

TABLE OF CONTENTS

1.0	USE AND APPLICATION .....	1.1-1
1.1	Definitions .....	1.1-1
1.2	Logical Connectors .....	1.2-1
1.3	Completion Times .....	1.3-1
1.4	Frequency .....	1.4-1
2.0	SAFETY LIMITS (SLs) .....	2.0-1
2.1	SLs .....	2.0-1
2.2	SL Violations .....	2.0-1
3.0	LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY .....	3.0-1
3.0	SURVEILLANCE REQUIREMENT (SR) APPLICABILITY .....	3.0-4
3.1	REACTIVITY CONTROL SYSTEMS .....	3.1.1-1
3.1.1	SHUTDOWN MARGIN (SDM) .....	3.1.1-1
3.1.2	Core Reactivity .....	3.1.2-1
3.1.3	Moderator Temperature Coefficient (MTC) .....	3.1.3-1
3.1.4	Rod Group Alignment Limits .....	3.1.4-1
3.1.5	Shutdown Bank Insertion Limits .....	3.1.5-1
3.1.6	Control Bank Insertion Limits .....	3.1.6-1
3.1.7	Rod Position Indication .....	3.1.7-1
3.1.8	PHYSICS TESTS Exceptions-MODE 2 .....	3.1.8-1
3.2	POWER DISTRIBUTION LIMITS .....	3.2.1-1
3.2.1	Heat Flux Hot Channel Factor ( $F_Q(Z)$ ) ( $F_Q$ Methodology) .....	3.2.1-1
3.2.2	Nuclear Enthalpy Rise Hot Channel Factor ( $F_{\Delta H}^N$ ) .....	3.2.2-1
3.2.3	AXIAL FLUX DIFFERENCE (AFD) .....	3.2.3-1
3.2.4	QUADRANT POWER TILT RATIO (QPTR) .....	3.2.4-1
3.3	INSTRUMENTATION .....	3.3.1-1
3.3.1	Reactor Protection System (RPS) Instrumentation .....	3.3.1-1
3.3.2	Engineered Safety Feature Actuation System (ESFAS) Instrumentation .....	3.3.2-1
3.3.3	Post Accident Monitoring (PAM) Instrumentation .....	3.3.3-1
3.3.4	Loss of Power (LOP) Diesel Generator (DG) Start and Load Sequence Instrumentation .....	3.3.4-1
3.3.5	Control Room Emergency Filtration System (CREFS) Actuation Instrumentation .....	3.3.5-1
3.3.6	Boron Dilution Alarm .....	3.3.6-1
3.4	REACTOR COOLANT SYSTEM (RCS) .....	3.4.1-1
3.4.1	RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits .....	3.4.1-1
3.4.2	RCS Minimum Temperature for Criticality .....	3.4.2-1
3.4.3	RCS Pressure and Temperature (P/T) Limits .....	3.4.3-1
3.4.4	RCS Loops - MODES 1 and 2 .....	3.4.4-1

TABLE OF CONTENTS

3.4	REACTOR COOLANT SYSTEM (continued)	
3.4.5	RCS Loops - MODE 3 .....	3.4.5-1
3.4.6	RCS Loops - MODE 4 .....	3.4.6-1
3.4.7	RCS Loops - MODE 5, Loops Filled .....	3.4.7-1
3.4.8	RCS Loops - MODE 5, Loops Not Filled.....	3.4.8-1
3.4.9	Pressurizer .....	3.4.9-1
3.4.10	Pressurizer Safety Valves .....	3.4.10-1
3.4.11	Pressurizer Power Operated Relief Valves (PORVs).....	3.4.11-1
3.4.12	Low Temperature Overpressure Protection (LTOP) .....	3.4.12-1
3.4.13	RCS Operational LEAKAGE.....	3.4.13-1
3.4.14	RCS Pressure Isolation Valve (PIV) Leakage.....	3.4.14-1
3.4.15	RCS Leakage Detection Instrumentation.....	3.4.15-1
3.4.16	RCS Specific Activity .....	3.4.16-1
3.5	EMERGENCY CORE COOLING SYSTEMS (ECCS) .....	3.5.1-1
3.5.1	Accumulators .....	3.5.1-1
3.5.2	ECCS-Operating .....	3.5.2-1
3.5.3	ECCS-Shutdown .....	3.5.3-1
3.5.4	Refueling Water Storage Tank (RWST).....	3.5.4-1
3.6	CONTAINMENT SYSTEMS.....	3.6.1-1
3.6.1	Containment.....	3.6.1-1
3.6.2	Containment Air Locks .....	3.6.2-1
3.6.3	Containment Isolation Valves .....	3.6.3-1
3.6.4	Containment Pressure.....	3.6.4-1
3.6.5	Containment Air Temperature .....	3.6.5-1
3.6.6	Containment Spray and Cooling Systems .....	3.6.6-1
3.6.7	Spray Additive System .....	3.6.7-1
3.7	PLANT SYSTEMS .....	3.7.1-1
3.7.1	Main Steam Safety Valves (MSSVs) .....	3.7.1-1
3.7.2	Main Steam Isolation Valves (MSIVs) and Non-Return Check Valves .....	3.7.2-1
3.7.3	Main Feedwater Isolation .....	3.7.3-1
3.7.4	Atmospheric Dump Valve (ADV) Flowpaths .....	3.7.4-1
3.7.5	Auxiliary Feedwater (AFW) System.....	3.7.5-1
3.7.6	Condensate Storage Tank (CST) .....	3.7.6-1
3.7.7	Component Cooling Water (CC) System .....	3.7.7-1
3.7.8	Service Water (SW) System.....	3.7.8-1
3.7.9	Control Room Emergency Filtration System (CREFS).....	3.7.9-1
3.7.10	Fuel Storage Pool Water Level.....	3.7.10-1
3.7.11	Fuel Storage Pool Boron Concentration .....	3.7.11-1
3.7.12	Spent Fuel Pool Storage .....	3.7.12-1
3.7.13	Secondary Specific Activity .....	3.7.13-1

