Load Centers (Undervoltage)		
a. Bus Undervoltage	SR 3.3.5.1 SR 3.3.5.2 SR 3.3.5.3	
1) Load centers 3A and 4D		$\geq$ 427V and $\leq$ 433V
2) Load center 3B		$\geq$ 435V and $\leq$ 441V
3) Load centers 3C, 3D, 4B and 4C		$\geq$ 431V and $\leq$ 437V
4) Load center 4A		$\geq$ 432V and $\leq$ 438V
b. Time Delay – Load centers 3A, 3B, 3C, 3D, 4A, 4B, 4C, and 4D	SR 3.3.5.1 SR 3.3.5.2 SR 3.3.5.3	$\geq$ 9 and $\leq$ 11 seconds
3. 480V Load Centers (Degraded Voltage)		
a. Bus Undervoltage	SR 3.3.5.1 SR 3.3.5.2 SR 3.3.5.3	
1) Load center 3A		$\geq$ 421V and $\leq$ 427V
2) Load center 3B		$\geq$ 424V and $\leq$ 430V
3) Load center 3C		$\geq$ 434V and $\leq$ 440V
4) Load center 3D		$\geq$ 432V and $\leq$ 438V
5) Load center 4A		$\geq$ 427V and $\leq$ 433V
6) Load center 4B		$\geq$ 433V and $\leq$ 439V
7) Load center 4C and 4D		$\geq$ 431V and $\leq$ 437V
b. Time Delay – Load centers 3A, 3B, 3C, 3D, 4A, 4B, 4C, and 4D	SR 3.3.5.1 SR 3.3.5.2 SR 3.3.5.3	$\geq$ 30 and $\leq$ 90 seconds

3.3 INSTRUMENTATION

3.3.6 Containment Ventilation Isolation Instrumentation

LCO 3.3.6 The Containment Ventilation Isolation 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. ------------NOTE------------ Only applicable in MODE 1, 2, 3, or 4. -------------------------------- One or more Functions with one or more manual or automatic actuation trains inoperable. <u>OR</u> Required radiation monitoring channel inoperable.	A.1 Enter applicable Conditions and Required Actions of LCO 3.6.3, "Containment Isolation Valves," for instrument air bleed valves made inoperable by isolation instrumentation. <u>AND</u> A.2 Enter applicable Conditions and Required Actions of LCO 3.4.15, "RCS Leakage Detection Instrumentation."	Immediately Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. ------------NOTE------------ Only applicable during movement of recently irradiated fuel assemblies within containment. --------------------------------- One or more Functions with one or more manual or automatic actuation trains inoperable. <u>OR</u> Required radiation monitoring channels inoperable.	B.1	Enter applicable Conditions and Required Actions of LCO 3.9.4, "Containment Penetrations," for containment purge and exhaust isolation valves and instrument air bleed valves made inoperable by isolation instrumentation.	Immediately

SURVEILLANCE REQUIREMENTS

---NOTE---

Refer to Table 3.3.6-1 to determine which SRs apply for each Containment Ventilation Isolation Function.

SURVEILLANCE		FREQUENCY
SR 3.3.6.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.2	Perform COT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.3	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program

Table 3.3.6-1 (page 1 of 2)
Containment Ventilation Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT
1. Containment Isolation Phase A and Phase B					
a. Manual Initiation	See LCO 3.3.2, "ESFAS Instrumentation," Table 3.3.2-1, Items 3.a.1 and 3.a.2, 3.a.3, 3.b.1, and 3.b.2 for containment ventilation isolation requirements.				
b. Automatic Actuation Logic and Actuation Relays					
c. Safety Injection					
2. Containment Radiation					
a. Gaseous	1[(a)],2[(a)] 3[(a)],4[(a)], (b)	1[(c)]	SR 3.3.6.1 SR 3.3.6.2[(d)(e)] SR 3.3.6.3[(d)(e)]	Refer to Note 1 (Page 3.3.6-5)	Refer to Note 1 (Page 3.3.6-5)
b. Particulate	1[(a)],2[(a)] 3[(a)],4[(a)], (b)	1[(c)]	SR 3.3.6.1 SR 3.3.6.2[(d)(e)] SR 3.3.6.3[(d)(e)]	≤ 9.45×10^{-08} μCi/cc	≤ 9.00×10^{-08} μCi/cc

(a) Not applicable to containment purge supply and exhaust isolation valves.

(b) During movement of recently irradiated fuel assemblies within containment.

(c) Only one channel of either particulate or gaseous radioactivity channel is required.

(d) The instrument channel setpoint shall be reset to a value within the calibration tolerance of the Trip Setpoint at the completion of the surveillance; otherwise, the channel shall be declared inoperable.

(e) If the instrument channel setpoint is less conservative than the Allowable Value, the setpoint shall be reset consistent with the Trip Setpoint and within 12 hours determine the affected channel is OPERABLE; otherwise, the channel shall be declared inoperable.

Table 3.3.6-1 (page 2 of 2)
Containment Ventilation Isolation Instrumentation

Note 1: Containment Radiation – Gaseous

Containment Gaseous Monitor Trip Setpoint = $\dfrac{(1.11 \times 10^{-3})}{(\quad F \quad)}$ μCi/cc,

Containment Gaseous Monitor Allowable Value = $\dfrac{(1.17 \times 10^{-3})}{(\quad F \quad)}$ μCi/cc,

Where F = $\dfrac{\text{Actual Purge Flow}}{\text{Design Purge Flow (35,000 CFM)}}$

Setpoint may vary according to current plant conditions provided that the release rate does not exceed allowable limits provided in the Offsite Dose Calculation Manual.

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 ≥ 270,000 gpm and 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 ≥ 270,000 gpm and 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 24 hours after ≥ 90% RTP. -- Verify by precision heat balance that RCS total flow rate is ≥ 270,000 gpm and 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 100°F in any 1-hour period;

b. A maximum cooldown of 100°F in any 1-hour period;

c. A maximum temperature change of 5°F in any 1-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. AND A.2 Determine RCS is acceptable for continued operation.	30 minutes 72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5 with RCS pressure < 500 psig.	6 hours 36 hours

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

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

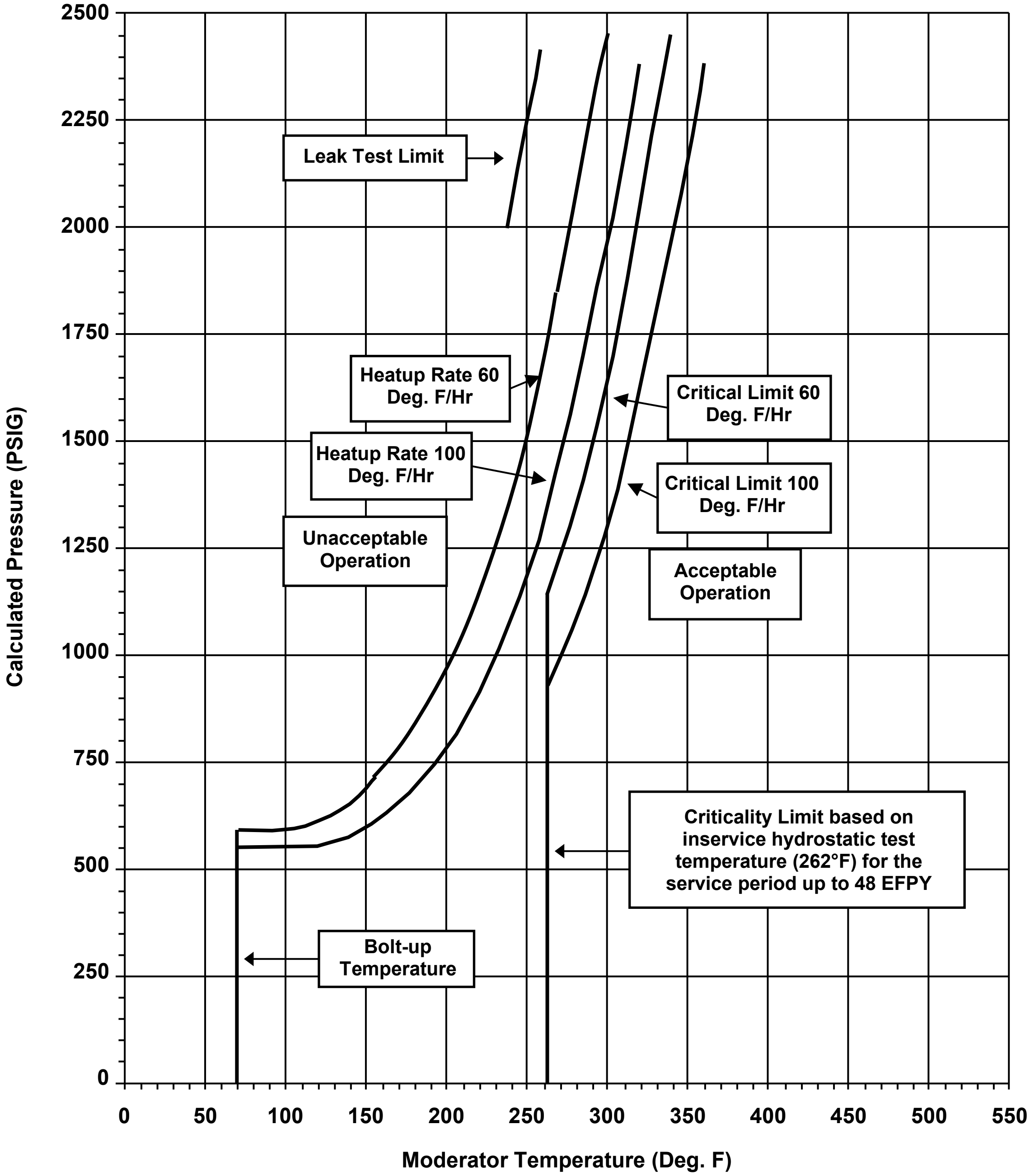

Figure 3.4.3-1 (page 1 of 1)
Reactor Coolant System Heatup Limitations (Heatup Rates of 60 and 100°F/hr)
Applicable for 48 EFPY (Without Margins for Instrumentation Errors)

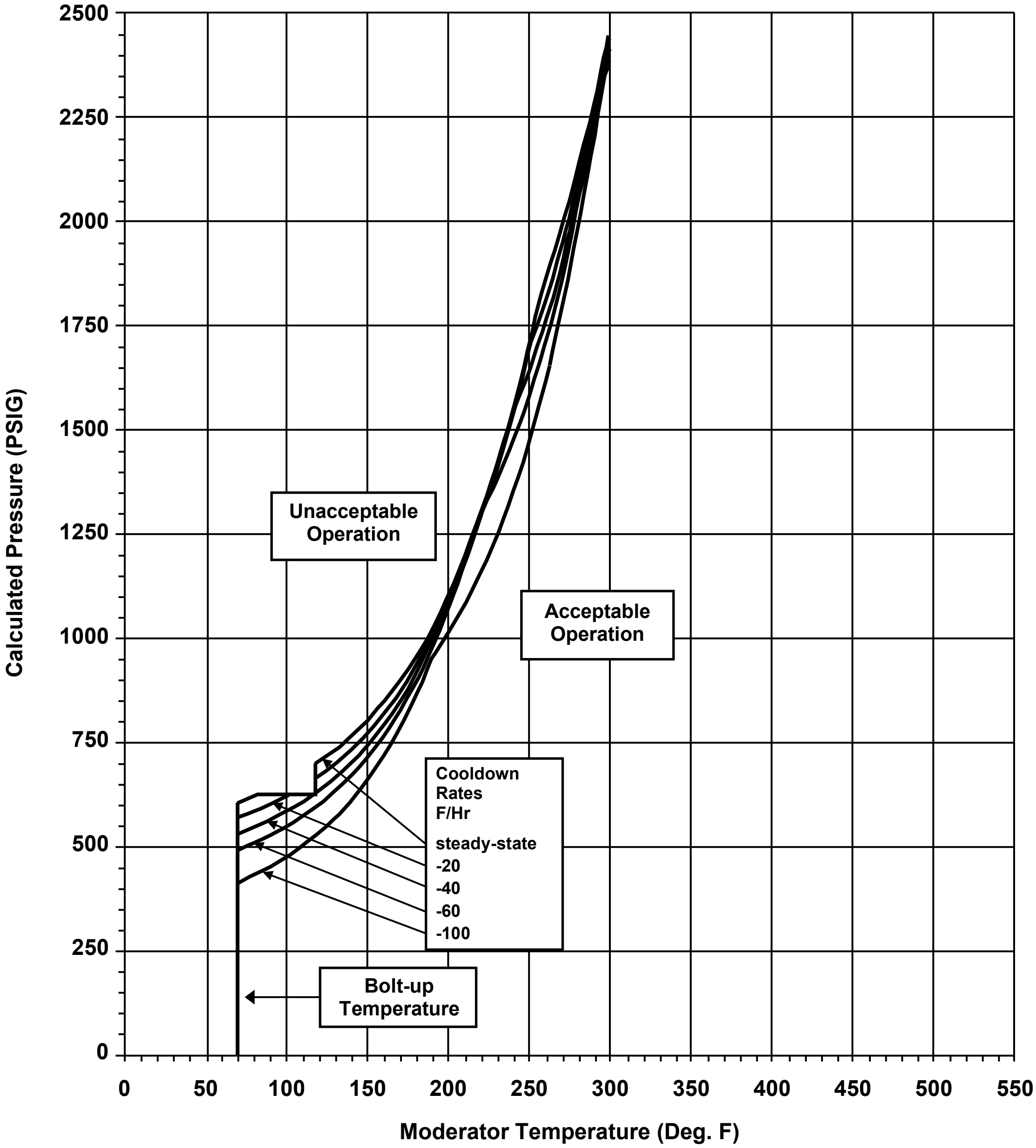

Figure 3.4.3-2 (page 1 of 1)
Reactor Coolant System Cooldown Limitations (Cooldown Rates of 0, 20, 40, 60 and 100°F/hr)
Applicable for 48 EFPY (Without Margins for Instrumentation Errors)

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 either:

a. Two RCS loops shall be in operation when the Rod Control System is capable of rod withdrawal or

b. One RCS loop shall be in operation when the Rod Control System is not capable of rod withdrawal.

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

a. No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1; and

b. Core outlet temperature is maintained at least 10°F below saturation temperature.

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 (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One required RCS loop not in operation with Rod Control System capable of rod withdrawal.	C.1	Restore required RCS loop to operation.	1 hour
	OR		
	C.2	Place the Rod Control System in a condition incapable of rod withdrawal.	1 hour
D. Two required RCS loops inoperable. OR No RCS loops in operation.	D.1	Place the Rod Control System in a condition incapable of rod withdrawal.	Immediately
	AND		
	D.2	Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.	Immediately
	AND		
	D.3	Initiate action to restore one RCS loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.5.2	Verify steam generator secondary side water levels are ≥ 10% for required RCS loops.	In accordance with the Surveillance Frequency Control Program
SR 3.4.5.3	------------------------------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 each required pump.	In accordance with the Surveillance Frequency Control Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Loops - MODE 4

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

---NOTES---

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

    a. No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1; and

    b. Core outlet temperature is maintained at least 10°F below saturation temperature.

2. No RCP shall be started with any RCS cold leg temperature ≤ 275°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. <u>AND</u>	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.2	--------------NOTE-------------- Only required if RHR loop is OPERABLE. ------------------------------------- Be in MODE 5.	24 hours
B. Two required loops inoperable. <u>OR</u> Required loop not in operation.	B.1	Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.	Immediately
	<u>AND</u>		
	B.2	Initiate action to restore one 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

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.6.2	Verify SG secondary side water levels are ≥ 10% for required RCS loops.	In accordance with the Surveillance Frequency Control Program
SR 3.4.6.3	------------------------------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 each required pump.	In accordance with the Surveillance Frequency Control Program
SR 3.4.6.4	------------------------------NOTE------------------------------ Not required to be performed until 12 hours after entering MODE 4. -- Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 RCS Loops - MODE 5, Loops Filled

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

a. One additional RHR loop shall be OPERABLE or

b. The secondary side water level of at least two steam generators (SGs) shall be ≥ 10%.

---NOTES---

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 of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1; and

   b. Core outlet temperature is maintained at least 10°F below saturation temperature.