TABLE OF CONTENTS

3.8	ELECTRICAL POWER SYSTEMS.....	3.8.1-1
3.8.1	AC Sources-Operating .....	3.8.1-1
3.8.2	AC Sources-Shutdown .....	3.8.2-1
3.8.3	Diesel Fuel Oil and Starting Air .....	3.8.3-1
3.8.4	DC Sources-Operating .....	3.8.4-1
3.8.5	DC Sources-Shutdown.....	3.8.5-1
3.8.6	Battery Cell Parameters .....	3.8.6-1
3.8.7	Inverters-Operating .....	3.8.7-1
3.8.8	Inverters-Shutdown .....	3.8.8-1
3.8.9	Distribution Systems-Operating.....	3.8.9-1
3.8.10	Distribution Systems-Shutdown.....	3.8.10-1
3.9	REFUELING OPERATIONS .....	3.9.1-1
3.9.1	Boron Concentration .....	3.9.1-1
3.9.2	Nuclear Instrumentation .....	3.9.2-1
3.9.3	Containment Penetrations.....	3.9.3-1
3.9.4	Residual Heat Removal (RHR) and Coolant Circulation-High Water Level .....	3.9.4-1
3.9.5	Residual Heat Removal (RHR) and Coolant Circulation-Low Water Level .....	3.9.5-1
3.9.6	Refueling Cavity Water Level .....	3.9.6-1
4.0	DESIGN FEATURES .....	4.0-1
4.1	Site Location .....	4.0-1
4.2	Reactor Core.....	4.0-1
4.3	Fuel Storage .....	4.0-2
5.0	ADMINISTRATIVE CONTROLS .....	5.0-1
5.1	Responsibility .....	5.1-1
5.2	Organization.....	5.2-1
5.3	Unit Staff Qualifications .....	5.3-1
5.4	Procedures.....	5.4-1
5.5	Programs and Manuals .....	5.5-1
5.6	Reporting Requirements .....	5.6-1
5.7	High Radiation Area .....	5.7-1

## 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.

---

<u>Term</u>	<u>Definition</u>
<b>ACTIONS</b>	<b>ACTIONS</b> shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.
<b>ACTUATION LOGIC TEST</b>	An <b>ACTUATION LOGIC TEST</b> shall be the application of various simulated or actual input combinations in conjunction with each possible interlock logic state required for <b>OPERABILITY</b> of a logic circuit and the verification of the required logic output. The <b>ACTUATION LOGIC TEST</b> , as a minimum, shall include a continuity check of output devices.
<b>AXIAL FLUX DIFFERENCE (AFD)</b>	<b>AFD</b> shall be the difference in normalized flux signals between the top and bottom halves of a two section excore neutron detector.
<b>CHANNEL CALIBRATION</b>	A <b>CHANNEL CALIBRATION</b> 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 <b>CHANNEL CALIBRATION</b> shall encompass all devices in the channel required for channel <b>OPERABILITY</b> . Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an in-place qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The <b>CHANNEL CALIBRATION</b> may be performed by means of any series of sequential, overlapping, or total channel steps.
<b>CHANNEL CHECK</b>	A <b>CHANNEL CHECK</b> 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.
CORE ALTERATION	CORE ALTERATION shall be the movement of any fuel, sources, or reactivity control components, within the reactor vessel with the vessel head removed and fuel in the vessel. Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.
CORE OPERATING LIMITS REPORT (COLR)	The COLR is the unit specific document that provides cycle specific parameter limits for the current reload cycle. These cycle specific parameter limits shall be determined for each reload cycle in accordance with Specification 5.6.4. 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/gram) that alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table 2.1 of Federal Guidance Report No. 11, "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion," September 1988.
E - AVERAGE DISINTEGRATION ENERGY	E shall be the average (weighted in proportion to the concentration of each radionuclide in the reactor coolant at the time of sampling) of the sum of the average beta and gamma energies per disintegration (in MeV) for isotopes, other than iodines, with half lives > 15 minutes, making up at least 95% of the total noniodine activity in the coolant.

## 1.1 Definitions

---

$L_a$  The maximum allowable primary containment leakage rate,  $L_a$ , shall be 0.4% of primary containment air weight per day at the peak design containment pressure ( $P_a$ ).

### 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 either not to interfere with the operation of leakage detection systems or not to be pressure boundary LEAKAGE; or
3. Reactor Coolant System (RCS) LEAKAGE through a steam generator (SG) to the Secondary System;

b. Unidentified LEAKAGE

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

c. Pressure Boundary LEAKAGE

LEAKAGE (except SG LEAKAGE) through a nonisolable fault in an RCS component body, pipe wall, or vessel wall.

### MASTER RELAY TEST

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

## 1.1 Definitions

---

<b>MODE</b>	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.
<b>OPERABLE - OPERABILITY</b>	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).
<b>PHYSICS TESTS</b>	<p>PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation. These tests are:</p> <ol style="list-style-type: none"> <li>a. Described in Chapter 13, Initial Test Program of the FSAR; or</li> <li>b. Authorized under the provisions of 10 CFR 50.59; or</li> <li>c. Otherwise approved by the Nuclear Regulatory Commission.</li> </ol>
<b>PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)</b>	The PTLR is the unit specific document that provides the reactor vessel pressure and temperature limits, including heatup and cooldown rates, and the LTOP arming temperature, for the current reactor vessel fluence period. These pressure and temperature limits shall be determined for each fluence period in accordance with Specification 5.6.5. Plant operation within these operating limits is addressed in LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," and LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System."
<b>QUADRANT POWER TILT RATIO (QPTR)</b>	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.

---

---

**1.1 Definitions**

---

<b>RATED THERMAL POWER (RTP)</b>	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 1518.5 MWt.
<b>SHUTDOWN MARGIN (SDM)</b>	<p>SDM shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming:</p> <ol style="list-style-type: none"><li>All rod cluster control assemblies (RCCAs) are fully inserted except for the single RCCA of highest reactivity worth, which is assumed to be fully withdrawn. However, with all RCCAs verified fully inserted by two independent means, it is not necessary to account for a stuck RCCA in the SDM calculation;</li><li>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</li><li>In MODES 1 and 2, the fuel and moderator temperatures are changed to the nominal zero power design level.</li></ol>
<b>SLAVE RELAY TEST</b>	A SLAVE RELAY TEST shall consist of energizing all slave relays in the channel required for OPERABILITY and verifying the OPERABILITY of each required slave relay. The SLAVE RELAY TEST shall include a continuity check of associated required testable actuation devices. The SLAVE RELAY TEST may be performed by means of any series of sequential, overlapping, or total channel steps.
<b>STAGGERED TEST BASIS</b>	A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems, channels, or other designated components during the interval specified by the Surveillance Frequency, so that all systems, subsystems, channels, or other designated components are tested during n Surveillance Frequency intervals, where n is the total number of systems, subsystems, channels, or other designated components in the associated function.
<b>THERMAL POWER</b>	THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.

1.1 Definitions

---

<b>TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT)</b>	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 may be performed by means of any series of sequential, overlapping, or total channel steps.
---	--

---

Table 1.1-1 (page 1 of 1)  
MODES

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

- (a) Excluding decay heat.
- (b) All reactor vessel head closure bolts fully tensioned.
- (c) One or more reactor vessel head closure bolts less than fully tensioned.

## 1.0 USE AND APPLICATION

### 1.2 Logical Connectors

---

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

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

---

**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.

1.2 Logical Connectors

EXAMPLES (continued)

EXAMPLE 1.2-1

ACTIONS

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

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

1.2 Logical Connectors

EXAMPLES (continued)

EXAMPLE 1.2-2

ACTIONS

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

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

## 1.0 USE AND APPLICATION

### 1.3 Completion Times

---

<b>PURPOSE</b>	The purpose of this section is to establish the Completion Time convention and to provide guidance for its use.
<b>BACKGROUND</b>	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).
<b>DESCRIPTION</b>	<p>The Completion Time is the amount of time allowed for completing a Required Action. It is referenced to the time of discovery of a situation (e.g., inoperable equipment or variable not within limits) that requires entering an ACTIONS Condition unless otherwise specified, providing the unit is in a MODE or specified condition stated in the Applicability of the LCO. Required Actions must be completed prior to the expiration of the specified Completion Time. An ACTIONS Condition remains in effect and the Required Actions apply until the Condition no longer exists or the unit is not within the LCO Applicability.</p> <p>If situations are discovered that require entry into more than one Condition at a time within a single LCO (multiple Conditions), the Required Actions for each Condition must be performed within the associated Completion Time. When in multiple Conditions, separate Completion Times are tracked for each Condition starting from the time of discovery of the situation that required entry into the Condition.</p> <p>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 <u>not</u> 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.</p>

---

### 1.3 Completion Times

---

#### DESCRIPTION (continued)

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

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

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

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

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

The above Completion Time extension does not apply to a Completion Time with a modified "time zero." This modified "time zero" may be expressed as a repetitive time (i.e., "once per 8 hours," where the Completion Time is referenced from a previous completion of the Required Action versus the time of Condition entry) or as a time modified by the phrase "from discovery . . ." Example 1.3-3 illustrates one use of this type of Completion Time. The 10 day Completion Time specified for Conditions A and B in Example 1.3-3 may not be extended.

1.3 Completion Times

---

EXAMPLES

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

EXAMPLE 1.3-1

ACTIONS

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

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

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

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

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-2

ACTIONS

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

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

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

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

### 1.3 Completion Times

---

#### EXAMPLES (continued)

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.

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

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Function X train inoperable.	A.1 Restore Function X train to OPERABLE status.	7 days <u>AND</u> 10 days from discovery of failure to meet the LCO
B. One Function Y train inoperable.	B.1 Restore Function Y train to OPERABLE status.	72 hours <u>AND</u> 10 days from discovery of failure to meet the LCO
C. One Function X train inoperable. <u>AND</u> One Function Y train inoperable.	C.1 Restore Function X train to OPERABLE status. <u>OR</u> C.2 Restore Function Y train to OPERABLE status.	72 hours  72 hours

### 1.3 Completion Times

---

#### EXAMPLES (continued)

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

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

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

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-4

**ACTIONS**

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

A single Completion Time is used for any number of valves inoperable at the same time. The Completion Time associated with Condition A is based on the initial entry into Condition A and is not tracked on a per valve basis. Declaring subsequent valves inoperable, while Condition A is still in effect, does not trigger the tracking of separate Completion Times. Once one of the valves has been restored to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first valve was declared inoperable. The Completion Time may be extended if the valve restored to OPERABLE status was the first inoperable valve. The Condition A Completion Time may be extended for up to 4 hours provided this does not result in any subsequent valve being inoperable for > 4 hours.

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

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-5

ACTIONS

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

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

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

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

If subsequent valves are declared inoperable, Condition A is entered for each valve and separate Completion Times start and are tracked for each valve.

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,

### 1.3 Completion Times

---

#### EXAMPLES (continued)

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.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-6

ACTIONS

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

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

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-7

ACTIONS

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

Required Action A.1 has two Completion Times. The 1 hour Completion Time begins at the time the Condition is entered and each "Once per 8 hours thereafter" interval begins upon performance of Required Action A.1. If after Condition A is entered, Required Action A.1 is not met within either the initial 1 hour or any subsequent 8 hour interval from the previous performance (plus the extension allowed by SR 3.0.2), Condition B is entered. The Completion Time clock for Condition A does not stop after Condition B is entered, but continues from the time 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.

1.3 Completion Times

---

**IMMEDIATE**            When "Immediately" is used as a Completion Time, the  
**COMPLETION TIME** 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.

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

---

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

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 ( $1.25 \times 12 = 15$  hours) 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 ( $1.25 \times 12 = 15$  hours) is exceeded while the unit is not in a MODE or other specified condition in the Applicability of the LCO for which performance of the SR is required, the Surveillance must be performed within the Frequency requirements of SR 3.0.2 ( $1.25 \times 12 = 15$  hours) prior to entry into the MODE or other specified condition. Failure to do so would result in a violation of SR 3.0.4.

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-2

SURVEILLANCE REQUIREMENTS

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

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

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

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-3

SURVEILLANCE REQUIREMENTS

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

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

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

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

## 2.0 SAFETY LIMITS (SLs)

---

### 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 in order to preserve the following fuel design criteria:

2.1.1.1 The departure from nucleate boiling ratio (DNBR) shall be maintained:

- ≥ 1.22/1.21 (typical/thimble) for the WRB-1 correlation - cores not containing 422V+ fuel
- ≥ 1.24/1.23 (typical/thimble) for the WRB-1 correlation - cores containing 422V+ fuel

OR

- ≥ 1.30 for the W-3 correlation when system pressure is > 1000 psia
- ≥ 1.45 for the W-3 correlation when system pressure is ≥ 500 psia and ≤ 1000 psia

2.1.1.2 The peak fuel centerline temperature shall be maintained < 5080 °F, decreasing by 58 °F per 10,000 MWD/MTU of burnup.

#### 2.1.2 RCS Pressure SL

In MODES 1, 2, 3, 4, 5, and 6 the RCS pressure shall be maintained ≤ 2735 psig.

---

### 2.2 SL Violations

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

2.2.2 If SL 2.1.2 is violated:

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

2.2.2.2 In MODE 3, 4, 5, or 6 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 and LCO 3.0.7.

---

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 not be made except 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. This Specification shall not prevent

---

### 3.0 LCO APPLICABILITY

---

#### LCO 3.0.4 (continued)

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.

Exceptions to this Specification are stated in the individual Specifications.

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

---

LCO 3.0.5      Equipment removed from service or declared inoperable to comply with ACTIONS may be operated 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 operated under administrative control to perform the testing required to demonstrate OPERABILITY.

---

LCO 3.0.6      When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered. Only the support system LCO ACTIONS are required to be entered. This is an exception to LCO 3.0.2 for the supported system. In this event, an evaluation shall be performed in accordance with Specification 5.5.14, "Safety Function Determination Program (SFDP)." If a loss of safety function is determined to exist by the SFDP evaluation, 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 LCOs allow specified Technical Specification (TS) requirements to be changed to permit performance of special tests

---

### 3.0 LCO APPLICABILITY

---

#### LCO 3.0.7 (continued)

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 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 less. This delay period is permitted to allow performance of the Surveillance.

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.