2. One required RHR loop may be inoperable for up to 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

3. No reactor coolant pump shall be started with one or more RCS cold leg temperatures ≤ 275°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. AND One RHR loop OPERABLE.	A.1 Initiate action to restore a second RHR loop to OPERABLE status. OR A.2 Initiate action to restore required SGs secondary side water level to within limit.	Immediately Immediately
B. One or more required SGs with secondary side water level not within limit. AND One RHR loop OPERABLE.	B.1 Initiate action to restore a second RHR loop to OPERABLE status. OR B.2 Initiate action to restore required SGs secondary side water level to within limit.	Immediately Immediately
C. No required RHR loops OPERABLE. OR Required RHR loop not in operation.	C.1 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1. AND C.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	Verify 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 ≥ 10% in required SGs.	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 each required RHR pump.	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.4	Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 RCS Loops - MODE 5, Loops Not Filled

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

--NOTES--

1. All RHR pumps may be 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 of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1; and

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

2. One RHR loop may be inoperable for ≤ 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 (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. No required RHR loop OPERABLE. OR Required RHR loop not in operation.	B.1	Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.	Immediately
	AND		
	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----------------------------- 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 each required RHR pump.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.8.3	Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 Pressurizer

LCO 3.4.9 The pressurizer shall be OPERABLE with:

a. Pressurizer water level ≤ 92% and

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

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressurizer water level not within limit.	A.1 Be in MODE 3. <u>AND</u> A.2 Fully insert all rods. <u>AND</u> A.3 Place Rod Control System in a condition incapable of rod withdrawal. <u>AND</u> A.4 Be in MODE 4.	6 hours 6 hours 6 hours 12 hours
B. One required group of pressurizer heaters inoperable.	B.1 Restore required group of pressurizer heaters to OPERABLE status.	72 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One required group of pressurizer heaters not capable of being powered from an emergency power supply.	C.1 Restore emergency power supply to required group of pressurizer heaters.	14 days
D. Required Action and associated Completion Time of Condition B or C not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	Verify pressurizer water level is ≤ 92%.	In accordance with the Surveillance Frequency Control Program
SR 3.4.9.2	Verify capacity of each required group of pressurizer heaters is ≥ 125 kW.	In accordance with the Surveillance Frequency Control Program
SR 3.4.9.3	Verify required pressurizer heaters are capable of being powered from an emergency power supply.	In accordance with the Surveillance Frequency Control Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.10 Pressurizer Safety Valves

LCO 3.4.10 Three pressurizer safety valves shall be OPERABLE with lift settings ≥ 2391 psig and ≤ 2514 psig.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 with all RCS cold leg temperatures > 275°F.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One pressurizer safety valve inoperable.	A.1 Restore valve to OPERABLE status.	15 minutes
B. Required Action and associated Completion Time not met. <u>OR</u> Two or more pressurizer safety valves inoperable.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 4 with any RCS cold leg temperatures ≤ 275°F.	6 hours 24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.10.1	Verify each pressurizer safety valve is OPERABLE in accordance with the INSERVICE TESTING PROGRAM. Following testing, lift settings shall be 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 and capable of being manually cycled.	A.1 Close and maintain power to associated block valve.	1 hour
B. One PORV inoperable and not capable of being manually cycled.	B.1 Close associated block valve.	1 hour
	<u>AND</u>	
	B.2 Remove power from associated block valve.	1 hour
C. One block valve inoperable.	-------------------NOTE------------------ Required Actions C.1 and C.2 do not apply when block valve is inoperable solely as a result of complying with Required Action B.2. ---	
	C.1 Close affected block valve.	1 hour
	<u>AND</u>	
	C.2 Remove power from affected block valve.	1 hour

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Required Action and associated Completion Time of Condition C not met.	D.1	Place associated PORV in manual control	1 hour
	AND		
	D.2	Be in MODE 3.	6 hours
	AND		
	D.3	Be in MODE 4.	12 hours
E. Two PORVs inoperable and not capable of being manually cycled.	E.1	Restore one PORV to OPERABLE status.	30 days
F. Two block valves inoperable.	F.1	-------------NOTE---------------- Required Action F.1 does not apply when block valve is inoperable solely as a result of complying with Required Action B.2. ------------------------------------	
		Restore one block valve to OPERABLE status.	30 days
G. Required Action and associated Completion Time of Condition A, B, E, or F not met.	G.1	Be in MODE 3.	6 hours
	AND		
	G.2	Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.11.1	------------------------------NOTES---------------------------- 1. Not required to be performed with block valve closed in accordance with Required Actions of this LCO. 2. Only required to be performed in MODES 1 and 2. -- Perform a complete cycle of each PORV block valve.	In accordance with the INSERVICE TESTING PROGRAM
SR 3.4.11.2	------------------------------NOTE------------------------------- Only required to be performed in MODES 1 and 2. -- Perform a complete cycle of each PORV.	In accordance with the Surveillance Frequency Control Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.12 Overpressure Mitigating Systems (OMS)

LCO 3.4.12 The OMS shall be OPERABLE with the high pressure safety injection flow paths to the RCS isolated and one of the following pressure relief capabilities:

a. Two power operated relief valves (PORVs) with lift settings ≤ 448 psig, or

b. The RCS depressurized and an RCS vent of ≥ 2.20 square inches.

APPLICABILITY: MODE 4 when any RCS cold leg temperature is ≤ 275°F,
MODE 5,
MODE 6 when the reactor vessel head is on.

ACTIONS

--NOTE--

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more high pressure safety injection flow paths to the RCS not isolated.	A.1 Isolate all high pressure safety injection flow paths to the RCS.	4 hours
B. One required PORV inoperable in MODE 4.	B.1 Restore required PORV to OPERABLE status.	7 days
C. One required PORV inoperable in MODE 5 or 6.	C.1 Restore required PORV to OPERABLE status.	24 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Two required PORVs inoperable. <u>OR</u> Required Action and associated Completion Time of Condition A or B not met.	D.1	Depressurize RCS and establish RCS vent of ≥ 2.20 square inches.	24 hours
E. Required Action and associated Completion Time of Condition C not met.	E.1	Depressurize RCS and establish RCS vent of ≥ 2.20 square inches.	24 hours
	<u>OR</u>		
	E.2	Depressurize and vent RCS through at least one open PORV and associated block valve.	24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.12.1	Verify no safety injection pump is capable of injecting into the RCS.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.12.2	Verify required RCS vent ≥ 2.20 square inches open.	In accordance with the Surveillance Frequency Control Program
SR 3.4.12.3	Verify PORV block valve is open for each required PORV.	In accordance with the Surveillance Frequency Control Program
SR 3.4.12.4	-------------------------------NOTE------------------------------ Not required to be performed until 12 hours after decreasing RCS cold leg temperature to ≤ 275°F. --- Perform a COT on each required PORV, excluding actuation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.12.5	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, and

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 (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Required Action and associated Completion Time not met. <u>OR</u> Primary to secondary LEAKAGE not within limit.	C.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	C.2	--------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.13.1	------------------------------NOTES----------------------------- 1. Not required to be performed until 12 hours after establishment of steady state operation. 2. Not applicable to primary to secondary LEAKAGE. --- Verify RCS operational LEAKAGE is within limits by performance of RCS water inventory balance.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.13.2	-------------------------------NOTE------------------------------ Not required to be performed until 12 hours after establishment of steady state operation. --- Verify primary to secondary LEAKAGE is $\leq$ 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 shall be within limit.

AND

The Residual Heat Removal (RHR) System interlock function shall be OPERABLE.

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

ACTIONS

---NOTES---

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more flow paths with leakage from one or more RCS PIVs not within limit.	--------------------NOTE------------------- Each valve used to satisfy Required Action A.1 must have been verified to meet SR 3.4.14.1 and be in the reactor coolant pressure boundary. ---	
	A.1 Isolate the high pressure portion of the affected system from the low pressure portion by use of one closed manual, deactivated automatic, or check valve.	4 hours
	AND	

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.2	Restore RCS PIV to within limits.	72 hours
B. Required Action and associated Completion Time for Condition A not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	--------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. -------------------------------------	
		Be in MODE 4.	12 hours
C. RHR System autoclosure interlock function inoperable.	C.1	Isolate the affected penetration by use of one closed manual or deactivated automatic valve.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.14.1	-------------------------------NOTES------------------------------ 1. Not required to be performed in MODES 3 and 4. 2. Not required to be performed on the RCS PIVs located in the RHR flow path when in the shutdown cooling mode of operation. 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. ---	
	Verify leakage from each RCS PIV is ≤ 5.0 gpm at an RCS pressure ≥ 2215 psig and ≤ 2255 psig and, when current measured leakage is > 1 gpm, the current measured leakage has not exceeded the leakage rate determined by the previous test by an amount that reduces the margin between measured leakage rate and 5.0 gpm by 50%.	In accordance with the INSERVICE TESTING PROGRAM <u>AND</u> 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 <u>AND</u> Within 24 hours following valve actuation due to automatic or manual action or flow through the valve

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.14.2	Verify RHR System autoclosure interlock prevents the valves from being opened with a simulated or actual RCS pressure signal ≥ 525 psig.	In accordance with the Surveillance Frequency Control Program
SR 3.4.14.3	Verify RHR System autoclosure interlock causes the valves to close automatically with a simulated or actual RCS pressure signal ≥ 525 psig.	In accordance with the Surveillance Frequency Control Program

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 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-------------- Not required until 12 hours after establishment of steady state operation. ------------------------------------	
		Perform SR 3.4.13.1.	Once per 24 hours
	<u>AND</u>		
	A.2	Restore required containment sump monitor to OPERABLE status.	30 days

ACTIONS (continued)

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
C. Required containment sump monitor inoperable.	<u>AND</u>		
	C.2	Restore required containment sump monitor to OPERABLE status.	7 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Required Action and associated Completion Time of Condition A or B not met.	D.1	Be in MODE 3.	6 hours
	AND		
	D.2	--------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. -------------------------------------	
		Be in MODE 4.	12 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

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
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------------------- LCO 3.0.4.c is applicable. --	
	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------------------- LCO 3.0.4.c is applicable. --	
	B.1 Restore DOSE EQUIVALENT XE-133 to within limit.	48 hours

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.16.1	-------------------------------NOTE------------------------------ Only required to be performed in MODE 1. --- Verify reactor coolant DOSE EQUIVALENT XE-133 specific activity ≤ 447.7 μCi/gm.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.16.2	-------------------------------NOTE------------------------------ Only required to be performed in MODE 1. --- Verify reactor coolant DOSE EQUIVALENT I-131 specific activity ≤ 0.25 μCi/gm.	In accordance with the Surveillance Frequency Control Program <u>AND</u> 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 Steam Generator (SG) Tube Integrity

LCO 3.4.17 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. AND A.2 Plug the affected tube(s) in accordance with the Steam Generator Program.	7 days Prior to entering MODE 4 following the next refueling outage or SG tube inspection
B. Required Action and associated Completion Time of Condition A not met. OR SG tube integrity not maintained.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.17.1	Verify SG tube integrity in accordance with the Steam Generator Program.	In accordance with the Steam Generator Program
SR 3.4.17.2	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.	24 hours
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3. <u>AND</u> C.2 Reduce RCS pressure to ≤ 1000 psig.	6 hours 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 ≥ 6520 gallons and ≤ 6820 gallons.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.3	Verify nitrogen cover pressure in each accumulator is ≥ 600 psig and ≤ 675 psig.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.4	Verify boron concentration in each accumulator is ≥ 2300 ppm and ≤ 2600 ppm.	In accordance with the Surveillance Frequency Control Program <u>AND</u>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.1.4 (continued)		--------NOTE-------- Only required to be performed for affected accumulators ------------------------ Once within 6 hours after each solution volume increase of ≥ 1% of tank volume 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.	In accordance with the Surveillance Frequency Control Program

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS - Operating

LCO 3.5.2 The following ECCS subsystems shall be OPERABLE.

a. Three high head safety injection (HHSI) subsystems, and

b. Two residual heat removal (RHR) subsystems.

---NOTE---
In MODE 3, HHSI flow paths to the Reactor Coolant System (RCS) may be isolated to support transition into or from Applicability of LCO 3.4.12, "Overpressure Mitigating System (OMS)," when T_{avg} < 380°F.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required HHSI subsystems inoperable.	A.1 Restore HHSI subsystem(s) to OPERABLE status.	72 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
B. One RHR pump inoperable.	B.1 Restore RHR pump to OPERABLE status.	7 days <u>OR</u> In accordance with the Risk Informed Completion Time Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One or more RHR subsystems inoperable for reasons other than Condition B.	C.1	Restore RHR subsystem(s) to OPERABLE status.	72 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
D. ------------NOTE------------ Not applicable when a dual unit shutdown is required. --------------------------------- Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 <u>AND</u> D.2	Be in MODE 3. Be in MODE 4	6 hours 12 hours
E. ------------NOTE------------ Only applicable when a dual unit shutdown is required. --------------------------------- Required Action and associated Completion Time of Condition A, B, or C not met.	E.1 <u>AND</u> E.2	Be in MODE 3. Be in MODE 4.	12 hours 18 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Less than 100% of the ECCS flow equivalent to a single OPERABLE RHR subsystem available. <u>OR</u> Less than 100% of the ECCS flow equivalent to two OPERABLE HHSI subsystems available.	F.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.2.1	--------------------------------NOTE--------------------------- Power may be restored to the valves for ≤ 1 hour for surveillance or maintenance when continuous valve position indication is unavailable in the control room. --- Verify the following valves are in the listed position with power to the valve operator removed. <u>Number</u> / <u>Position</u> / <u>Function</u> 864A and B / Open / Supply from RWST to ECCS 862A and B / Open / RWST Supply to RHR pumps 863A and B / Closed / RHR Recirculation 866A and B / Closed / HHSI to Hot Legs 878A and B / Open / HHSI Header Crosstie HCV-758 / Open / RHR HX Outlet	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.2.2	--------------------------------NOTE--------------------------- Not required to be met for system vent flow paths opened under administrative control. --- 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 locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.4	Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the INSERVICE TESTING PROGRAM
SR 3.5.2.5	Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.6	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.2.7	Verify, for each ECCS throttle valve listed below, each position stop is in the correct position. <u>Valve Number</u> HCV-*-758 MOV-*-872	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.8	Verify, by visual inspection, each ECCS containment sump suction inlet is not restricted by debris and the suction components show 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.

--NOTE--
An RHR train may be considered OPERABLE during alignment and operation for decay heat removal if capable of being manually realigned to the ECCS mode of operation.

APPLICABILITY: MODE 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Required ECCS train inoperable.	A.1	-------------- NOTE ------------- LCO 3.0.4.a is not applicable when entering MODE 4. -------------------------------------	
		Initiate action to restore required ECCS train to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.3.1	The following SRs are applicable for all equipment required to be OPERABLE: SR 3.5.2.3 SR 3.5.2.7 SR 3.5.2.4 SR 3.5.2.8	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. OR 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. AND C.2 --------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.4.1	-----------------------------NOTE------------------------------ Not required to be performed until 24 hours after ambient air temperature is < 39°F or > 100°F. --- Verify RWST borated water temperature is ≥ 39°F and ≤ 100°F.	In accordance with the Surveillance Frequency Control Program
SR 3.5.4.2	Verify RWST borated water volume is ≥ 320,000 gallons.	In accordance with the Surveillance Frequency Control Program
SR 3.5.4.3	Verify RWST boron concentration is ≥ 2400 ppm and ≤ 2600 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. <u>AND</u> B.2 Be in MODE 5.	6 hours 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
SR 3.6.1.2	Verify containment structural integrity in accordance with the Pre-Stressed Concrete Containment Tendon Surveillance Program.	In accordance with the Pre-Stressed Concrete Containment Tendon Surveillance 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----------------- 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. 2. Entry and exit is permissible for 7 days under administrative controls if both air locks are inoperable. ---	
	A.1 Verify the OPERABLE door is closed in the affected air lock.	1 hour
	<u>AND</u>	

ACTIONS (continued)

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

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.2	Lock an OPERABLE door closed in the affected air lock.	24 hours
	AND		
	B.3	--------------NOTE-------------- Air lock doors in high radiation areas may be verified locked closed by administrative means. -------------------------------------	
		Verify an OPERABLE door is locked closed in the affected air lock.	Once per 31 days
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
	AND		
	C.2	Verify a door is closed in the affected air lock.	1 hour
	AND		
	C.3	Restore air lock to OPERABLE status.	24 hours OR In accordance with the Risk Informed Completion Time Program
D. Required Action and associated Completion Time not met.	D.1	Be in MODE 3.	6 hours
	AND		
	D.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.1	------------------------------NOTES---------------------------- 1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. 2. Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1. --- Perform required air lock leakage rate testing in accordance with the Containment Leakage 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 (CIV) shall be OPERABLE.