---

3.0 SR APPLICABILITY (continued)

---

SR 3.0.4            Entry into a MODE or other specified condition in the Applicability of an LCO shall not be made unless the LCO's Surveillances have been met within their specified Frequency. 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 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3 and 4.

---

3.1 REACTIVITY CONTROL SYSTEMS

3.1.1 SHUTDOWN MARGIN (SDM)

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

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

**ACTIONS**

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

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.1.1.1 Verify SDM to be within limits.	24 hours

3.1 REACTIVITY CONTROL SYSTEMS

3.1.2 Core Reactivity

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

APPLICABILITY:    MODES 1 and 2.

**ACTIONS**

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

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
<p>SR 3.1.2.1</p> <p>-----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.            -----</p> <p>Verify measured core reactivity is within <math>\pm 1\% \Delta k/k</math> of predicted values.</p>	<p>Once prior to entering MODE 1 after each refueling</p> <p><u>AND</u></p> <p>-----NOTE-----            Only required after 60 EFPD            -----</p> <p>31 EFPD thereafter</p>

3.1 REACTIVITY CONTROL SYSTEMS

3.1.3 Moderator Temperature Coefficient (MTC)

LCO 3.1.3 The upper MTC limits shall be maintained within the limits specified in the COLR. The maximum upper MTC limits shall be  $\leq 5$  pcm/ $^{\circ}$ F for power levels  $\leq 70\%$  RTP and  $\leq 0$  pcm/ $^{\circ}$ F for power levels  $> 70\%$  RTP.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. MTC not within upper limits.	A.1 Establish administrative limits for boron concentration to maintain MTC within limits.	24 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 2 with $k_{eff} < 1.0$ .	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.3.1 Verify MTC is within upper limits.	Once prior to entering MODE 1 after each refueling

3.1 REACTIVITY CONTROL SYSTEMS

3.1.4 Rod Group Alignment Limits

LCO 3.1.4 All shutdown and control rods shall be OPERABLE, with individual rod positions within limits.

APPLICABILITY: MODES 1 and 2.

ACTIONS

-----NOTE-----  
One hour is allowed following rod motion prior to verifying rod operability and group alignment limits.  
-----

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

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. One rod not within alignment limits.</p>	<p>B.1 Restore rod to within alignment limits.</p>	<p>1 hour</p>
	<p><u>OR</u></p>	
	<p>B.2.1.1 Verify SDM to be within the limits provided in the COLR.</p>	<p>1 hour</p>
	<p><u>OR</u></p>	
	<p>B.2.1.2 Initiate boration to restore SDM to within limit.</p>	<p>1 hour</p>
	<p><u>AND</u></p>	
	<p>B.2.2 Reduce THERMAL POWER to <math>\leq 75\%</math> RTP.</p>	<p>2 hours</p>
	<p><u>AND</u></p>	
	<p>B.2.3 Verify SDM to be within the limits provided in the COLR.</p>	<p>Once per 12 hours</p>
	<p><u>AND</u></p>	
<p>B.2.4 Perform SR 3.2.1.1 and SR 3.2.1.2.</p>	<p>72 hours</p>	
<p><u>AND</u></p>		
<p>B.2.5 Perform SR 3.2.2.1.</p>	<p>72 hours</p>	
<p><u>AND</u></p>	<p>(continued)</p>	



**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.1.4.1	<p>Verify individual rod positions are within the following alignment limits:</p> <ul style="list-style-type: none"> <li>a. <math>\pm 12</math> steps of demanded position in MODE 1 &gt; 85 percent RTP; and</li> <li>b. <math>\pm 24</math> steps of demanded position in MODE 1 <math>\leq</math> 85 percent RTP or in MODE 2.</li> </ul>	12 hours
SR 3.1.4.2	<p>Verify rod freedom of movement (trippability) by moving each rod not fully inserted in the core <math>\geq 10</math> steps in either direction.</p>	92 days
SR 3.1.4.3	<p>Verify rod drop time of each rod, from the fully withdrawn position, is <math>\leq 2.2</math> seconds from the beginning of decay of stationary gripper coil voltage to dashpot entry, with:</p> <ul style="list-style-type: none"> <li>a. <math>T_{avg} \geq 500^{\circ}\text{F}</math>; and</li> <li>b. All reactor coolant pumps operating.</li> </ul>	Prior to reactor criticality after each removal of the reactor head

3.1 REACTIVITY CONTROL SYSTEMS

3.1.5 Shutdown Bank Insertion Limits

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

APPLICABILITY:    MODES 1 and 2

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

ACTIONS

-----NOTE-----  
One hour is allowed following rod motion prior to verifying bank insertion limits.  
-----

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

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.1.5.1	Verify each shutdown bank is within the limits specified in the COLR.	12 hours

3.1 REACTIVITY CONTROL SYSTEMS

3.1.6 Control Bank Insertion Limits

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

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

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

ACTIONS

-----NOTE-----  
One hour is allowed following rod motion prior to verifying bank insertion limits.  
-----

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

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Control bank sequence or overlap limits not met.	B.1.1 Verify SDM to be within the limits provided in the COLR.  <u>OR</u>	1 hour
	B.1.2 Initiate boration to restore SDM to within limit.  <u>AND</u>	1 hour
	B.2 Restore control bank sequence and overlap to within limits.	2 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 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 Verify each control bank insertion is within the limits specified in the COLR.	12 hours

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.1.6.3	Verify sequence and overlap limits specified in the COLR are met for control banks not fully withdrawn from the core.	12 hours

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Rod Position Indication

LCO 3.1.7 Individual control rod position indication and bank demand indication shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One or more RPI(s) per group inoperable for one or more groups.</p>	<p>A.1.1 Verify the position of the rods with inoperable position indicators by using movable incore detectors.</p>	<p>8 hours</p>
	<p><u>AND</u></p> <p>A.1.2 Verify the position of the rods with inoperable position indicators.</p>	<p>Once per 8 hours</p>
	<p><u>OR</u></p> <p>A.2 Reduce THERMAL POWER to <math>\leq</math> 50% RTP.</p>	<p>8 hours</p>

(continued)



**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.1.7.1 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 (MTC)"; LCO 3.1.4, "Rod Group Alignment Limits"; LCO 3.1.5, "Shutdown Bank Insertion Limits"; LCO 3.1.6, "Control Bank Insertion Limits"; and LCO 3.4.2, "RCS Minimum Temperature for Criticality"

may be suspended and the number of required channels for LCO 3.3.1, "RPS Instrumentation," Functions 2, 5, and 17.d, may be reduced to "3" required channels, provided:

- a. RCS lowest loop average temperature is  $\geq 530^{\circ}\text{F}$ ;
- b. SDM is within the limits provided in the COLR; and
- c. THERMAL POWER is  $\leq 5\%$  RTP.

APPLICABILITY: During PHYSICS TESTS initiated in MODE 2.