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

ACTIONS

---NOTES---

1. Penetration flow path(s) except for purge supply and exhaust valve flow paths may be unisolated intermittently under administrative controls.

2. Separate Condition entry is allowed for each penetration flow path.

3. Enter applicable Conditions and Required Actions for systems made inoperable by containment isolation valves.

4. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when isolation valve leakage results in exceeding the overall containment leakage rate acceptance criteria.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ------------NOTE------------ Only applicable to penetration flow paths with two containment isolation valves. -------------------------------- One or more penetration flow paths with one containment isolation valve inoperable 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. <u>AND</u>	4 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program

ACTIONS (continued)

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

ACTIONS (continued)

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.	72 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
	<u>AND</u>		
	C.2	--------------NOTES------------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. ------------------------------------ Verify the affected penetration flow path is isolated.	Once per 31 days following isolation

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. One or more purge valve leakage not within limit.	D.1	Restore leakage within limit.	72 hours
E. Required Action and associated Completion Time not met.	E.1	Be in MODE 3.	6 hours
	AND		
	E.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.3.1	Verify each purge supply and exhaust valve is sealed closed and deactivated or the associated penetration(s) isolated by flange.	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 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

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.6.3.3	------------------------------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 3.6.3.4	Verify the isolation time of each automatic power operated containment isolation valve is within limits.	In accordance with the INSERVICE TESTING PROGRAM
SR 3.6.3.5	------------------------------NOTE------------------------------ Not required to be met for valves in penetrations isolated by blind flanges. -- Perform leakage rate testing for containment purge valves with resilient seals.	In accordance with the Containment Leakage Rate Testing Program
SR 3.6.3.6	Verify each automatic containment isolation valve that is not locked, sealed or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.4 Containment Pressure

LCO 3.6.4 Containment pressure shall be ≥ -2 psig and ≤ +1 psig.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

3.6 CONTAINMENT SYSTEMS

3.6.5 Containment Air Temperature

LCO 3.6.5 Containment average air temperature shall be ≤ 125°F and shall not exceed 120°F by more than 336 equivalent hours during a calendar year.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

3.6 CONTAINMENT SYSTEMS

3.6.6 Containment Spray and Cooling Systems

LCO 3.6.6 Two containment spray trains and three emergency containment cooling units shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One containment spray train inoperable.	A.1	Restore containment spray train to OPERABLE status.	72 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time of Condition A not met.	B.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	B.2	--------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	54 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One emergency containment cooling unit inoperable.	C.1	Restore emergency containment cooling unit to OPERABLE status.	72 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
D. Required Action and associated Completion Time of Condition C not met.	D.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	D.2	-------------- NOTE ------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	12 hours
E. Two containment spray trains inoperable. <u>OR</u> Two or more emergency containment cooling units inoperable.	E.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.6.1	--------------------------------NOTE--------------------------- Not required to be met for system vent flow paths opened under administrative control. --- Verify each containment spray manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.2	Operate each emergency containment cooling unit fan unit for ≥ 15 minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.3	Verify each emergency containment cooling unit cooling water flow rate is ≥ 2000 gpm.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.4	Verify containment spray locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.5	Verify each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the INSERVICE TESTING PROGRAM
SR 3.6.6.6	Verify each automatic containment spray valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.6.7	Verify each containment spray pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.8	Verify each emergency containment cooling unit starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.9	Verify each spray nozzle is unobstructed.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.7 Recirculation pH Control System

LCO 3.6.7 The Recirculation pH Control System shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Recirculation pH Control System inoperable.	A.1 Restore Recirculation pH Control System to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. <u>AND</u> B.2 --------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	6 hours 54 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.7.1	Verify the buffering agent baskets are in place and intact.	In accordance with the Surveillance Frequency Control Program
SR 3.6.7.2	Verify the buffering agent baskets collectively contain > 7500 pound (154 cubic feet) of sodium tetraborate decahydrate, or equivalent.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.1 Main Steam Safety Valves (MSSVs)

LCO 3.7.1 Four 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 or more MSSV inoperable in MODE 1 with the moderator temperature coefficient (MTC) zero or negative. <u>OR</u> One or more steam generators with one or more MSSV inoperable in MODE 2 or 3.	A.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.	4 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. One or more steam generators with one or more MSSV inoperable in MODE 1 with a positive MTC.	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.	4 hours
	<u>AND</u>		
	B.2	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.	36 hours
C. Required Action and associated Completion Time not met. <u>OR</u> One or more steam generators with all MSSVs inoperable.	C.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	C.2	Be in MODE 4.	18 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.1.1	-------------------------------NOTE------------------------------ Only required to be performed in MODES 1 and 2. --- Verify each required MSSV lift setpoint per Table 3.7.1-2 in accordance with the INSERVICE TESTING PROGRAM. Following testing, lift setting shall be within ±1%.	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)
3	44
2	27
1	10

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

VALVE NUMBER			LIFT SETTING (psig ± 3%)
STEAM GENERATOR			
A	B	C	
RV1400	RV1405	RV1410	1085
RV1401	RV1406	RV1411	1100
RV1402	RV1407	RV1412	1105
RV1403	RV1408	RV1413	1105

3.7 PLANT SYSTEMS

3.7.2 Main Steam Isolation Valves (MSIVs)

LCO 3.7.2 Three MSIVs shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One MSIV inoperable in MODE 1.	A.1 Restore MSIV to OPERABLE status.	24 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 2.	6 hours
C. ------------NOTE------------ Separate Condition entry is allowed for each MSIV. -------------------------------- One or more MSIVs inoperable in MODE 2 or 3.	C.1 Close MSIV. <u>AND</u> C.2 Verify MSIV is closed.	8 hours Once per 7 days
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3. <u>AND</u> D.2 Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.2.1	-------------------------------NOTE------------------------------ Only required to be performed in MODES 1 and 2. --- Verify the isolation time of each MSIV is within limits.	In accordance with the INSERVICE TESTING PROGRAM
SR 3.7.2.2	-------------------------------NOTE------------------------------ Only required to be performed in MODES 1 and 2. --- Verify each MSIV 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 Feedwater Isolation Valves (FIVs) and Feedwater Control Valves (FCVs) and Associated Bypass Valves

LCO 3.7.3 Three FIVs, three FCVs, and associated bypass valves shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3 except when FIV, FCV, or associated bypass valve 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 FIVs inoperable.	A.1 Close or isolate FIV. <u>AND</u> A.2 Verify FIV is closed or isolated.	72 hours Once per 7 days
B. One or more FCVs inoperable.	B.1 Close or isolate FCV. <u>AND</u> B.2 Verify FCV is closed or isolated.	72 hours Once per 7 days
C. One or more bypass valves inoperable.	C.1 Close or isolate bypass valve. <u>AND</u> C.2 Verify bypass valve is closed or isolated.	72 hours Once per 7 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Two valves in the same flow path inoperable.	D.1 Isolate affected flow path.	8 hours
E. Required Action and associated Completion Time not met.	E.1 Be in MODE 3. AND E.2 Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.3.1	------------------------------NOTE------------------------------ Only required to be performed in MODES 1 and 2. --- Verify the isolation time of each FIV, FCV, and associated bypass valve is within limits.	In accordance with the INSERVICE TESTING PROGRAM
SR 3.7.3.2	------------------------------NOTE------------------------------ Only required to be performed in MODES 1 and 2. --- Verify each FIV, FCV, and associated bypass valves 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 Secondary Specific Activity

LCO 3.7.4 The specific activity of the secondary coolant shall be ≤ 0.10 μCi/gm DOSE EQUIVALENT I-131.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Verify the specific activity of the secondary coolant is ≤ 0.10 μCI/gm DOSE EQUIVELENT I-131.	In accordance with the Surveillance Frequency Program

3.7 PLANT SYSTEMS

3.7.5 Auxiliary Feedwater (AFW) System

LCO 3.7.5 Two AFW trains and three steam generator steam supplies shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One steam generator steam supply inoperable.	A.1	--------------NOTE-------------- Required Action A.1 is not applicable if two or more steam generator steam supplies are inoperable or one or more AFW trains are inoperable. --------------------------------------	
		Verify each OPERABLE steam generator steam supply is aligned to an OPERABLE AFW train.	4 hours
	<u>AND</u>		
	A.2	Restore steam generator steam supply to OPERABLE status.	7 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. One AFW train inoperable.	B.1	Restore AFW train to OPERABLE status.	72 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
C. Two AFW trains inoperable.	C.1	Restore one AFW train to OPERABLE status.	2 hours
D. ------------NOTE------------ Not applicable when a dual unit shutdown is required. --------------------------------- Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 <u>AND</u> D.2	Be in MODE 3. Be in MODE 4.	6 hours 12 hours
E. ------------NOTE------------ Only applicable when a dual unit shutdown is required. --------------------------------- Required Action and associated Completion Time of Condition A, B, or C not met.	E.1 <u>AND</u> E.2	Be in MODE 3. Be in MODE 4.	12 hours 18 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. ------------NOTE------------ Not applicable when both standby feedwater pumps are capable of providing makeup flow to the steam generators. --------------------------------- Two AFW trains inoperable.	F.1 --------------NOTE-------------- LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. ------------------------------------- Initiate action to restore one AFW train to OPERABLE status.	 Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.5.1	Verify each AFW manual and power operated 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 3.7.5.2	-------------------------------NOTE------------------------------ Only required to be performed in MODE 1. --- Verify each AFW pump operates for ≥ 15 minutes and develops a flow of ≥ 373 gpm to the entrance of the steam generators.	In accordance with the Surveillance Frequency Control Program
SR 3.7.5.3	Verify each AFW automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.7.5.4	------------------------------NOTE------------------------------ Only required to be performed in MODE 1. -- Verify each AFW pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.7.5.5	Verify proper alignment of the required AFW flow paths by verifying flow from the condensate storage tank to each steam generator.	Prior to entering MODE 1 whenever unit has been in MODE 5, MODE 6, or defueled for a cumulative period of > 30 days
SR 3.7.5.6	------------------------------NOTE------------------------------ Only required to be performed in MODE 1. -- Verify the AFW pump discharge valves, steam supply valves, and turbine valves operate as required to deliver the required flow during performance of SR 3.7.5.2.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.6 Condensate Storage Tank (CST)

LCO 3.7.6 The CST System shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CST System inoperable.	A.1 Verify by administrative means availability of backup water supply. <u>AND</u> A.2 Restore CST System to OPERABLE status.	4 hours <u>AND</u> Once per 12 hours thereafter 7 days
B. ------------NOTE------------ Not applicable when a dual unit shutdown is required. -------------------------------- Required Action and associated Completion Time not met.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 4.	6 hours 12 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. ------------NOTE------------ Only applicable when a dual unit shutdown is required. --------------------------------- Required Action and associated Completion Time of Condition A not met.	C.1 <u>AND</u> C.2	Be in MODE 3. Be in MODE 4.	12 hours 18 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.6.1	------------------------------NOTE------------------------------ Only required to be met when the opposite unit is in MODE 1, 2, or 3. --- Verify the CST level is ≥ 420,000 gal.	In accordance with the Surveillance Frequency Control Program
SR 3.7.6.2	------------------------------NOTE------------------------------ Only required to be met when the opposite unit is not in MODE 1, 2, or 3. --- Verify the CST level is ≥ 210,000 gal.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.7 Component Cooling Water (CCW) System

LCO 3.7.7 Two CCW trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One CCW train inoperable.	A.1	--------------NOTE--------------- Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops – MODE 4," for residual heat removal loops made inoperable by CCW. ------------------------------------- Restore CCW train to OPERABLE status.	 72 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time of Condition A not met.	B.1 <u>AND</u> B.2	Be in MODE 3. --------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	6 hours 12 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Two CCW trains inoperable.	C.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.7.7.4	Verify two CCW heat exchangers and one CCW pump are capable of removing design basis heat loads.	In accordance with the Surveillance Frequency Control Program
SR 3.7.7.5	-----------------------------NOTE-------------------------------- Not required to be performed until 72 hours after reaching Reactor Coolant System T_{avg} of 547°F but prior to MODE 2. -- Verify the CCW heat exchanger performance curves by performance test.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.8 Intake Cooling Water (ICW) System

LCO 3.7.8 Two ICW trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One ICW train inoperable.	A.1	--------------NOTE--------------- Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops – MODE 4," for residual heat removal loops made inoperable by ICW. ------------------------------------- Restore ICW train to OPERABLE status.	72 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	B.2	--------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	 12 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.8.1	-------------------------------NOTE------------------------------ Isolation of ICW flow to individual components does not render the ICW inoperable. --- Verify each ICW 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 ICW automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.7.8.3	Verify each ICW 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. ------------NOTE------------ Not applicable when a dual unit shutdown is required. --------------------------------- UHS inoperable.	A.1 Be in MODE 3. AND A.2 --------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------ Be in MODE 4.	6 hours 12 hours
B. -----------NOTE------------- Only applicable when a dual unit shutdown is required. --------------------------------- UHS inoperable.	B.1 Be in MODE 3. AND B.2 ---------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------ Be in MODE 4.	12 hours 18 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.9.1	Verify average water temperature of UHS is ≤ 104°F.	1 hour when UHS temperature is > 100°F <u>AND</u> In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.10 Control Room Emergency Ventilation System (CREVS)

LCO 3.7.10 Two CREVS trains shall be OPERABLE.

AND

Three control room air handling units (AHUs) shall be OPERABLE.

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

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

ACTIONS

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

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. (continued)	C.3	Restore CRE boundary to OPERABLE status.	90 days
D. ------------NOTE------------ Not applicable when a dual unit shutdown is required. -------------------------------- Required Action and associated Completion Time of Condition A, B, or C not met in MODE 1, 2, 3, or 4.	D.1 AND D.2	Be in MODE 3. --------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	6 hours 12 hours
E. ----------NOTE------------- Only applicable when a dual unit shutdown is required. ------------------------------- Required Action and associated Completion Time of Condition A, B, or C not met in MODE 1, 2, 3, or 4.	E.1 AND E.2.	Be in MODE 3. --------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	12 hours 18 hours
F. Required Action and associated Completion Time of Condition A or B not met in MODE 5 or 6, or during movement of irradiated fuel assemblies.	F.1.1 AND F.1.2 OR F.2	Place OPERABLE CREVS train in recirculation mode. Place two OPERABLE control room AHUs in service. Suspend movement of irradiated fuel assemblies.	Immediately Immediately Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
G. Two CREVS trains inoperable due to normal outside air intake isolated.	G.1	Place one CREVS train in recirculation mode.	Immediately
H. Two CREVS trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition C or G.	H.1	Place compensatory filtration unit in service.	24 hours
----------------NOTE------------- Not applicable when a dual unit shutdown is required. -------------------------------------	I.1	Be in MODE 3.	6 hours
I. Two or more control room AHUs inoperable in MODE 1, 2, 3, or 4.	<u>AND</u>		
<u>OR</u>	I.2	Be in MODE 5.	36 hours
Required Action and associated Completion Time of Condition G or H not met in MODE 1, 2, 3, or 4.			