ACTIONS

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

(continued)

**ACTIONS (continued)**

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. RCS lowest loop average temperature not within limit.	C.1 Restore RCS lowest loop average temperature to within limit.	15 minutes
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 Verify the RCS lowest loop average temperature is $\geq 530^{\circ}\text{F}$ .	30 minutes
SR 3.1.8.2 Verify THERMAL POWER is $\leq 5\%$ RTP.	30 minutes
SR 3.1.8.3 Verify SDM to be within the limits provided in the COLR.	24 hours

### 3.2 POWER DISTRIBUTION LIMITS

#### 3.2.1 Heat Flux Hot Channel Factor (F<sub>Q</sub>(Z))

LCO 3.2.1 F<sub>Q</sub>(Z), as approximated by F<sub>Q</sub><sup>C</sup>(Z) and F<sub>Q</sub><sup>W</sup>(Z), shall be within the limits specified in the COLR.

APPLICABILITY: MODE 1.

#### ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>-----NOTE----- Required Action A.4 shall be completed whenever this Condition is entered. -----</p>	<p>A.1 Reduce THERMAL POWER ≥ 1% RTP for each 1% F<sub>Q</sub><sup>C</sup>(Z) exceeds limit.</p>	<p>15 minutes after each F<sub>Q</sub><sup>C</sup>(Z) determination</p>
	<p><u>AND</u></p>	
<p>A. F<sub>Q</sub><sup>C</sup>(Z) not within limit.</p>	<p>A.2 Reduce Power Range Neutron Flux — High trip setpoints ≥ 1% for each 1% F<sub>Q</sub><sup>C</sup>(Z) exceeds limit.</p>	<p>72 hours after each F<sub>Q</sub><sup>C</sup>(Z) determination</p>
	<p><u>AND</u></p>	
	<p>A.3 Reduce Overpower ΔT trip setpoints ≥ 1% for each 1% F<sub>Q</sub><sup>C</sup>(Z) exceeds limit.</p>	<p>72 hours after each F<sub>Q</sub><sup>C</sup>(Z) determination</p>
	<p><u>AND</u></p>	
		(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	<p>A.4 Perform SR 3.2.1.1 and SR 3.2.1.2.</p>	<p>Prior to increasing THERMAL POWER above the limit of Required Action A.1</p> <p><u>AND</u></p> <p>Prior to increasing any setpoint that has been reduced above the limits of Required Actions A.2 and A.3</p>
<p>-----NOTE----- Required Action B.4 shall be completed whenever this Condition is entered. -----</p> <p>B. F<sub>Q</sub><sup>W</sup>(Z) not within limits.</p>	<p>B.1 Reduce AFD limits ≥ 1% for each 1% F<sub>Q</sub><sup>W</sup>(Z) exceeds limit.</p> <p><u>AND</u></p> <p>B.2 Reduce Power Range Neutron Flux-High trip setpoints ≥ 1% for each 1% that the maximum allowable power of the AFD limits is reduced.</p> <p><u>AND</u></p>	<p>4 hours</p> <p>72 hours</p> <p>(continued)</p>

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	<p>B.3 Reduce the Overpower <math>\Delta T</math> trip setpoints <math>\geq 1\%</math> for each 1% that the maximum allowable power of the AFD limits is reduced.</p> <p><u>AND</u></p> <p>B.4 Perform SR 3.2.1.1 and SR 3.2.1.2.</p>	<p>72 hours</p> <p>Prior to increasing THERMAL POWER above the maximum allowable power of the AFD limits.</p>
C. Required Action and associated Completion Time not met.	C.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      Verify F <sub>Q</sub> <sup>C</sup> (Z) is within limit.	Once after each refueling prior to THERMAL POWER exceeding 75% RTP  <u>AND</u>  Once within 12 hours after achieving equilibrium conditions after exceeding, by ≥ 10% RTP, the THERMAL POWER at which F <sub>Q</sub> <sup>C</sup> (Z) was last verified  <u>AND</u>  31 EFPD thereafter

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.2.1.2 -----NOTE-----            If F<sup>w</sup><sub>q</sub>(Z) measurements indicate that the</p> <p style="text-align: center;">maximum over z <math>\left[ \frac{F^c_q(Z)}{K(Z)} \right]</math></p> <p>has increased since the previous evaluation of F<sup>c</sup><sub>q</sub>(Z):</p> <p>a. Increase F<sup>w</sup><sub>q</sub>(Z) by the greater of a factor of 1.02 or by an appropriate factor specified in the COLR and reverify F<sup>w</sup><sub>q</sub>(Z) is within limits; or</p> <p>b. Repeat SR 3.2.1.2 once per 7 EFPD until either a. above is met, or two successive flux maps indicate that the</p> <p style="text-align: center;">maximum over z <math>\left[ \frac{F^c_q(Z)}{K(Z)} \right]</math></p> <p>has not increased.</p> <p>-----            Verify F<sup>w</sup><sub>q</sub>(Z) is within limit.</p>	<p>Once after each refueling prior to THERMAL POWER exceeding 75% RTP</p> <p><u>AND</u></p> <p>(continued)</p>

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.2.1.2 (continued)	Once within 12 hours after achieving equilibrium conditions after exceeding, by ≥ 10% RTP, the THERMAL POWER at which F <sub>Q</sub> <sup>W</sup> (Z) was last verified.  <u>AND</u>  31 EFPD thereafter

3.2 POWER DISTRIBUTION LIMITS

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

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

APPLICABILITY: MODE 1.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. -----NOTE----- Required Actions A.2 and A.3 must be completed whenever Condition A is entered. ----- <math>F_{\Delta H}^N</math> not within limit.</p>	<p>A.1.1 Restore <math>F_{\Delta H}^N</math> to within limit.</p>	4 hours
	<p><u>OR</u></p>	
	<p>A.1.2.1 Reduce THERMAL POWER to &lt; 50% RTP.</p>	4 hours
	<p><u>AND</u></p>	
	<p>A.1.2.2 Reduce Power Range Neutron Flux - High trip setpoints to ≤ 55% RTP.</p>	72 hours
	<p><u>AND</u></p>	
	<p>A.2 Perform SR 3.2.2.1.</p>	24 hours
	<p><u>AND</u></p>	
		(continued)

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	<p>A.3</p> <p>-----NOTE----- THERMAL POWER does not have to be reduced to comply with this Required Action. -----</p> <p>Perform SR 3.2.2.1.</p>	<p>Prior to THERMAL POWER exceeding 50% RTP</p> <p><u>AND</u></p> <p>Prior to THERMAL POWER exceeding 75% RTP</p> <p><u>AND</u></p> <p>24 hours after THERMAL POWER reaching <math>\geq</math> 95% RTP</p>
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 $F_{\Delta H}^N$ is within limits specified in the COLR.	Once after each refueling prior to THERMAL POWER exceeding 75% RTP  <u>AND</u>  31 EFPD thereafter