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
----------------NOTE------------- Only applicable when a dual unit shutdown is required. -------------------------------------	J.1	Be in MODE 3.	12 hours
	AND		
J. Two or more control room AHUs inoperable in MODE 1, 2, 3, or 4. OR Required Action and associated Completion Time of Condition G or H not met in MODE 1, 2, 3, or 4.	J.2	Be in MODE 5.	42 hours
K. Two or more control room AHUs inoperable in MODE 5 or 6, or during movement of irradiated fuel assemblies. OR One or more CREVS trains inoperable due to an inoperable CRE boundary in MODE 5 or 6, or during movement of irradiated fuel assemblies.	K.1	Suspend movement of irradiated fuel assemblies.	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
L. Two CREVS trains inoperable in MODE 5 or 6, or during movement of irradiated fuel assemblies, for reasons other than Condition K. OR Required Action and associated Completion Time of Condition G not met in MODE 5 or 6, or during movement of irradiated fuel assemblies.	L.1 Place compensatory filtration unit in service. OR L.2 Suspend movement of irradiated fuel assemblies.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.10.1	Operate each CREVS train for ≥ 15 continuous minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.7.10.2	Perform required CREVS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.10.3	Verify each CREVS train actuates on an actual or simulated actuation signal, except for dampers and valves that are locked, sealed, or otherwise secured in the actuated position.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.7.10.4	Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.	In accordance with the Control Room Envelope Habitability Program

3.7 PLANT SYSTEMS

3.7.11 Control Room Emergency Air Temperature Control System (CREATCS)

LCO 3.7.11 Two CREATCS trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required CREATCS train inoperable. :	A.1 Restore CREATCS train to OPERABLE status.	30 days
B. ------------NOTE------------ Not applicable when a dual unit shutdown is required. -------------------------------- Required Action and associated Completion Time of Condition A not met in MODE 1, 2, 3, or 4.	B.1 Be in MODE 3. <u>AND</u> B.2 --------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------ Be in MODE 4.	6 hours 12 hours
C. ------------NOTE------------ Only applicable when a dual unit shutdown is required. -------------------------------- Required Action and associated Completion Time of Condition A not met in MODE 1, 2, 3, or 4.	C.1 Be in MODE 3. <u>AND</u> C.2 --------------NOTE--------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------ Be in MODE 4.	12 hours 18 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A not met in MODE 5 or 6, or during movement of irradiated fuel assemblies.	D.1 Place OPERABLE CREATCS train in operation. <u>OR</u> D.2 Suspend movement of irradiated fuel assemblies.	Immediately Immediately
E. Two required CREATCS trains inoperable in MODE 5 or 6, or during movement of irradiated fuel assemblies.	E.1 Suspend movement of irradiated fuel assemblies.	Immediately
F. Two required CREATCS trains inoperable in MODE 1, 2, 3, or 4.	F.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.11.1	Verify control room air temperature is ≤ 120°F.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.12 Fuel Storage Pool Water Level

LCO 3.7.12 The fuel storage pool water level shall be ≥ 56 ft 10 inches elevation.

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 3.7.12.1	Verify the fuel storage pool water level is ≥ 56 ft 10 inches elevation.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.13 Fuel Storage Pool Boron Concentration

LCO 3.7.13 The fuel storage pool boron concentration shall be ≥ 2350 ppm.

APPLICABILITY: When fuel assemblies are stored in the fuel storage pool and a fuel storage pool verification has not been performed since the last movement of fuel assemblies in the fuel storage pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Fuel storage pool boron concentration not within limit.	--------------------NOTE------------------- LCO 3.0.3 is not applicable. ---	
	A.1 Suspend movement of fuel assemblies in the fuel storage pool.	Immediately
	<u>AND</u>	
	A.2.1 Initiate action to restore fuel storage pool boron concentration to within limit.	Immediately
	<u>OR</u>	
	A.2.2 Initiate action to perform a fuel storage pool verification.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.13.1	Verify the fuel storage pool boron concentration is within limit.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.14 Spent Fuel Storage

LCO 3.7.14 The combination of initial enrichment, burnup, and cooling time of each fuel assembly stored in the spent fuel pit shall be in accordance with the following:

a. No restrictions on storage of fresh or irradiated fuel assemblies in the cask area storage rack are applicable.

b. Fuel assemblies stored in Region I and II shall be stored in accordance with the requirements of Figures 3.7.14-1 through 3.7.14-3 with credit for burnup and cooling time taken in determining acceptable placement locations for spent fuel in the two-region spent fuel racks. Fresh and irradiated fuel assemblies in the Region I or Region II racks shall be stored in compliance with the following:

1. any 2x2 array of Region I storage cells containing fuel shall comply with the storage patterns in Figure 3.7.14-1 and the requirements of Tables 3.7.14-1 through 3.7.14-3, as applicable. The reactivity rank of fuel assemblies in the 2x2 array (rank determined using Table 3.7.14-4) shall be equal to or less reactive than that shown for the 2x2 array.

2. any 2x2 array of Region II storage cells containing fuel shall:

   i. comply with the storage patterns in Figure 3.7.14-2 and the requirements of Tables 3.7.14-1 through 3.7.14-3, as applicable. The reactivity rank of fuel assemblies in the 2x2 array (rank determined using Table 3.7.14-4) shall be equal to or less reactive than that shown for the 2x2 array,

   ii. have the same directional orientation for Metamic inserts in a contiguous group of 2x2 arrays where Metamic inserts are required, and

   iii. comply with the requirements of LCO 3.7.14.b.3. for cells adjacent to Region I racks.

3. Any 2x2 array of Region II storage cells that interface with Region I storage cells shall comply with the rules of Figure 3.7.14-3.

4. Any fuel assembly may be replaced with a fuel rod storage basket or non-fuel hardware.

LCO 3.7.14 (continued)

5. Storage of Metamic inserts or rod cluster control assemblies (RCCAs) is acceptable in locations designated as empty (water-filled) cells.

6. Fuel in Category I-2 shall meet the minimum IFBA requirement given by the following equation:

   Minimum IFBA = $-22.222 * En^2 + 272.22 * En - 711.96$

   where En is equal to the fresh I-2 enrichment and greater than 3.78 weight percent U-235.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.14.1	Verify by administrative means the initial enrichment, burnup, and cooling time of the fuel assembly is in accordance with the Figure 3.7.14-1 through Figure 3.7.14-3.	Prior to storing the fuel assembly in Region I or II

Table 3.7.14-1 (Page 1 of 1)

Pre-EPU Non-Blanketed Fuel – Coefficients to Calculate the Minimum Required Fuel Assembly Burnup (Bu) as a Function of Enrichment (En) and Cooling time (Ct)
See Notes 1-4 for use of Table 3.7.14-1

	Fuel Category							
Coeff.	**I-3**	**I-4**	**II-1**	**II-2**	**II-3**	**II-4**	**II-5**	**II-6**
A1	46.1221	-15.5280	-2.0590	26.4195	26.4195	-3.7782	-29.0518	-29.0518
A2	-51.4825	13.5960	-2.7964	-23.6884	-23.6884	0.7172	38.3795	38.3795
A3	18.4391	-3.4175	3.0982	6.8587	6.8587	2.1165	-13.3538	-13.3538
A4	-2.0048	0.3637	-0.4715	-0.4980	-0.4980	-0.3342	1.6937	1.6937
A5	-0.4998	-1.0368	0.2161	-1.4442	-1.4442	0.1433	-0.4574	-0.4574
A6	0.3474	1.3335	-0.3773	1.6753	1.6753	-0.1589	0.5477	0.5477
A7	-0.0487	-0.4940	0.1893	-0.5777	-0.5777	0.0725	-0.1803	-0.1803
A8	0.0000	0.0574	-0.0265	0.0632	0.0632	-0.0095	0.0184	0.0184
A9	-38.3233	-96.9847	6.7162	-96.0974	-96.0074	-26.9895	-36.7528	-36.7528
A10	24.6155	94.9777	-18.9681	92.2715	92.2715	23.9367	38.4104	38.4104
A11	-3.5675	-28.3931	10.8797	-25.2863	-25.2863	-2.6264	-5.8631	-5.8631
A12	0.3160	3.0898	-1.2782	2.5516	2.5516	0.1421	0.2201	0.2201
Min. Enrich.	2.00	1.80	1.75	1.55	1.50	1.30	1.15	1.15

Notes:

1. All relevant uncertainties are explicitly included in the criticality analysis. For instance, no additional allowance for burnup uncertainty or enrichment uncertainty is required. For a fuel assembly to meet the requirements of a Fuel Category, the assembly burnup must exceed the “minimum burnup” (GWd/MTU) given by the curve fit for the assembly “cooling time” and “initial enrichment.” The specific minimum burnup required for each fuel assembly is calculated from the following equation. The equation is applicable at enrichments greater than or equal to the value shown as Minimum Enrichment.

$$\mathbf{Bu = (A_1 + A_2{*}En + A_3{*}En^2 + A_4{*}En^3) * exp\,[\,-\,(A_5 + A_6{*}En + A_7{*}En^2 + A_8{*}En^3){*}Ct\,] + A_9 + A_{10}{*}En + A_{11}{*}En^2 + A_{12}{*}En^3}$$

2. Initial enrichment, En, is the nominal ^{235}U enrichment up to 4.0 wt.%.
3. Cooling time, Ct, is in years. Decay (cooling) time credit of 15 years may be used for enrichments less than 2.0 wt.%. Decay (cooling) time credit between 15 and 25 years, inclusive, may be used for any enrichment between 2.0 and 4.0 wt.%, inclusive. An assembly with a cooling time greater than 25 years must use 25 years.
4. This table applies only for pre-EPU non-blanketed fuel assemblies. If a non-blanketed assembly is depleted at EPU conditions, none of the burnup accrued at EPU conditions can be credited (i.e., only burnup accrued at pre-EPU conditions may be used as burnup credit).

Table 3.7.14-2 (Page 1 of 1)

Mid-Enriched Blanketed Fuel – Coefficients to Calculate the Minimum Required Fuel Assembly Burnup (Bu) as a Function of Enrichment (En) and Cooling time (Ct)
See Notes 1-4 for use of Table 3.7.14-2

Coeff.	Fuel Category							
	I-3	**I-4**	**II-1**	**II-2**	**II-3**	**II-4**	**II-5**	**II-6**
A1	-14.0214	0.7356	-10.3764	0.3023	-13.6425	-1.9201	-15.6064	16.2892
A2	11.4137	-1.1927	7.6199	-3.1468	13.5164	2.9502	16.3820	-17.6207
A3	-2.7518	1.4318	-1.2005	2.3278	-2.5923	0.3686	-3.6279	7.2596
A4	0.2743	-0.1832	0.0789	-0.2523	0.1973	-0.0636	0.3114	-0.7399
A5	2.6169	-0.0485	4.8088	0.2364	-0.1211	-0.3267	-0.2816	-0.4164
A6	-2.1487	0.0236	-3.8345	-0.0738	0.1969	0.3766	0.3303	0.5335
A7	0.5878	0.0034	1.0085	-0.0001	-0.0571	-0.1090	-0.0953	-0.1669
A8	-0.0522	-0.0004	-0.0863	0.0016	0.0050	0.0099	0.0087	0.0160
A9	-27.8139	-51.8296	-29.1782	-57.7979	-41.6737	-51.9429	-40.4692	-67.4031
A10	15.7630	41.0704	21.6958	55.4896	42.2351	52.1289	41.5363	74.8527
A11	-0.7370	-8.3986	-3.2089	-13.5089	-8.9287	-11.9184	-8.8545	-19.0424
A12	-0.0324	0.7265	0.2488	1.2360	0.7680	1.0595	0.7866	1.7507
Min. Enrich.	2.00	1.75	1.75	1.55	1.35	1.30	1.30	1.15

Notes:

1. All relevant uncertainties are explicitly included in the criticality analysis. For instance, no additional allowance for burnup uncertainty or enrichment uncertainty is required. For a fuel assembly to meet the requirements of a Fuel Category, the assembly burnup must exceed the “minimum burnup” (GWd/MTU) given by the curve fit for the assembly “cooling time” and “initial enrichment.” The specific minimum burnup required for each fuel assembly is calculated from the following equation. The equation is applicable at enrichments greater than or equal to the value shown as Minimum Enrichment.

$$\mathbf{Bu = (A_1 + A_2{*}En + A_3{*}En^2 + A_4{*}En^3) * exp\,[\,-\,(A_5 + A_6{*}En + A_7{*}En^2 + A_8{*}En^3){*}Ct\,] + A_9 + A_{10}{*}En + A_{11}{*}En^2 + A_{12}{*}En^3}$$

2. Initial enrichment, En, is the nominal ^{235}U enrichment up to 5.0 wt.%. Axial blanket material is not considered when determining enrichment.
3. Cooling time, Ct, is in years. No decay (cooling) time credit may be used for enrichments less than 2.0 wt.%. Decay (cooling) time credit between 0 and 25 years, inclusive, may be used for any enrichment between 2.0 and 5.0 wt.%, inclusive. An assembly with a cooling time greater than 25 years must use 25 years.
4. This table applies only for assemblies with a blanket enrichment ≤ 2.6 wt% ^{235}U.

Table 3.7.14-3 (Page 1 of 1)

Post-EPU Non-Blanketed Fuel – Coefficients to Calculate the Minimum Required Fuel Assembly Burnup (Bu) as a Function of Enrichment (En) and Cooling time (Ct)
See Notes 1-4 for use of Table 3.7.14-3

Coeff.	Fuel Category							
	I-3	**I-4**	**II-1**	**II-2**	**II-3**	**II-4**	**II-5**	**II-6**
A1	32.2479	-4.1991	12.9596	-8.7984	1.2361	-13.6999	-4.4636	16.9460
A2	-32.5873	0.5751	-16.0005	17.5883	3.9352	13.5880	4.4226	-16.9514
A3	10.8045	1.2741	6.3237	-6.8331	-1.1864	-2.6470	0.3955	6.7299
A4	-1.0774	-0.1682	-0.6838	0.8117	0.1753	0.2090	-0.0894	-0.6660
A5	-0.9953	-0.9249	-0.5872	0.0832	0.0667	0.2213	-0.2197	-0.4412
A6	0.9362	0.8428	0.5836	-0.1491	-0.1430	-0.1129	0.2649	0.5695
A7	-0.2713	-0.2310	-0.1721	0.0770	0.0840	0.0290	-0.0800	-0.1805
A8	0.0260	0.0205	0.0169	-0.0095	-0.0112	-0.0025	0.0078	0.0175
A9	-55.7079	-31.2188	-30.7329	-33.6356	-42.2030	-34.7146	-53.7542	-64.6698
A10	40.9920	22.8793	22.0019	18.4614	34.1725	34.4020	56.0845	70.4969
A11	-8.4183	-2.8703	-3.2299	0.7440	-4.6731	-6.5830	-13.3110	-17.5951
A12	0.7732	0.1971	0.2932	-0.2665	0.2560	0.6009	1.2772	1.6628
Min. Enrich.	2.00	1.75	1.75	1.55	1.35	1.30	1.30	1.15

Notes:

1. All relevant uncertainties are explicitly included in the criticality analysis. For instance, no additional allowance for burnup uncertainty or enrichment uncertainty is required. For a fuel assembly to meet the requirements of a Fuel Category, the assembly burnup must exceed the “minimum burnup” (GWd/MTU) given by the curve fit for the assembly “cooling time” and “initial enrichment.” The specific minimum burnup required for each fuel assembly is calculated from the following equation. The equation is applicable at enrichments greater than or equal to the value shown as Minimum Enrichment.

$$\mathbf{Bu = (A_1 + A_2{*}En + A_3{*}En^2 + A_4{*}En^3) * \exp [- (A_5 + A_6{*}En + A_7{*}En^2 + A_8{*}En^3){*}Ct] + A_9 + A_{10}{*}En + A_{11}{*}En^2 + A_{12}{*}En^3}$$

2. Initial enrichment, En, is the nominal ^{235}U enrichment up to 5.0 wt.%.
3. Cooling time, Ct, is in years. No decay (cooling) time credit may be used for enrichments less than 2.0 wt.%. Decay (cooling) time credit between 0 and 25 years, inclusive, may be used for any enrichment between 2.0 and 5.0 wt.%, inclusive. An assembly with a cooling time greater than 25 years must use 25 years.
4. This table applies for all post-EPU non-blanketed assemblies.

Table 3.7.14-4 (page 1 of 1)

Fuel Categories Ranked by Reactivity
See Notes 1-5 for use of Table 3.7.14-3

Region I	I-1	High Reactivity
	I-2	
	I-3	
	I-4	Low Reactivity
Region II	II-1	High Reactivity
	II-2	
	II-3	
	II-4	
	II-5	
	II-6	Low Reactivity

Notes:

1. Fuel Category is ranked by decreasing order of reactivity without regard for any reactivity-reducing mechanisms, e.g., Category I-2 is less reactive than Category I-1, etc. The more reactive fuel categories require compensatory measures to be placed in Regions I and II of the spent fuel pit, e.g., use of water filled cells, Metamic inserts, or full length RCCAs.

2. Any higher numbered fuel category can be used in place of a lower numbered fuel category from the same Region.

3. Category I-1 is fresh unburned fuel up to 5.0 wt% U-235 enrichment.

4. Category I-2 is fresh unburned fuel that obeys the Integral Fuel Burnable Adsorber (IFBA) requirements of LCO 3.7.14.b.6.

5. All Categories except I-1 and I-2 are determined from Tables 3.7.14-1 through 3.7.14-3.

Figure 3.7.14-1 (page 1 of 1)

Allowable Region I Storage Arrays
See Notes 1-8 for use of Figure 3.7.14-1

DEFINITION | ILLUSTRATION

Array I-A
Checkerboard pattern of Category I-1 assemblies and empty (water-filled) cells.

I-1	**X**
X	I-1

Array I-B
Category I-4 assembly in every cell.

I-4	I-4
I-4	I-4

Array I-C
Combination of Category I-2 and I-4 assemblies. Each Category I-2 assembly shall contain a full length RCCA.

I-2	I-4
I-4	I-4

I-2	I-2
I-4	I-4

I-2	I-2
I-2	I-4

I-2	I-2
I-2	I-2

Array I-D
Category I-3 assembly in every cell. One of every four assemblies contains a full length RCCA.

I-3	I-3
I-3	I-3

Notes:

1. In all arrays, an assembly of lower reactivity can replace an assembly of higher reactivity.
2. Category I-1 is fresh unburned fuel up to 5.0 wt% U-235 enrichment.
3. Category I-2 is fresh unburned fuel that obeys the IFBA requirements in LCO 3.7.14.b.6.
4. Categories I-3 and I-4 are determined from Tables 3.7.14-1 through 3.7.14-3.
5. Shaded cells indicate that the fuel assembly contains a full length RCCA.
6. **X** indicates an empty (water-filled) cell.
7. Attributes for each 2x2 array are as stated in the definition. Diagram is for illustrative purposes only.
8. An empty (water-filled) cell may be substituted for any fuel containing cell in all storage arrays.

Figure 3.7.14-2 (page 1 of 1)

Allowable Region II Storage Arrays
See Notes 1-6 for use of Figure 3.7.14-2

<u>DEFINITION</u> | <u>ILLUSTRATION</u>

<u>Array II-A</u>
Category II-1 assembly in three of every four cells;
one of every four cells is empty (water-filled);
the cell diagonal from the empty cell contains a Metamic insert or full length RCCA.

II-1	II-1
X	II-1

X	II-1
II-1	II-1

<u>Array II-B</u>
Checkerboard pattern of Category II-3 and II-5 assemblies with two of every four cells containing a Metamic insert or full length RCCA.

II-3	II-5
II-5	II-3

II-3	II-5
II-5	II-3

<u>Array II-C</u>
Category II-4 assembly in every cell with two of every four cells containing a Metamic insert or full length RCCA.

II-4	II-4
II-4	II-4

II-4	II-4
II-4	II-4

<u>Array II-D</u>
Category II-2 assembly in every cell with three of every four cells containing a Metamic insert or full length RCCA.

II-2	II-2
II-2	II-2

<u>Array II-E</u>
Category II-6 assembly in every cell with one of every four cells containing a Metamic insert or full length RCCA.

II-6	II-6
II-6	II-6

<u>Notes</u>:

1. In all arrays, an assembly of lower reactivity can replace an assembly of higher reactivity.
2. Fuel categories are determined from Tables 3.7.14-1 through 3.7.14-3.
3. Shaded cells indicate that the cell contains a Metamic insert or the fuel assembly contains a full length RCCA.
4. **X** indicates an empty (water-filled) cell.
5. Attributes for each 2x2 array are as stated in the definition. Diagram is for illustrative purposes only.
6. An empty (water-filled) cell may be substituted for any fuel containing cell in all storage arrays.

Figure 3.7.14-3 (page 1 of 2)
Interface Restrictions Between Region I and Region II Arrays
See Notes 1-13 for use of Figure 3.7.14-3

Array I-A – Region II

Array I-A

X	I-1	X	I-1
I-1	X	I-1	X
II-1	X	II-1	X
II-1	II-1	II-1	II-1

Array II-A

Array I-A

X	I-1	X	I-1
I-1	X	I-1	X
II-4	II-4	II-4	II-4
II-4	II-4	II-4	II-4

Array II-C

Array I-A

X	I-1	X	I-1
I-1	X	I-1	X
II-6	II-6	II-6	II-6
II-6	II-6	II-6	II-6

Array II-E

Array I-B – Region II

Array I-B

I-4	I-4	I-4	I-4
I-4	I-4	I-4	I-4
II-1	X	II-1	X
II-1	II-1	II-1	II-1

Array II-A

Array I-B

I-4	I-4	I-4	I-4
I-4	I-4	I-4	I-4
II-2	II-2	II-2	II-2
II-2	II-2	II-2	II-2

Array II-D

Array I-D – Region II

Array I-D

I-3	I-3	I-3	I-3
I-3	I-3	I-3	I-3
II-1	X	II-1	X
II-1	II-1	II-1	II-1

Array II-A

Array I-D

I-3	I-3	I-3	I-3
I-3	I-3	I-3	I-3
II-3	II-5	II-3	II-5
II-5	II-3	II-5	II-3

Array II-B

Array I-D

I-3	I-3	I-3	I-3
I-3	I-3	I-3	I-3
II-3	II-5	II-3	II-5
II-5	II-3	II-5	II-3

Array II-B

Array I-D

I-3	I-3	I-3	I-3
I-3	I-3	I-3	I-3
II-3	II-5	II-3	II-5
II-5	II-3	II-5	II-3

Array II-B

Array I-D

I-3	I-3	I-3	I-3
I-3	I-3	I-3	I-3
II-4	II-4	II-4	II-4
II-4	II-4	II-4	II-4

Array II-C

Array I-D

I-3	I-3	I-3	I-3
I-3	I-3	I-3	I-3
II-4	II-4	II-4	II-4
II-4	II-4	II-4	II-4

Array II-C

Array I-D

I-3	I-3	I-3	I-3
I-3	I-3	I-3	I-3
II-4	II-4	II-4	II-4
II-4	II-4	II-4	II-4

Array II-C

Array I-D

I-3	I-3	I-3	I-3
I-3	I-3	I-3	I-3
II-2	II-2	II-2	II-2
II-2	II-2	II-2	II-2

Array II-D

Array I-D

I-3	I-3	I-3	I-3
I-3	I-3	I-3	I-3
II-2	II-2	II-2	II-2
II-2	II-2	II-2	II-2

Array II-D

Figure 3.7.14-3 (page 2 of 2)
Interface Restrictions Between Region I and Region II Arrays
See Notes 1-13 for use of Figure 3.7.14-3

Notes:

1. In all arrays, an assembly of lower reactivity can replace an assembly of higher reactivity.
2. Fuel categories are determined from Tables 3.7.14-1 through 3.7.14-3.
3. Region I shaded cells indicate that the fuel assembly contains a full length RCCA.
4. Region II shaded cells indicate that the cell contains a Metamic insert or the fuel assembly contains a full length RCCA.
5. X indicates an empty (water-filled) cell.
6. Region I and Region II storage cells do not necessarily align across the interface as shown in the figure. There are no restrictions associated with cell alignment across the interface.
7. If no fuel is stored adjacent to Region II in Region I, then the interface restrictions are not applicable.
8. Array I-A is subject to the following restrictions:
    a. Array I-A shall not interface with Array II-B or II-D.
    b. Array I-A – Array II-A Interface: The Array II-A empty cell shall be placed on the interface.
    c. Array I-A – Array II-C Interface: All required Metamic inserts or RCCAs must be placed along the interface.
    d. Array I-A – Array II-E Interface: All required Metamic inserts or RCCAs must be placed along the interface.
9. Array I-B is subject to the following restrictions:
    a. Array I-B – Array II-A Interface: The Array II-A empty cell shall be placed on the interface.
    b. Array I-B – Array II-D Interface: The Array II-D assemblies on the interface must all contain Metamic inserts or RCCAs.
    c. There are no restrictions for Arrays II-B, II-C or II-E with Array I-B.
10. The same restrictions noted for Array I-B apply to Array I-C, with no additional restrictions on the Region I side regarding Fuel Categories I-2 and I-4.
11. Array I-D is subject to the following restrictions:
    a. Array I-D – Array II-A Interface: The Array II-A empty cell shall be placed on the interface.
    b. Array I-D – Array II-B Interface: A storage cell on the interface in each storage array must contain a Metamic insert or RCCA on at least one side of the interface.
    c. Array I-D – Array II-C Interface: A storage cell on the interface in each storage array must contain a Metamic insert or RCCA on at least one side of the interface.
    d. Array I-D – Array II-D Interface: Either all Array II-D cells on the interface must contain Metamic inserts or RCCAs, or each Region I storage array and each Region II storage array must contain a Metamic insert or RCCA in a storage cell on the interface.
    e. Array I-D – Array II-E Interface: No interface restrictions.
12. This Figure is only applicable to the Region I - Region II interface. There are no restrictions for the interfaces with the Cask Area Rack.
13. An empty (water-filled) cell may be substituted for any fuel containing cell in all storage arrays.

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 unit onsite Class 1E AC Electrical Power Distribution System,

b. Two unit 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 opposite unit onsite Class 1E AC electrical power distribution train(s) needed to support equipment required by LCO 3.5.2, "ECCS – Operating," LCO 3.7.10, "Control Room Emergency Ventilation System (CREVS)," LCO 3.7.11, "Control Room Emergency Air Temperature Control System (CREATCS)," and LCO 3.8.4, "DC Sources – Operating,"

d. Required opposite unit EDG(s) capable of supplying power to equipment required by LCO 3.5.2, LCO 3.7.10, LCO 3.7.11, and LCO 3.8.4, and

e. Automatic load sequencers for Train A and Train B.

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

ACTIONS

---NOTE---

LCO 3.0.4.b is not applicable to EDGs.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One unit offsite circuit inoperable.	A.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit. <u>AND</u>	1 hour <u>AND</u> Once per 8 hours thereafter

ACTIONS (continued)

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 <u>OR</u> In accordance with the Risk Informed Completion Time
B. One required opposite unit offsite circuit inoperable.	B.1	Perform SR 3.8.1.1 for required OPERABLE offsite circuits.	1 hour <u>AND</u> Once per 8 hours thereafter
	<u>AND</u>		
	B.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>		
	B.3	Restore required opposite unit offsite circuit to OPERABLE status.	30 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One required EDG inoperable.	C.1	Perform SR 3.8.1.1 for the offsite circuit(s).	1 hour <u>AND</u> Once per 8 hours thereafter
	<u>AND</u>		
	C.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 C concurrent with inoperability of redundant required feature(s)
	<u>AND</u>		
	C.3.1	Determine OPERABLE EDG(s) is not inoperable due to common cause failure.	24 hours
	<u>OR</u>		
	C.3.2	Perform SR 3.8.1.2 for OPERABLE EDG(s).	24 hours
	<u>AND</u>		
	C.4	Restore required EDG to OPERABLE status.	14 days <u>OR</u> In accordance with the Risk Informed Completion Time Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Two unit offsite circuits inoperable. OR Three offsite circuits inoperable.	D.1	Declare required feature(s) inoperable when its redundant required feature(s) is inoperable.	12 hours from discovery of Condition D concurrent with inoperability of redundant required features
	AND		
	D.2	Restore one unit offsite circuit to OPERABLE status.	24 hours
E. One or two required offsite circuits inoperable. AND One required EDG inoperable.	--------------------NOTE------------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition E is entered with no AC power source to any train. --		
	E.1	Restore required offsite circuit(s) to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program
	OR		
	E.2	Restore required EDG to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
F. One unit EDG inoperable and one required opposite unit EDG inoperable. OR Two required opposite unit EDGs inoperable.	F.1	Verify two high head safety injection subsystems are capable of being powered from OPERABLE EDGs.	2 hours
	AND		
	F.2	Verify two control room air handling units are capable of being powered from OPERABLE EDGs.	2 hours
	AND		
	F.3	Verify one CREVS train is capable of being powered from an OPERABLE EDG.	2 hours
	AND		
	F.4	Verify one CREATCS train is capable of being powered from an OPERABLE EDG.	2 hours
	AND		
	F.5	Restore one required EDG to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
G. Two or more required EDGs inoperable for reasons other than Condition F.	G.1	Restore all but one required EDG to OPERABLE status.	2 hours
H. One automatic load sequencer inoperable.	H.1	Restore automatic load sequencer to OPERABLE status.	72 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
I. -----------NOTE------------- Not applicable when a dual unit shutdown is required. -------------------------------- Required Action and associated Completion Time of Condition A, B, C, D, E, F, G, or H not met.	I.1 <u>AND</u> I.2	Be in MODE 3. --------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------ Be in MODE 4.	6 hours 12 hours
J. ---------NOTES------------- Only applicable when a dual unit shutdown is required. -------------------------------- Required Action and associated Completion Time of Condition A, B, C, D, E, F, G, or H not met.	J.1 <u>AND</u> J.2	Be in MODE 3. --------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------ Be in MODE 4.	12 hours 18 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
K. One required EDG inoperable and two unit offsite circuits inoperable. OR One required EDG inoperable and three offsite circuits inoperable. OR Two or more required offsite circuits inoperable and two or more required EDGs inoperable.	K.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 offsite circuit.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.2	------------------------------NOTES------------------------------ 1. All EDG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 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. --- Verify each EDG starts from standby conditions and achieves steady state voltage ≥ 3950 V and ≤ 4350 V, and frequency ≥ 59.4 Hz and ≤ 60.6 Hz.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.3	------------------------------NOTES------------------------------ 1. EDG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one EDG at a time. 4. This SR shall be preceded by and immediately follow without shutdown a successful performance of SR 3.8.1.2 or SR 3.8.1.7. --- Verify each EDG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 2300 kW and ≤ 2500 kW (Unit 3), ≥ 2650 kW and ≤ 2850 kW (Unit 4).	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.4	Verify each EDG has the following fuel oil volume: a. Unit 3 EDGs day tank and skid tank contains ≥ 2000 gallons of fuel oil. b. Unit 4 EDGs day tank contains ≥ 230 gallons of fuel oil.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.5	Check for and remove accumulated water from each day tank and Unit 3 skid mounted tank.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.6	-----------------------------NOTE------------------------------ Not required to be met for Unit 3 EDGs during use of a temporary Class III fuel storage system as allowed by LCO 3.8.3, "Diesel Fuel Oil, Lube Oil, and Starting Air." --- Verify the fuel oil transfer system operates to automatically transfer fuel oil from the storage tank to the day tank.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.7	-----------------------------NOTE------------------------------ All EDG starts may be preceded by an engine prelube period. --- Verify each EDG starts from standby condition and achieves in ≤ 15 seconds, voltage ≥ 3950 V and ≤ 4350 V, and frequency ≥ 59.4 Hz and ≤ 60.6 Hz.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.8	Verify manual transfer of AC power sources from the auxiliary transformer to the startup transformer.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.9	-----------------------------NOTES----------------------------- 1. For the unit EDGs, 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 plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. 2. If performed with the EDG synchronized with offsite power, it shall be performed at a power factor less than or equal to the power factor of the single largest post accident load. 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. ---	
	Verify each EDG rejects a load greater than or equal to its associated single largest post-accident load, and: a. Following load rejection, the frequency is ≤ 66.25 Hz, b. Within 2 seconds following load rejection, the voltage is ≥ 3950 V and ≤ 4350 V, and c. Within 2 seconds following load rejection, the frequency is ≥ 59.4 Hz and ≤ 60.6 Hz.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.10	------------------------------NOTES----------------------------- 1. For the unit EDGs, 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 plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. 2. If performed with EDG synchronized with offsite power, it shall be performed at a power factor less than or equal to that determined by the diesel loading analysis. 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. ---	
	Verify each EDG does not trip and voltage returns to ≤ 4784 V within 2 seconds following a load rejection of ≥ 2500 kW (Unit 3), ≥ 2874 kW (Unit 4).	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.11	-----------------------------NOTES----------------------------- 1. All EDG starts may be preceded by an engine prelube period. 2. For the unit EDGs, this Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. --	
	Verify on an actual or simulated loss of offsite power signal: a. De-energization of emergency buses, b. Load shedding from emergency buses, c. EDG auto-starts from standby condition and: 1. Energizes permanently connected loads in ≤ 15 seconds, 2. Energizes auto-connected shutdown loads through automatic load sequencer, 3. Maintains steady state voltage ≥ 3950 V and ≤ 4350 V, 4. Maintains steady state frequency ≥ 59.4 Hz and ≤ 60.6 Hz, and 5. Supplies permanently connected and auto-connected shutdown loads for ≥ 5 minutes.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.12	-----------------------------NOTES---------------------------- 1. All EDG starts may be preceded by prelube period. 2. For the unit EDGs, 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 plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. --- Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each EDG auto-starts from standby condition and: a. In ≤ 15 seconds after auto-start and during tests, achieves voltage ≥ 3950 V and frequency ≥ 59.4 Hz, b. Achieves steady state voltage ≥ 3950 V and ≤ 4350 V and frequency ≥ 59.4 Hz and ≤ 60.6 Hz, c. Operates for ≥ 5 minutes, d. Permanently connected loads remain energized from the offsite power system, and e. Emergency loads are energized or auto-connected through the automatic load sequencer from the offsite power system.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.13	------------------------------NOTE------------------------------ For the unit EDGs, 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 plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. --	
	Verify EDG trips made OPERABLE during the test mode of EDG operation are inoperable on actual or simulated loss of voltage signal on the emergency bus concurrent with an actual or simulated ESF actuation signal.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.14	------------------------------NOTES------------------------------ 1. Momentary transients outside the load and power factor ranges do not invalidate this test. 2. If performed with EDG synchronized with offsite power, it shall be performed at a power factor less than or equal to that determined by the diesel loading analysis. 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. ---	
	Verify each EDG operates for ≥ 24 hours: a. For ≥ 2 hours loaded ≥ 2550 kW and ≤ 2750 kW (Unit 3), ≥ 2950 kW and ≤ 3150 kW (Unit 4) and b. For the remaining hours of the test loaded ≥ 2300 kW and ≤ 2500 kW (Unit 3), ≥ 2650 kW and ≤ 2850 kW (Unit 4).	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.15	-----------------------------NOTES---------------------------- 1. This Surveillance shall be performed within 5 minutes of shutting down the EDG after the EDG has operated ≥ 2 hours loaded ≥ 2300 kW and ≤ 2500 kW (Unit 3), ≥ 2650 kW and ≤ 2850 kW (Unit 4). Momentary transients outside of load range do not invalidate this pre-test requirement. 2. All EDG starts may be preceded by an engine prelube period. --- Verify each EDG starts and achieves: a. In ≤ 15 seconds, voltage ≥ 3950 V and frequency ≥ 59.4 Hz and b. Steady state voltage ≥ 3950 V, and ≤ 4350 V and frequency ≥ 59.4 Hz and ≤ 60.6 Hz.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.16	-----------------------------NOTE------------------------------ For the unit EDGs, this Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. --- Verify each EDG: a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power, b. Transfers loads to offsite power source, and c. Returns to ready-to-load operation.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.17	-----------------------------NOTE------------------------------ For the unit EDGs, this Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---	
	Verify, with a EDG operating in test mode and connected to its bus, an actual or simulated ESF actuation signal overrides the test mode by: a. Returning EDG to ready-to-load operation and b. Automatically energizing the emergency load from offsite power.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.18	-----------------------------NOTE------------------------------ For the unit EDGs, this Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---	
	Verify interval between each sequenced load block is within ± 10% of design interval for each emergency load sequencer.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.19	------------------------------NOTES------------------------------ 1. All EDG starts may be preceded by an engine prelube period. 2. For the unit EDGs, this Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---	
	Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal: a. De-energization of emergency buses, b. Load shedding from emergency buses, and c. EDG auto-starts from standby condition and: 1. Energizes permanently connected loads in ≤ 15 seconds, 2. Energizes auto-connected emergency loads through load sequencer, 3. Achieves steady state voltage ≥ 3950 V and ≤ 4350 V, 4. Achieves steady state frequency ≥ 59.4 Hz and ≤ 60.6 Hz, and 5. Supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.20	------------------------------NOTE------------------------------ All EDG starts may be preceded by an engine prelube period. --	
	Verify when started simultaneously from standby condition, each required EDG achieves: a. In ≤ 15 seconds, voltage ≥ 3950 V and frequency ≥ 59.4 Hz and b. Steady state voltage ≥ 3950 V and ≤ 4350 V, and frequency ≥ 59.4 Hz and ≤ 60.6 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, or an alternate 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 generator (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 irradiated fuel assemblies.