3.2 POWER DISTRIBUTION LIMITS

3.2.3 AXIAL FLUX DIFFERENCE (AFD)

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

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

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. AFD not within limits.	A.1 Reduce THERMAL POWER to < 50% RTP.	3 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.3.1 Verify AFD within limits for each OPERABLE excore channel.	7 days

3.2 POWER DISTRIBUTION LIMITS

3.2.4 QUADRANT POWER TILT RATIO (QPTR)

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

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. QPTR not within limit.	A.1 Reduce THERMAL POWER $\geq 3\%$ from RTP for each 1% of QPTR > 1.00.	2 hours after each QPTR determination
	<u>AND</u>	
	A.2 Determine QPTR.	Once per 12 hours
	<u>AND</u>	
	A.3 Perform SR 3.2.1.1, SR 3.2.1.2, and SR 3.2.2.1.	24 hours after achieving equilibrium conditions from a thermal power reduction per Required Action A.1
	<u>AND</u>	<u>AND</u> Once per 7 days thereafter  (continued)



ACTIONS		
CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	<p>A.6</p> <p>-----NOTE-----            Perform Required Action A. 6 only after Required Action A.5 is completed.            -----</p> <p>Perform SR 3.2.1.1, SR 3.2.1.2, and SR 3. 2.2.1.</p>	<p>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</p>
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to $\leq$ 50% RTP.	4 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
<p>SR 3.2.4.1 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. With input from one Power Range Neutron Flux channel inoperable and THERMAL POWER <math>\leq</math> 75% RTP, the remaining three power range channels can be used for calculating QPTR.</li> <li>2. SR 3.2.4.2 may be performed in lieu of this Surveillance.</li> </ol> <p>-----</p> <p>Verify QPTR is within limit by calculation.</p>	<p>7 days</p>
<p>SR 3.2.4.2 -----NOTE-----</p> <p>Not required to be performed until 12 hours after input from one or more Power Range Neutron Flux channels are inoperable with THERMAL POWER <math>&gt;</math> 75% RTP.</p> <p>-----</p> <p>Verify QPTR is within limit using the movable incore detectors.</p>	<p>12 hours</p>

3.3 INSTRUMENTATION

3.3.1 Reactor Protection System (RPS) Instrumentation

LCO 3.3.1 The RPS 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> B.2 Be in MODE 3.	54 hours
C. One Manual Reactor Trip channel inoperable.	C.1 Restore channel to OPERABLE status.	48 hours
	<u>OR</u> C.2 Open reactor trip breakers (RTBs).	49 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One channel inoperable.	D.1 Place channel in trip.	1 hour
	<u>OR</u> D.2 Be in MODE 3.	7 hours
E. One channel inoperable.	E.1 Place channel in trip.	6 hours
	<u>OR</u> E.2 Reduce THERMAL POWER to < P-7.	12 hours
F. One Intermediate Range Neutron Flux channel inoperable.	F.1 Reduce THERMAL POWER to < P-6.	24 hours
	<u>OR</u> F.2 Increase THERMAL POWER to > P-10.	24 hours
G. Two Intermediate Range Neutron Flux channels inoperable.	G.1 Suspend operations involving positive reactivity additions.	Immediately
	<u>AND</u> G.2 Reduce THERMAL POWER to < P-6.	2 hours
H. One Source Range Neutron Flux channel inoperable.	H.1 Suspend operations involving positive reactivity additions.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
I. Two Source Range Neutron Flux channels inoperable.	I.1 Open RTBs.	Immediately
J. One Source Range Neutron Flux channel inoperable.	J.1 Restore channel to OPERABLE status.	48 hours
	<u>OR</u> J.2 Open RTBs.	49 hours
K. One channel inoperable.	K.1 Place channel in trip.	1 hour
	<u>OR</u> K.2 Reduce THERMAL POWER to < P-7.	7 hours
L. One Reactor Coolant Flow-Low (Single Loop) channel inoperable.	L.1 Place channel in trip.	1 hour
	<u>OR</u> L.2 Reduce THERMAL POWER to < P-8.	5 hours
M. One Reactor Coolant Pump Breaker Position (Single Loop) channel inoperable.	M.1 Restore channel to OPERABLE status.	1 hour
	<u>OR</u> M.2 Reduce THERMAL POWER to < P-8.	5 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
N. One inoperable channel.	N.1 Restore channel to OPERABLE status.	1 hour
	<u>OR</u> N.2 Reduce THERMAL POWER to < P-7.	7 hours
O. One turbine trip channel inoperable.	O.1 Place channel in trip.	1 hour
	<u>OR</u> O.2 Reduce THERMAL POWER to < P-9.	5 hours
P. One train inoperable.	-----NOTE----- One train may be bypassed for up to 8 hours for surveillance testing provided the other train is OPERABLE. -----	
	P.1 Restore train to OPERABLE status.  <u>OR</u> P.2 Be in MODE 3.	6 hours  12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>Q. One RTB inoperable.</p>	<p>-----NOTE-----            One RTB may be bypassed for up to 8 hours provided the other RTB is OPERABLE.            -----</p> <p>Q.1     Restore RTB to OPERABLE status.</p> <p><u>OR</u></p> <p>Q.2     Be in MODE 3.</p>	<p>1 hour</p> <p>7 hours</p>
<p>R. One or more channel(s) inoperable.</p>	<p>R.1     Verify interlock is in required state for existing unit conditions.</p> <p><u>OR</u></p> <p>R.2     Be in MODE 3.</p>	<p>1 hour</p> <p>7 hours</p>
<p>S. One or more channel(s) inoperable.</p>	<p>S.1     Verify interlock is in required state for existing unit conditions.</p> <p><u>OR</u></p> <p>S.2     Be in MODE 2.</p>	<p>1 hour</p> <p>7 hours</p>
<p>T. One RTB or trip mechanism for one RTB inoperable.</p>	<p>T.1     Restore RTB or RTB trip mechanism to OPERABLE status.</p> <p><u>OR</u></p> <p>T.2     Open RTBs.</p>	<p>48 hours</p> <p>49 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
U. One trip mechanism inoperable for one RTB.	U.1 Restore inoperable trip mechanism to OPERABLE status.	48 hours
	<u>OR</u> U.2 Be in MODE 3.	54 hours
V. One reactor trip bypass breaker (RTBB) or trip mechanism for one RTBB inoperable.	V.1 Restore RTBB or RTBB trip mechanism to OPERABLE status.	1 hour
	<u>OR</u> V.2 Be in MODE 3.	7 hours
W. One reactor trip bypass breaker (RTBB) or trip mechanism for one RTBB inoperable.	W.1 Restore RTBB or RTBB trip mechanism to OPERABLE status.	48 hours
	<u>OR</u> W.2 Open RTBs and RTBBs.	49 hours
X. One train inoperable.	X.1 Restore train to OPERABLE status.	48 hours
	<u>OR</u> X.2 Open RTBs.	49 hours