ACTIONS

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

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

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.1 Suspend movement of irradiated fuel assemblies.	Immediately
	AND	
	A.2.2 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.	Immediately
	AND	
	A.2.3 Initiate action to restore required offsite power circuit to OPERABLE status.	Immediately
B. One required EDG inoperable.	B.1 Suspend movement of irradiated fuel assemblies.	Immediately
	AND	
	B.2 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.	Immediately
	AND	
	B.3 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 3.8.1.9 through SR 3.8.1.11, SR 3.8.1.13 through SR 3.8.1.16, and SR 3.8.1.18. -- For AC sources required to be OPERABLE, the SRs of Specification 3.8.1, "AC Sources - Operating," except SR 3.8.1.8, SR 3.8.1.12, SR 3.8.1.17, SR 3.8.1.19, and SR 3.8.1.20, are applicable.	 In accordance with applicable SRs

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

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

--NOTE--
The Unit 3 fuel oil storage subsystem may be considered within limits for 10 days when a temporary Class III fuel oil storage subsystem containing greater than or equal to a 7 day supply of fuel oil is used during the Unit 3 fuel oil storage tank cleaning while Unit 3 is in MODES 5, 6, or defueled.

APPLICABILITY: When associated EDG is required to be OPERABLE.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more EDGs with fuel level less than a 7 day supply and greater than a 6 day supply in storage tank.	A.1 Restore fuel oil level to within limits.	48 hours
B. One or more EDGs with lube oil inventory less than a 7 day supply and greater than a 6 day supply.	B.1 Restore lube 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 to within limits.	7 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
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 required starting air receiver pressure < 5 start air pressure and ≥ 160 psig.	E.1 Restore starting air receiver pressure to ≥ 5 start air pressure.	48 hours
F. Required Action and associated Completion Time not met. <u>OR</u> One or more EDGs with diesel fuel oil, lube oil, or starting air subsystem not within limits for reasons other than Condition A, B, C, D, or E.	F.1 Declare associated EDG inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	Verify each fuel oil storage tank contains ≥ a 7 day supply of fuel.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.3.2	Verify lubricating oil inventory is ≥ a 7 day supply.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.3	Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.4	Verify each EDG air start receiver pressure is ≥ 5 start air pressure.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.5	Check for and remove accumulated water from each fuel oil storage tank.	In accordance with the Surveillance Frequency Control Program

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources - Operating

LCO 3.8.4 Four DC electrical power trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required battery charger on one train inoperable.	A.1 Restore battery terminal voltage to greater than or equal to the minimum established float voltage.	2 hours
	AND	
	A.2 Verify battery float current ≤ 2 amps.	Once per 12 hours
	AND	
	A.3 Restore required battery charger to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program
B. ------------NOTE------------ Only applicable when opposite unit is not in MODE 1, 2, 3, or 4. --------------------------------- One DC electrical power train inoperable for reasons other than Condition A.	B.1 Restore DC electrical power train to OPERABLE status.	24 hours OR In accordance with the Risk Informed Completion Time Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One DC electrical power train inoperable for reasons other than Condition A or B.	C.1	Restore DC electrical power train to OPERABLE status.	2 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
D. Required Action and associated Completion Time not met.	D.1	Be in MODE 3.	12 hours
	<u>AND</u>		
	D.2	--------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	18 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.4.1	Verify battery terminal voltage is greater than or equal to the minimum established float voltage.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.4.2	Verify each battery charger supplies ≥ 400 amps (battery chargers associated with battery banks 3A and 4B) and ≥ 300 amps (battery chargers associated with battery banks 3B and 4A) at greater than or equal to the minimum established float voltage for ≥ 8 hours. <u>OR</u> Verify each battery charger can recharge the battery to the fully charged state within 24 hours while supplying the largest combined demands of the various continuous steady state loads, after a battery discharge to the bounding design basis event discharge state.	In accordance with the Surveillance Frequency Control Program
SR 3.8.4.3	-----------------------------NOTES---------------------------- 1. The modified performance discharge test in SR 3.8.6.6 may be performed in lieu of SR 3.8.4.3. 2. This Surveillance shall not be performed on inservice batteries in MODE 1, 2, 3, or 4. Credit may be taken for unplanned events that satisfy this SR. -- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test.	 In accordance with the Surveillance Frequency Control Program

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources - Shutdown

LCO 3.8.5 Three trains of the DC electrical power subsystem shall be OPERABLE.

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

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required battery charger on one train inoperable. AND The redundant required batteries and chargers OPERABLE.	A.1 Restore battery terminal voltage to greater than or equal to the minimum established float voltage.	2 hours
	AND	
	A.2 Verify battery float current ≤ 2 amps.	Once per 12 hours
	AND	
	A.3 Restore battery charger to OPERABLE status.	72 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more required DC electrical power trains inoperable for reasons other than Condition A. OR Required Actions and associated Completion Time of Condition A not met.	B.1 Declare affected required feature(s) inoperable. OR B.2.1 Suspend movement of irradiated fuel assemblies. AND B.2.2 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration. AND B.2.3 Initiate action to restore required DC electrical power trains to OPERABLE status.	Immediately Immediately Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.5.1	-------------------------------NOTE------------------------------ The following SRs are not required to be performed: SR 3.8.4.2 and SR 3.8.4.3. --- For DC sources required to be OPERABLE, the following SRs are applicable: SR 3.8.4.1 SR 3.8.4.2 SR 3.8.4.3	In accordance with applicable SRs

3.8 ELECTRICAL POWER SYSTEMS

3.8.6 Battery Parameters

LCO 3.8.6 Battery parameters for the 125 VDC electrical power subsystem shall be within limits.

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

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required batteries with one or more battery cells float voltage < 2.07 V.	A.1 Perform SR 3.8.4.1. <u>AND</u> A.2 Perform SR 3.8.6.1. <u>AND</u> A.3 Restore affected cell voltage ≥ 2.07 V.	2 hours 2 hours 24 hours
B. One or more required batteries with float current > 2 amps.	B.1 Perform SR 3.8.4.1. <u>AND</u> B.2 Restore battery float current to ≤ 2 amps.	2 hours 12 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. -----------NOTE------------- Required Action C.2 shall be completed if electrolyte level was below the top of plates. -------------------------------- One or more required batteries with one or more cells electrolyte level less than minimum established design limits.	-------------------NOTE-------------------- Required Actions C.1 and C.2 are only applicable if electrolyte level was below the top of plates. ---	
	C.1 Restore electrolyte level to above top of plates.	8 hours
	AND	
	C.2 Verify no evidence of leakage.	12 hours
	AND	
	C.3 Restore electrolyte level to greater than or equal to minimum established design limits.	31 days
D. One or more required batteries with pilot cell electrolyte temperature less than minimum established design limits.	D.1 Restore battery pilot cell temperature to greater than or equal to minimum established design limits.	12 hours
E. One or more required batteries in redundant trains with battery parameters not within limits.	E.1 Restore battery parameters for batteries in two trains to within limits.	2 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met. <u>OR</u> One or more required batteries with one or more battery cells float voltage < 2.07 V and float current > 2 amps. <u>OR</u> Battery parameters not within limits for any reason other than Condition A, B, C, D, or E.	F.1	Declare associated battery inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.6.1	-------------------------------NOTE------------------------------ Not required to be met when battery terminal voltage is less than the minimum established float voltage of SR 3.8.4.1. --- Verify each required battery float current is ≤ 2 amps.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.6.2	Verify each battery pilot cell float voltage is ≥ 2.07 V.	In accordance with the Surveillance Frequency Control Program
SR 3.8.6.3	Verify each battery connected cell electrolyte level is greater than or equal to minimum established design limits.	In accordance with the Surveillance Frequency Control Program
SR 3.8.6.4	Verify each battery pilot cell temperature is greater than or equal to minimum established design limits.	In accordance with the Surveillance Frequency Control Program
SR 3.8.6.5	Verify each battery connected cell float voltage is ≥ 2.07 V.	In accordance with the Surveillance Frequency Control Program
SR 3.8.6.6	-------------------------------NOTE------------------------------ This Surveillance shall not be performed on inservice batteries in MODE 1, 2, 3, or 4. Credit may be taken for unplanned events that satisfy this SR. --- Verify battery capacity is ≥ 80% (87% for batteries 4B and D52 (spare) when used in place of battery 4B) 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 <u>AND</u>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.8.6.6 (continued)	12 months when battery shows degradation, or has reached 85% (75% for batteries 4B and D52 (spare) when used in place of battery 4B) of the expected life with capacity < 100% of manufacturer's rating <u>AND</u> 24 months when battery has reached 85% (75% for batteries 4B and D52 (spare) when used in place of battery 4B) of the expected life with capacity ≥ 100% of manufacturer's rating

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Inverters - Operating

LCO 3.8.7 The required inverters shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required inverter inoperable.	A.1 --------------NOTE-------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating" with any AC vital bus de-energized. ------------------------------------- Restore inverter to OPERABLE status.	24 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	--------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	18 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.7.1	Verify correct inverter voltage, frequency, 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 Two inverters shall be OPERABLE.

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

ACTIONS

---NOTE---

LCO 3.0.3 is not applicable.

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.8.1	Verify correct inverter voltage, frequency, 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 electrical power distribution trains and subsystems shall be OPERABLE:

a. Two unit AC electrical power distribution trains,

b. Required opposite unit AC electrical power distribution train(s) to support equipment required by LCO 3.5.2, "ECCS – Operating," LCO 3.7.10, "Control Room Emergency Ventilation System (CREVS)," LCO 3.7.11, "Control Room Emergency Air Temperature Control System (CREATCS)," and LCO 3.8.4, "DC Sources – Operating,"

c. Four DC electrical power distribution trains,

d. Four unit AC vital electrical power distribution subsystems, and

e. Required opposite unit AC vital electrical power distribution subsystems to support LCO 3.5.2, LCO 3.7.10, LCO 3.7.11, and LCO 3.8.1, "AC Sources – Operating."

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more required AC electrical power distribution trains inoperable.	A.1	--------------NOTE-------------- Enter applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources - Operating," for DC power trains made inoperable by inoperable power distribution trains. ------------------------------------ Restore AC electrical power distribution train to OPERABLE status.	8 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
B. One or more AC vital electrical power distribution subsystems inoperable.	B.1	Restore AC vital bus electrical power distribution subsystem(s) to OPERABLE status.	2 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
C. ------------NOTE------------ Not applicable when opposite unit is in MODE 1, 2, 3, or 4. --------------------------------- One or more opposite unit DC electrical power distribution trains inoperable.	C.1	Restore DC electrical power distribution trains to OPERABLE status.	24 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. One or more DC electrical power distribution trains inoperable for reasons other than Condition C.	D.1	Restore DC electrical power distribution trains to OPERABLE status.	2 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
E. ------------NOTE------------ Not applicable when a dual unit shutdown is required. -------------------------------- Required Action and associated Completion Time of Condition A, B, C, or D not met.	E.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	E.2	--------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------ Be in MODE 4.	12 hours
F. ------------NOTE------------ Only applicable when a dual unit shutdown is required. -------------------------------- Required Action and associated Completion Time of Condition A, B, C, or D not met.	F.1	Be in MODE 3.	12 hours
	<u>AND</u>		
	F.2	--------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------ Be in MODE 4.	18 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
G. Two or more electrical power distribution trains or subsystems inoperable that result in a loss of safety function.	G.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 and DC electrical power distribution trains, and required AC vital electrical power distribution subsystems.	In accordance with the Surveillance Frequency Control Program

3.8 ELECTRICAL POWER SYSTEMS

3.8.10 Distribution Systems - Shutdown

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

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

ACTIONS

--NOTE--

LCO 3.0.3 is not applicable.