**SURVEILLANCE REQUIREMENTS**

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

SURVEILLANCE		FREQUENCY
SR 3.3.1.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.1.2	<p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Adjust NIS channel if absolute difference is &gt; 2%.</li> <li>2. Not required to be performed until 12 hours after THERMAL POWER is <math>\geq</math> 15% RTP.</li> </ol> <p>-----</p> <p>Compare results of calorimetric heat balance calculation to Nuclear Instrumentation System (NIS) channel output.</p>	24 hours
SR 3.3.1.3	<p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Adjust NIS channel if absolute difference is <math>\geq</math> 3%.</li> <li>2. Not required to be performed until 24 hours after THERMAL POWER is <math>\geq</math> 50% RTP.</li> </ol> <p>-----</p> <p>Compare results of the incore detector measurements to NIS AFD.</p>	31 effective full power days (EFPD)

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

SURVEILLANCE	FREQUENCY
<p>SR 3.3.1.4 -----NOTE-----            This Surveillance must be performed on the reactor trip bypass breaker prior to placing the bypass breaker in service.            -----            Perform TADOT.</p>	<p>31 days on a STAGGERED TEST BASIS</p>
<p>SR 3.3.1.5 -----NOTES-----            1. Not required to be performed for the Source Range Neutron Flux Trip Function until 8 hours after power is below P-6.            2. Not required to be performed for the RCP Breaker Position (Two Loops), Reactor Coolant Flow — Low (Two Loops) and Underfrequency Bus A01 and A02 Trip Functions and the P-6, P-7, P-8, P-9 and P-10 Interlocks.            -----            Perform ACTUATION LOGIC TEST.</p>	<p>31 days on a STAGGERED TEST BASIS</p>
<p>SR 3.3.1.6 -----NOTE-----            Not required to be performed until 24 hours after THERMAL POWER is <math>\geq 50\%</math> RTP.            -----            Calibrate excore channels to agree with incore detector measurements.</p>	<p>92 EFPD</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.3.1.7      -----NOTE-----                      Not required to be performed for source range                      instrumentation prior to entering MODE 3 from                      MODE 2 until 4 hours after entry into MODE 3.                      -----                      Perform COT.</p>	<p>92 days</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>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.</p>	<p>-----NOTE-----  Only required when not performed within previous 92 days  -----  Prior to reactor startup    <u>AND</u>  Four hours after reducing power below P-10 for power and intermediate range instrumentation    <u>AND</u>  Four hours after reducing power below P-6 for source range instrumentation    <u>AND</u>  Every 92 days thereafter</p>

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

SURVEILLANCE		FREQUENCY
SR 3.3.1.9	Perform TADOT.	31 days
SR 3.3.1.10	-----NOTE----- This Surveillance shall include verification that the time delays are adjusted to the prescribed values. ----- Perform CHANNEL CALIBRATION.	18 months
SR 3.3.1.11	-----NOTE----- Neutron detectors are excluded from CHANNEL CALIBRATION. ----- Perform CHANNEL CALIBRATION.	18 months
SR 3.3.1.12	Perform COT.	18 months
SR 3.3.1.13	Perform TADOT.	18 months
SR 3.3.1.14	Perform TADOT.	Prior to exceeding the P-9 interlock whenever the unit has been in MODE 3, if not performed within previous 31 days.

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.3.1.15 -----NOTE-----            This Surveillance must be performed on the RCP Breaker Position (Two Loop), Reactor Coolant Flow - Low (Two Loop) and Underfrequency Bus A01 and A02 Trip Functions and the P-6 , P-7, P-8, P-9 and P-10 Interlocks.            -----            Perform ACTUATION LOGIC TEST.</p>	<p>18 months</p>

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

FUNCTION	APPLICABLE MODES	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Manual Reactor Trip	1,2	2	B	SR 3.3.1.13	NA
	3(a), 4(a), 5(a)	2	C	SR 3.3.1.13	NA
2. Power Range Neutron Flux					
a. High	1,2	4	D	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.7 SR 3.3.1.11	≤ 108% RTP
b. Low	1(b),2	4	D	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11	≤ 25% RTP
3. Intermediate Range Neutron Flux	1(b), 2(c)	2	F,G	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11	≤ 40% RTP
4. Source Range Neutron Flux	2(d)	2	H,I	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11	within span of instrumentation
	3(a), 4(a), 5(a)	2	I,J	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.11	within span of instrumentation
5. Overtemperature ΔT	1,2	4	D	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.11	Refer to Note 1 (Page 3.3.1-18)
6. Overpower ΔT	1,2	4	D	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.11	Refer to Note 2 (Page 3.3.1-20)

(continued)

- (a) With Reactor Trip Breakers (RTBs) closed and Rod Control System capable of rod withdrawal.
- (b) Below the P-10 (Power Range Neutron Flux) interlocks.
- (c) Above the P-6 (Intermediate Range Neutron Flux) interlock.
- (d) Below the P-6 (Intermediate Range Neutron Flux) interlock.

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

FUNCTION	APPLICABLE MODES	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
7. Pressurizer Pressure					
a. Low	1(e)	4	K	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.11	(h)
b. High	1,2	3	D	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.11	(i)
8. Pressurizer Water Level — High	1(e)	3	K	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.11	≤ 95% of span
9. Reactor Coolant Flow-Low					
a. Single Loop	1(f)	3 per loop	L	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.11	≥ 90%
b. Two Loops	1(g)	3 per loop	K	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.11	≥ 90%
10. Reactor Coolant Pump (RCP) Breaker Position					
a. Single Loop	1(f)	1 per RCP	M	SR 3.3.1.13	NA
b. Two Loops	1(g)	1 per RCP	N	SR 3.3.1.13	NA
11. Undervoltage Bus A01 & A02	1(e)	2 per bus	K	SR 3.3.1.9 SR 3.3.1.10	≥ 3120 V

(continued)

- (e) Above the P-7 (Low Power Reactor Trips Block) interlock.
- (f) Above the P-8 (Power Range Neutron Flux) interlock.
- (g) Above the P-7 (Low Power Reactor Trips Block) interlock and below the P-8 (Power Range Neutron Flux) interlock.
- (h) ≥ 1905 psig during operation at 2250 psia, or ≥ 1800 psig during operation at 2000 psia.
- (i) ≤ 2385 psig during operation at 2250 psia, or ≤ 2210 psig during operation at 2000 psia.