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

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.3 Initiate actions to restore required AC and DC electrical power distribution trains, and AC vital electrical power distribution subsystems to OPERABLE status.	Immediately
	<u>AND</u>	
	A.2.4 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 and DC electrical power distribution trains, and AC vital 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 positive reactivity additions. AND A.2 Initiate action to restore boron concentration to within limit.	Immediately 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 Refueling Cavity Water Level

LCO 3.9.2 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 3.9.2.1	Verify refueling cavity water level is ≥ 23 ft above the top of reactor vessel flange.	In accordance with the Surveillance Frequency Control Program

3.9 REFUELING OPERATIONS

3.9.3 Nuclear Instrumentation

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

AND

One source range audible alarm circuit shall be OPERABLE.

APPLICABILITY: MODE 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required source range neutron flux monitor inoperable.	A.1 Suspend positive reactivity additions. AND A.2 ------------ NOTE ------------- Fuel assemblies, sources, and reactivity control components may be moved if necessary to restore an inoperable source range neutron flux monitor or to complete movement of a component to a safe condition. ---------------------------------- Suspend movement of fuel, sources, and reactivity control components within the reactor vessel.	Immediately Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Two required 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
C. Required source range audible alarm circuit inoperable.	C.1 Initiate action to isolate unborated water sources.	Immediately

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	Perform COT.	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 is closed and held in place by four bolts,

b. One door in each air lock is capable of being closed, and

c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere is either:

1. Closed by a manual or automatic isolation valve, blind flange, or equivalent or

2. Capable of being closed by an OPERABLE Containment Ventilation Isolation System.

--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------------------------------ Not required to be met for containment ventilation isolation valve(s) in penetrations closed to comply with LCO 3.9.4.c.1. --- Verify each required containment ventilation isolation valve actuates to the isolation position on an actual or simulated actuation signal.	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 of coolant into the Reactor Coolant System with boron concentration less than that 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 of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately
	<u>AND</u>	
	A.2 Suspend loading irradiated fuel assemblies in the core.	Immediately
	<u>AND</u>	
	A.3 Initiate action to satisfy RHR loop requirements.	Immediately
	<u>AND</u>	

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.9.5.2	Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

3.9 REFUELING OPERATIONS

3.9.6 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 degrees F below saturation temperature,

    b. No operations are permitted that would cause introduction of coolant into the Reactor Coolant System (RCS) with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1, and

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

2. One required RHR loop may be inoperable for up to 2 hours for surveillance testing, provided that the other RHR loop is OPERABLE and in operation.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Less than the required number of RHR loops OPERABLE.	A.1 Initiate action to restore required RHR loops to OPERABLE status. <u>OR</u> A.2 Initiate action to establish ≥ 23 ft of water above the top of reactor vessel flange.	Immediately Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. No RHR loop in operation.	B.1 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	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 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>	

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.5.2 Verify each penetration is capable of being closed by an OPERABLE Containment Ventilation 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 ≥ 3000 gpm.	In accordance with the Surveillance Frequency Control Program
SR 3.9.6.2	Verify correct breaker alignment and indicated power available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.9.6.3	Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

4.0 DESIGN FEATURES

4.1 Site Location

The site is approximately 25 miles south of Miami, 8 miles east of Florida City and 9 miles southeast of Homestead, Florida.

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-4, **ZIRLO®**, **Optimized** ZIRLO™, or **AXIOM®** fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO_2), with or without dopants, as fuel material. Limited substitutions of stainless steel filler rods for fuel rods, or by vacant rod positions, 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.

4.2.2 Control Rod Assemblies

The reactor core shall contain 45 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,

b. $k_{eff} \leq 0.95$ if fully flooded with water borated to 550 ppm, which includes an allowance for biases and uncertainties as described in Section 9.5 of the UFSAR,

c. $k_{eff} \leq 1.0$ if fully flooded with unborated water, which includes an allowance for biases and uncertainties as described in Section 9.5 of the UFSAR,

d. A nominal 10.6 inch center to center distance between fuel assemblies placed in Region I of the fuel storage racks,

e. A nominal 9.0 inch center to center distance between fuel assemblies placed in Region II of the fuel storage racks,

4.0 DESIGN FEATURES

4.3 Fuel Storage (continued)

f. A nominal 10.1 inch center to center distance in the east-west direction and a nominal 10.7 inch center to center distance in the north-south direction for the cask area storage rack,

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 4.25 weight percent if the assemblies contain no burnable adsorber rods,

b. Fuel assemblies having a maximum U-235 enrichment of 5.0 weight percent if the assemblies contain at least 16 integral fuel burnable adsorber rods.

c. A nominal 21 inch center to center distance between fuel assemblies placed in the storage racks to assure $k_{eff} \leq 0.98$ for optimum moderation conditions, and

d. A nominal 21 inch center to center distance between fuel assemblies placed in the storage racks to assure $k_{eff} \leq 0.95$ for fully flooded conditions.

4.3.2 Drainage

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below a level of 6 feet above the fuel assemblies in the storage racks.

4.3.3 Capacity

The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 1535 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 either 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 both units are 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 including the plant-specific titles of those personnel fulfilling the responsibilities of the positions delineated in these Technical Specifications shall be documented in the Quality Assurance Topical Report or Updated Final Safety Analysis Report,

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.

5.2.2 Unit Staff

The unit staff organization shall include the following:

a. A total of three non-licensed operators shall be assigned to the units at all times with one non-licensed operator assigned to each reactor.

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.e 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.

5.2 Organization

5.2.2 Unit Staff (continued)

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. The operations manager or assistant operations manager shall hold an SRO license.

e. 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 of ANSI N18.1-1971, except for the radiation protection manager who shall meet or exceed the qualifications of Regulatory Guide 1.8, September 1975. The staff not covered by ANSI N18.1-1971 shall meet or exceed the minimum qualifications of Regulations, Regulatory Guides, or ANSI Standards acceptable to NRC staff.

5.3.2 For the purpose of 10 CFR 55.4, a licensed senior reactor operator (SRO) and a licensed reactor operator (RO) are those individuals who, in addition to meeting the requirements of Specification 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 required by the Quality Assurance Topical Report,

b. The emergency operating procedures required to implement the requirements of NUREG-0737 and to NUREG-0737, Supplement 1, as stated in Generic Letter 82-33,

c. Quality assurance for effluent and environmental monitoring, and

d. 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 Radioactive Effluent Release Reports required by Specification 5.6.1 and Specification 5.6.2.

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 Containment Spray, Safety Injection, and Chemical and Volume Control Systems. The program shall include the following:

a. Preventive maintenance and periodic visual inspection requirements and

b. Integrated leak test requirements for each system in accordance with the Surveillance Frequency Control Program.

The provisions of SR 3.0.2 are applicable.

5.5.3 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,

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,

5.5 Programs and Manuals

5.5.3 Radioactive Effluent Controls Program (continued)

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

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.

5.5.4 Pre-Stressed Concrete Containment Tendon Surveillance Program

This program provides controls for monitoring any tendon degradation in pre-stressed concrete containments, including effectiveness of its corrosion protection medium, to ensure containment structural integrity. The program shall include baseline measurements prior to initial operations. The Tendon Surveillance Program, inspection frequencies, and acceptance criteria shall be in accordance with Section XI, Subsection IWL of the ASME Boiler and Pressure Vessel Code and applicable addenda as required by 10 CFR 50.55a, except where an alternative, exemption, or relief has been authorized by the NRC.

The provisions of SR 3.0.3 are applicable to the Tendon Surveillance Program inspection frequencies.

5.5 Programs and Manuals

5.5.5 Reactor Coolant Pump (RCP) Flywheel Inspection Program

This program shall provide for the inspection of each RCP flywheel at least once every 20 years by either conducting an in-place ultrasonic examination over the volume from the inner bore of the flywheel to the circle of one-half the outer radius, or by conducting a surface examination (magnetic particle and/or liquid penetrant) of exposed surfaces of the disassembled flywheel.

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

b. Performance criteria for SG tube integrity. SG tube integrity shall be maintained by meeting the performance criteria for tube structural integrity, accident induced leakage, and operational LEAKAGE.

   1. Structural integrity performance criterion: All 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), all anticipated transients included in the design specification and design basis accidents. This includes retaining a safety factor of 3.0 against burst under normal steady state full power operation primary-to-secondary pressure differential and a safety factor of 1.4 against burst applied to the design basis accident primary-to-secondary pressure differentials. Apart from the above requirements, additional loading conditions associated with the design basis accidents, or combination of accidents in accordance with the design and licensing basis, shall also be evaluated to determine if the associated loads contribute significantly to burst or collapse. In the assessment of tube integrity, those loads that do significantly affect burst or collapse shall be determined and assessed in combination with the loads due to pressure with a safety factor of 1.2 on the combined primary loads and 1.0 on axial secondary loads.

5.5 Programs and Manuals

5.5.6 Steam Generator (SG) Program (continued)

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 0.60 gpm total through all SGs and 0.20 gpm through any one SG at room temperature conditions.

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

c. Provisions for SG tube plugging criteria. Tubes found by inservice inspection to contain flaws with a depth equal to or exceeding 40% of the nominal tube wall thickness shall be plugged.

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

1. Tubes with service-induced flaws located greater than 18.11 inches below the top of the tubesheet do not require plugging. Tubes with service-induced flaws located in the portion of the tube from the top of the tubesheet to 18.11 inches below the top of the tubesheet shall be plugged upon detection.

d. Provisions for SG tube inspections. Periodic SG tube inspections shall be performed. 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 except for any portions of the tube that are exempt from inspection by alternate repair criteria, and that may satisfy the applicable tube plugging criteria. 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.

5.5 Programs and Manuals

5.5.6 Steam Generator (SG) Program (continued)

2. After the first refueling outage following SG installation, inspect 100% of the tubes in each SG at least every 54 effective full power months, which defines the inspection period. If none of the SG tubes have ever experienced cracking other than in regions that are exempt from inspection by alternate repair criteria and the SG inspection was performed with enhanced probes, the inspection period may be extended to 72 effective full power months. Enhanced probes have a capability to detect flaws of any type equivalent to or better than array probe technology. The enhanced probes shall be used from the tube-to-tubesheet weld at the tube inlet to the tube-to-tubesheet weld at the tube outlet except any portions of the tube that are exempt from inspection by alternate repair criteria. If there are regions where enhanced probes cannot be used, the tube inspection techniques shall be capable of detecting all forms of existing and potential degradation in that region.

3. If crack indications are found in any SG tube excluding any region that is exempt from inspection by alternate repair criteria, then the next inspection for each affected and potentially affected SG for the degradation mechanism that caused the crack indication shall be at the next refueling outage, but may be deferred to the following outage if the 100% inspection of all SGs was performed with enhanced probes as described in paragraph d.2. 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.

e. Provisions for monitoring operational primary to secondary LEAKAGE.

5.5.7 Secondary Water Chemistry Program

This program provides controls for monitoring secondary water chemistry to inhibit SG tube degradation. 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,

5.5 Programs and Manuals

5.5.7 Secondary Water Chemistry Program (continued)

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.

5.5.8 Ventilation Filter Testing Program (VFTP)

A program shall be established to implement the following required testing of filter ventilation systems at a Frequency in accordance with the Surveillance Frequency Control Program and 1) after 720 hours of system operation, or 2) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or 3) following exposure of the filters to effluents from painting, fire, or chemical release in any ventilation zone communicating with the system that may have an adverse effect on the functional capability of the system, or 4) after complete or partial replacement of a filter bank, and in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2 and ASTM D3803-1989.

a. Demonstrate for ventilation systems that an inplace test of the high efficiency particulate air (HEPA) filters shows a penetration and system bypass < 0.05% when tested at the system flowrate specified below ± 10%.

Ventilation System	Flowrate
Control Room Emergency Ventilation System	1000 cfm

b. Demonstrate for ventilation systems that an inplace test of the charcoal adsorber shows a penetration and system bypass < 1% when tested in accordance with ASTM D3803-1989 at the system flowrate specified below ± 10%.

Ventilation System	Flowrate
Control Room Emergency Ventilation System	1000 cfm

c. Demonstrate for Control Room Emergency Ventilation System 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, shows the methyl iodide penetration less than 2.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86°F) and the relative humidity of 95%.

5.5 Programs and Manuals

5.5.8 Ventilation Filter Testing Program (VFTP) (continued)

d. Demonstrate for ventilation systems that the pressure drop across the combined HEPA filters and the charcoal adsorbers is less than the value specified below when tested at the system flowrate specified below ± 10%.

Ventilation System	Delta P	Flowrate
Control Room Emergency Ventilation System	6" w.g	1000 cfm

e. Verify by a visual inspection the absence of foreign materials and gasket deterioration.

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

5.5.9 Gas Decay Tank Explosive Gas and Radioactivity Monitoring Program

This program provides controls for potentially explosive gas mixtures and the quantity of radioactivity contained in the gas decay tanks. The gaseous radioactivity quantities shall be determined following the methodology in Branch Technical Position (BTP) ETSB 11-5, "Postulated Radioactive Release due to Waste Gas System Leak or Failure."

The program shall include:

a. The limits for concentrations of hydrogen and oxygen in the gas decay tanks 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) and

b. A surveillance program to ensure that the quantity of radioactivity contained in the gas decay 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.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Gas Decay Tank Explosive Gas and Radioactivity Monitoring Program surveillance frequencies.

5.5 Programs and Manuals

5.5.10 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. A clear and bright appearance with proper color or a water and sediment content within limits.

b. Within 30 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, and

c. Total particulate concentration of the fuel oil is ≤ 10 mg/l when tested in accordance with the Surveillance Frequency Control Program.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Diesel Fuel Oil Testing Program test frequencies.

5.5.11 Technical Specifications (TS) Bases Control Program

This program provides a means for processing changes to the Bases of these Technical Specifications.

a. Changes to the Bases of the TS shall be made under appropriate administrative controls and reviews.

b. Licensees may make changes to Bases without prior NRC approval provided the changes do not require either of the following:

   1. A change in the TS incorporated in the license or

   2. A change to the updated 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.

5.5 Programs and Manuals

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

d. Proposed changes that meet the criteria of Specification 5.5.11b 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).

5.5.12 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 limitations and remedial or compensatory actions may be identified to 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 no concurrent loss of onsite diesel generator(s), a safety function assumed in the accident analysis cannot be performed. For the purpose of this program, a loss of safety function may exist when a support system is inoperable, and:

a. A required system redundant to the system(s) supported by the inoperable support system is also inoperable, or

b. A required system redundant to the system(s) in turn supported by the inoperable supported system is also inoperable, or

c. A required system redundant to the support system(s) for the supported systems (a) and (b) above is also inoperable.

5.5 Programs and Manuals

5.5.12. Safety Function Determination Program (SFDP) (continued)

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

5.5.13 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 Nuclear Energy Institute (NEI) 94-01, Revision 3-A, "Industry Guidance for Implementing Performance Based Options of 10 CFR 50 Appendix J," and the conditions and limitations specified in NEI 94-01, Revision 2-A, with the following deviations or exceptions:

   1. A vacuum test may be performed in lieu of a pressure test for airlock door seals.

b. The calculated peak containment internal pressure for the design basis loss of coolant accident, P_a, is defined here as the containment design pressure of 55 psig.

c. The maximum allowable containment leakage rate, L_a, at P_a, shall be 0.20% of containment air weight per day.

d. Leakage rate acceptance criteria are:

   1. Containment leakage rate acceptance criterion is 1.0 L_a. During the first unit startup following testing in accordance with this program, the leakage rate acceptance criteria are < 0.60 L_a for the Type B and C tests and ≤ 0.75 L_a, for Type A tests.

   2. Overall air lock leakage rate acceptance criterion is ≤ 0.05 L_a, when tested at ≥ 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 Programs and Manuals

5.5.14 Battery Monitoring and Maintenance Program

This program provides controls for battery restoration and maintenance. The program shall be in accordance with IEEE Standard (Std) 450-2010, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," as endorsed by Regulatory Guide 1.129, Revision 3 (RG), and program provisions as identified below:

a. Actions to restore battery cells with float voltage < 2.13 V;

b. Actions to determine whether the float voltage of the remaining battery cells is ≥ 2.13 V when the float voltage of a battery cell has been found to be < 2.13 V;

c. Actions to equalize and test battery cells that had been discovered with electrolyte level below the top of the plates; and

d. Limits on average electrolyte temperature, battery connection resistance, and battery terminal voltage.

5.5.15 Control Room Envelope (CRE) Habitability Program

A Control Room Envelope (CRE) Habitability Program shall be established and implemented to ensure that CRE habitability is maintained such that, with an OPERABLE Control Room Emergency Ventilation System (CREVS), CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem total effective dose equivalent (TEDE) for the duration of the accident. The program shall include the following elements:

a. The definition of the CRE and the CRE boundary.

b. Requirements for maintaining the CRE boundary in its design condition including configuration control and preventive maintenance.

c. Requirements for (i) determining the unfiltered air inleakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003, and (ii) assessing CRE habitability at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

5.5 Programs and Manuals

5.5.15 Control Room Envelope (CRE) Habitability Program (continued)

d. Measurement, at designated locations, of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation with one CREVS train operating at the flow rate required by the VFTP, at a Frequency in accordance with the Surveillance Frequency Control Program. The results shall be trended and used as part of the assessment of the CRE boundary.

e. The quantitative limits on unfiltered air inleakage into the CRE. 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 DBA consequences. Unfiltered air inleakage limits for hazardous chemicals must ensure that exposure of CRE occupants to these hazards will be within the assumptions in the licensing basis.

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

5.5.16 Surveillance Frequency Control Program

The program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met.

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

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

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.

5.5 Programs and Manuals

5.5.17 Risk Informed Completion Time Program

This program provides controls to calculate a Risk Informed Completion Time (RICT) and must be implemented in accordance with NEI 06-09-A, Revision 0, "Risk-Managed Technical Specifications (RMTS) Guidelines." The program shall include the following:

a. The RICT may not exceed 30 days;

b. A RICT may only be utilized in MODES 1 and 2;

c. When a RICT is being used, any change to the plant configuration within the scope of the Risk Informed Completion Time Program must be considered for the effect on the RICT.

    1. For planned changes, the revised RICT must be determined prior to implementation of the change in configuration.

    2. For emergent conditions, the revised RICT must be determined within the time limits of the Required Action Completion Time (i.e., not the RICT) or 12 hours after the plant configuration change, whichever is less.

    3. Revising the RICT is not required if the plant configuration change would lower plant risk and would result in a longer RICT.

d. For emergent conditions, if the extent of condition evaluation for inoperable structures, systems, or components (SSCs) is not complete prior to exceeding the Completion Time, the RICT shall account for the increased possibility of common cause failure (CCF) by either:

    1. Numerically accounting for the increased possibility of CCF in the RICT calculation; or

    2. Risk Management Actions (RMAs) not already credited in the RICT calculation shall be implemented that support redundant or diverse SSCs that perform the function(s) of the inoperable SSCs, and, if practicable, reduce the frequency of initiating events that challenge the function(s) performed by the inoperable SSCs.

e. Use of a RICT is not permitted for entry into a configuration which represents a loss of a specified safety function or inoperability of all required trains of a system required to be OPERABLE.

5.0 ADMINISTRATIVE CONTROLS

5.6 Reporting Requirements

The following reports shall be submitted in accordance with 10 CFR 50.4.

5.6.1 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.

The Annual Radiological Environmental Operating Report covering the operation of the unit during the previous calendar year shall be submitted by May 15 of each year. The report shall include summaries, interpretations, and analyses of trends of the results of the Radiological Environmental Monitoring Program for the reporting period. The material provided shall be consistent with the objectives outlined in 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. 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.

5.6.2 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.

The Radioactive Effluent Release Report covering the operation of the unit shall be submitted in accordance with 10 CFR 50.36a. The report shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit. The material provided shall be consistent with the objectives outlined in 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 Reporting Requirements

5.6.3 CORE OPERATING LIMITS REPORT

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. TS 2.1.1, Reactor Core SLs
2. LCO 3.1.1, SHUTDOWN MARGIN (SDM)
3. LCO 3.1.3, Moderator Temperature Coefficient (MTC)
4. LCO 3.1.5, Shutdown Bank Insertion Limit
5. LCO 3.1.6, Control Bank Insertion Limits
6. LCO 3.1.7, Rod Position Indication
7. LCO 3.2.1, Heat Flux Hot Channel Factor ($F_Q(Z)$)
8. LCO 3.2.2, Nuclear Enthalpy Rise Hot Channel Factor ($F^N_{\Delta H}$)
9. LCO 3.2.3, Axial Flux Difference (AFD)
10. LCO 3.3.1, Overtemperature ΔT, Note 1 of Table 3.3.1-1, determination of values K_1, K_2, K_3, T', P', τ_1, τ_2, τ_3, τ_4, τ_5, τ_6, and the breakpoint and slope values for the f_1 (ΔI)
11. LCO 3.3.1, Overpower ΔT, Note 3 of Table 3.3.1-1, determination of values for K_4, K_5, K_6, T'', τ_7 and f_2 (ΔI)
12. LCO 3.4.1, RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits

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:

The analytical methods used to determine the AFD limits shall be those previously reviewed and approved by the NRC in:

1. WCAP-10216-P-A, "RELAXATION OF CONSTANT AXIAL OFFSET CONTROL F_Q SURVEILLANCE TECHNICAL SPECIFICATION," June 1983.

2. WCAP-8385, "POWER DISTRIBUTION CONTROL AND LOAD FOLLOWING PROCEDURES - TOPICAL REPORT," September 1974.

The analytical methods used to determine F_Q (Z), $F\Delta H$ and the K(Z) curve shall be those previously reviewed and approved by the NRC in:

5.6 Reporting Requirements

5.6.3 CORE OPERATING LIMITS REPORT (continued)

1. WCAP-12610-P-A, "VANTAGE+ Fuel Assembly Reference Core Report," S. L. Davidson and T. L. Ryan, April 1995.

2. WCAP-12610-P-A & CENPD-404-P-A, Addendum 1-A, "Optimized ZIRLO™," July 2006.

3. WCAP-16996-P-A, Revision 1, “Realistic LOCA Evaluation Methodology Applied to the Full Spectrum of Break Sizes (FULL SPECTRUM LOCA Methodology),” November 2016.

4. WCAP-18546-P-A, Revision 0, “Westinghouse AXIOM® Cladding for Use in Pressurized Water Reactor Fuel,” March 2023.

The analytical methods used to determine Overtemperature ΔT and Overpower ΔT shall be those previously reviewed and approved by the NRC in:

1. WCAP-8745-P-A, "Design Basis for the Thermal Overtemperature ΔT and Overpower ΔT Trip Functions," September 1986.

2. WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985.

The analytical methods used to determine Safety Limits, Shutdown Margin, Moderator Temperature Coefficient, DNB Parameters, Rod Bank Insertion Limits and the All Rods Out position shall be those previously reviewed and approved by the NRC in:

1. WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985.

The analytical methods used to support the suspension of the measurement of the Moderator Temperature Coefficient in accordance with Surveillance Requirement (SR) 3.1.3.2 shall be those previously reviewed and approved by the NRC in:

1. WCAP-13749-P-A, "Safety Evaluation Supporting the Conditional Exemption of the Most Negative EOL Moderator Temperature Coefficient Measurement," March 1997.

2. WCAP-11596-P-A, "Qualification of the Phoenix-P/ANC Nuclear Design System for Pressurized Water Reactor Cores," June 1988.

3. WCAP-16045-P-A, "Qualification of the Two-Dimensional Transport Code PARAGON," August 2004.

5.6 Reporting Requirements

5.6.3 CORE OPERATING LIMITS REPORT (continued)

4. WCAP-16045-P-A, Addendum 1-A, "Qualification of the NEXUS Nuclear Data Methodology," August 2007

The ability to calculate the COLR nuclear design parameters are demonstrated in:

1. Florida Power & Light Company Topical Report NF-TR-95-01, "Nuclear Physics Methodology for Reload Design of Turkey Point & St. Lucie Nuclear Plants."

Topical Report NF-TR-95-01 was approved by the NRC for use by Florida Power & Light Company in:

1. Safety Evaluation by the Office of Nuclear Reactor Regulations Related to Amendment No. 174 to Facility Operating License DPR-31 and Amendment No. 168 to Facility Operating License DPR-41, Florida Power & Light Company Turkey Point Units 3 and 4, Docket Nos. 50-250 and 50-251.

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.

5.6.4 Post Accident Monitoring Report

When a report is required by Condition B or F 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 preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

5.6.5 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 5.5.6, "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;

5.6 Reporting Requirements

5.6.5 Steam Generator Tube Inspection Report (continued)

c. For each degradation mechanism found:

1. The nondestructive examination techniques utilized;

2. The location, orientation (if linear), measured size (if available), and voltage response for each indication. For tube wear at support structures less than 20 percent through-wall, only the total number of indications needs to be reported;

3. A description of the condition monitoring assessment and results, including the margin to the tube integrity performance criteria and comparison with the margin predicted to exist at the inspection by the previous forward-looking tube integrity assessment; and

4. The number of tubes plugged during the inspection outage.

d. An analysis summary of the tube integrity conditions predicted to exist at the next scheduled inspection (the forward-looking tube integrity assessment) relative to the applicable performance criteria, including the analysis methodology, inputs, and results;

e. The number and percentage of tubes plugged to date, and the effective plugging percentage in each SG;

f. The results of any SG secondary side inspections;

g. The primary to secondary leakage rate observed in each SG (if it is not practical to assign the leakage to an individual SG, the entire primary to secondary leakage should be conservatively assumed to be from one SG) during the cycle preceding the inspection which is the subject of the report;

h. The calculated accident induced leakage rate from the portion of the tubes below 18.11 inches from the top of the tubesheet for the most limiting accident in the most limiting SG. In addition, if the calculated accident induced leakage rate from the most limiting accident is less than 1.82 times the maximum operational primary to secondary leakage rate, the report should describe how it was determined; and

i. The results of monitoring for tube axial displacement (slippage). If slippage is discovered, the implications of the discovery and corrective action shall be provided.

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) of 10 CFR Part 20:

5.7.1 High Radiation Areas with Dose Rates Not Exceeding 1.0 rem/hour at 30 Centimeters (12 inches) from the Radiation Source or from any Surface Penetrated by the Radiation

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

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

5.7 High Radiation Area

5.7.1 High Radiation Areas with Dose Rates Not Exceeding 1.0 rem/hour at 30 Centimeters (12 inches) from the Radiation Source or from any Surface Penetrated by the Radiation (continued)

(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.

5.7.2 High Radiation Areas with Dose Rates Greater than 1.0 rem/hour at 30 Centimeters (12 inches) 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 shift manager, and/or health physics supervision, and

2. Doors and gates shall remain locked except during periods of personnel under an approved RWP 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), maximum allowable stay time 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.

5.7 High Radiation Area

5.7.2 High Radiation Areas with Dose Rates Greater than 1.0 rem/hour at 30 Centimeters (12 inches) 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 (continued)

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

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

(i) Be under 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 surveillance as specified in the RWP or equivalent, while in the area, by means of closed circuit television, or 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.

5.7 High Radiation Area

5.7.2 High Radiation Areas with Dose Rates Greater than 1.0 rem/hour at 30 Centimeters (12 inches) 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 (continued)

f. Such individual areas such as containment 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 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 SUBSEQUENT RENEWED FACILITY OPERATING LICENSES NOS. DPR-31 and DPR-41

TURKEY POINT NUCLEAR GENERATING UNITS NOS. 3 AND 4

ENVIRONMENTAL PROTECTION PLAN (EPP)

(NON-RADIOLOGICAL)

1.0 Objectives of the Environmental Protection Plan

The objective of the Environmental Protection Plan (EPP) is to provide for protection of the environment at the Turkey Point Plant and immediate adjacent areas.

The principal objectives of the EPP are to:

1. Aid in determining that the plant is operated in an environmentally acceptable manner, as established by NRC environmental impact assessments.

2. Provide for review of NRC requirements to maintain consistency with other Federal and State requirements for environmental protection.

3. Keep NRC informed of any significant environmental impacts due to facility operation and of actions taken in response to any impacts.

Environmental concerns which relate to any water quality and biological monitoring matters will be regulated by EPA or the Florida Department of Environmental Protection (FDEP) as EPA's delegee through the licensee's National Pollutant Discharge Elimination System (NPDES) permit.

2.0 Environmental Protection Issues

With assumption of aquatic monitoring programs by U.S. Environmental Protection Agency (EPA) or FDEP through the NPDES program, NRC will rely on EPA for resolution of issues involving the monitoring of water quality and biological monitoring programs.

2.1 Endangered Species Act

In accordance with Section 7(a) of the Endangered Species Act, the U.S. Fish and Wildlife Service (FWS) issued a Biological Opinion related to the continued operation of Turkey Point Nuclear Generating Unit Nos. 3 and 4 as a result of subsequent renewal of the renewed licenses. The Biological Opinion includes an Incidental Take Statement pertaining to the American crocodile (*Crocodylus acutus*) and eastern indigo snake (*Drymarchon couperi*). The Biological Opinion includes a Reasonable and Prudent Measure that the FWS determined to be necessary and appropriate to reduce take and to minimize the direct and indirect effects on the listed species. The Terms and Conditions that implement the Reasonable and Prudent Measure are nondiscretionary. The currently applicable Biological Opinion concludes that continued operation of Turkey Point Nuclear Generating Unit Nos. 3 and 4, as a result of subsequent renewal of the renewed licenses, is not likely to jeopardize the continued existence of the American crocodile or eastern indigo snake or to adversely modify the designated critical habitat of the American crocodile.

The licensee shall adhere to the requirements within the Incidental Take Statement of the currently applicable Biological Opinion. Changes to the Biological Opinion, including the Incidental Take Statement, Reasonable and Prudent Measures, and Terms and Conditions contained therein, must be preceded by consultation between the NRC, as the authorizing agency, and the FWS.

3.0 Consistency Requirements

3.1 Facility Design and Operation

The licensee may make changes in facility design or operation or perform tests or experiments affecting the environment provided such changes, tests or experiments do not involve an unreviewed environmental question. Changes in plant design or operation or performance of tests or experiments which do not significantly affect the environment are not subject to this requirement.

Before engaging in construction or operational activities which may significantly affect the environment, the licensee shall perform 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 NRC.

A proposed change, test or experiment shall be deemed to involve an unreviewed environmental question if it concerns a matter which may result in 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.

*Activities are excluded from this requirement if all measurable nonradiological effects are confined to the on-site areas previously disturbed during site preparation, plant construction and previous plant operation.

Activities governed by Section 3.3 of this EPP are not subject to the requirements of Section 3.1.

3.2 Reporting Related to the NPDES Permit and State 401 Certification

1. Violations of the NPDES Permit or the State 401 Certification Conditions shall be reported to the NRC by submittal of copies of the reports required by the NPDES Permit or State 401 Certification.

2. Changes and additions to the NPDES Permit or the State 401 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.

3. The NRC shall be notified of changes to the effective NPDES 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 licensee shall provide the NRC a copy of the application for renewal of the NPDES 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 facility 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 Administrative Procedures

4.1 Review and Audit

The licensee shall provide for review and audit of compliance with the Environmental Protection Plan. The audits shall be conducted independently of the individual or groups responsible for performing the specific activity. A description of the organization structure utilized to achieve the independent review and audit function and results of the audit activities shall be maintained and made available for inspection.

4.2 Records Retention

Records and logs relative to the environmental aspects of facility operation which have significant environmental impact 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 facility. 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.

4.3 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.

5.0 Facility Reporting Requirements

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

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 within 10 working days of the time it is submitted to the other agency.

5.2 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 facility operation shall be recorded and promptly reported to the NRC within 5 working days followed by a written report within 30 days. No routine monitoring programs are required to implement this condition.