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

FUNCTION	APPLICABLE MODES	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
12. Underfrequency Bus A01 & A02	1(e)	2 per bus	E	SR 3.3.1.10	≥ 55.0 Hz
13. Steam Generator (SG) Water Level — Low Low	1,2	3 per SG	D	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.11	≥ 20% of span
14. SG Water Level — Low	1,2	2 per SG	D	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.11	NA
Coincident with Steam Flow/Feedwater Flow Mismatch	1,2	2 per SG	D	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.11	≤ 1 E6 lbm/hr
15. Turbine Trip					
a. Low Autostop Oil Pressure	1(j)	3	O	SR 3.3.1.14	NA
b. Turbine Stop Valve Closure	1(j)	2	O	SR 3.3.1.14	NA
16. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)	1,2	2 trains	P	SR 3.3.1.13	NA

(continued)

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

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

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

FUNCTION	APPLICABLE MODES	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
17. Reactor Trip System Interlocks					
a. Intermediate Range Neutron Flux, P-6	2 <sup>(d)</sup>	2	R	SR 3.3.1.11 SR 3.3.1.12	> 1E-10 amp
b. Low Power Reactor Trips Block, P-7					
(1) Power Range Neutron Flux	1	4	S	SR 3.1.1.11 SR 3.3.1.12	< 10% RTP
(2) Turbine Impulse Pressure	1	2	S	SR 3.3.1.11 SR 3.3.1.12	< 10% turbine power
c. Power Range Neutron Flux, P-8	1	4	S	SR 3.3.1.11 SR 3.3.1.12	< 50% RTP
d. Power Range Neutron Flux, P-9	1 <sup>(k)</sup>	4	S	SR 3.3.1.11 SR 3.3.1.12	< 50% RTP
e. Power Range Neutron Flux, P-10	1,2	4	R	SR 3.3.1.11 SR 3.3.1.12	> 8% RTP and < 10% RTP
18. Reactor Trip Breakers (RTBs)	1,2 3(a), 4(a), 5(a)	2 trains 2 trains	Q T	SR 3.3.1.4 SR 3.3.1.4	NA NA
19. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms	1,2 3(a), 4(a), 5(a)	1 each per RTB 1 each per RTB	U T	SR 3.3.1.4 SR 3.3.1.4	NA NA

(continued)

- (a) With the RTBs closed and the Rod Control System capable of rod withdrawal.
- (d) Below the P-6 (Intermediate Range Neutron Flux) interlock.
- (k) With 1 of 2 circulating water pump breakers closed and condenser vacuum  $\geq$  22 "Hg.

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

FUNCTION	APPLICABLE MODES	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
20. Reactor Trip Bypass Breaker and associated Undervoltage Trip Mechanism	1 <sup>(l)</sup> , 2 <sup>(l)</sup>	1	V	SR 3.3.1.4	NA
	3 <sup>(l)</sup> , 4 <sup>(l)</sup> , 5 <sup>(l)</sup>	1	W	SR 3.3.1.4	NA
21. Automatic Trip Logic	1, 2,	2 trains	P	SR 3.3.1.5 SR 3.3.1.15	NA
	3 <sup>(a)</sup> , 4 <sup>(a)</sup> , 5 <sup>(a)</sup>	2 trains	X	SR 3.3.1.5	NA

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

(l) When Reactor Trip Bypass Breakers are racked in and closed and the Rod Control System is capable of rod withdrawal.

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

Note 1: Overtemperature  $\Delta T$

$$\Delta T \left( \frac{1}{1 + \tau_3 S} \right) \leq \Delta T_o \left( K_1 - K_2 \left( T \left( \frac{1}{1 + \tau_4 S} \right) - T' \right) \left( \frac{1 + \tau_1 S}{1 + \tau_2 S} \right) + K_3 (P - P') - f(\Delta I) \right)$$

where (values are applicable to operation at both 2000 psia and 2250 psia unless otherwise indicated)

$\Delta T_o$	=	indicated $\Delta T$ at rated power, °F
T	=	average temperature, °F
T'	≤	[*]°F (for cores containing 422V+ fuel assemblies)
T'	≤	[*]°F (for cores not containing 422V+ fuel assemblies)
P	=	pressurizer pressure, psig
P'	=	[*] psig (for 2250 psia operation)
P'	=	[*] psig (for 2000 psia operation and cores not containing 422V+ fuel assemblies)
K <sub>1</sub>	≤	[*] (for 2250 psia operation and cores containing 422V+ fuel assemblies)
K <sub>1</sub>	≤	[*] (for 2250 psia operation and cores not containing 422V+ fuel assemblies)
K <sub>1</sub>	≤	[*] (for 2000 psia operation and cores not containing 422V+ fuel assemblies)
K <sub>2</sub>	=	[*] (for 2250 psia operation and cores containing 422V+ fuel assemblies)
K <sub>2</sub>	=	[*] (for 2250 psia operation and cores not containing 422V+ fuel assemblies)
K <sub>2</sub>	=	[*] (for 2000 psia operation and cores not containing 422V+ fuel assemblies)
K <sub>3</sub>	=	[*] (for 2250 psia operation and cores containing 422V+ fuel assemblies)
K <sub>3</sub>	=	[*] (for 2250 psia operation and cores not containing 422V+ fuel assemblies)
K <sub>3</sub>	=	[*] (for 2000 psia operation and cores not containing 422V+ fuel assemblies)
$\tau_1$	=	[*] sec
$\tau_2$	=	[*] sec
$\tau_3$	=	[*] sec for Rosemont or equivalent RTD
	=	[*] sec for Sostman or equivalent RTD
$\tau_4$	=	[*] sec for Rosemont or equivalent RTD
	=	[*] sec for Sostman or equivalent RTD

and  $f(\Delta I)$  is an even function of the indicated difference between top and bottom detectors of the power-range nuclear ion chambers; with gains to be selected based on measured instrument response during plant startup tests, where  $q_t$  and  $q_b$  are the percent power in the top and bottom halves of the core respectively, and  $q_t + q_b$  is total core power in percent of rated power, such that:

- (a) for  $q_t - q_b$  within  $-[*]$ ,  $+[*]$  percent,  $f(\Delta I) = 0$  for cores not containing 422V+ fuel assemblies; for  $q_t - q_b$  within  $-[*]$ ,  $+[*]$  percent,  $f(\Delta I) = 0$  for cores containing 422V+ fuel assemblies.
- (b) for each percent that the magnitude of  $q_t - q_b$  exceeds  $+[*]$  percent, the  $\Delta T$  trip setpoint shall be automatically reduced by an equivalent of  $[*]$  percent of rated power for cores not containing 422V+ fuel assemblies and reduced by an equivalent of  $[*]$  percent of rated power for cores containing 422V+ fuel assemblies.

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

Note 1: Overtemperature  $\Delta T$  (continued)

- (c) for cores not containing 422V+ fuel assemblies, for each percent that the magnitude of  $q_t - q_b$  exceeds  $-[*]$  percent, the  $\Delta T$  trip setpoint shall be automatically reduced by an equivalent of  $[*]$  percent of rated power; for cores containing 422V+ fuel assemblies, for each percent that the magnitude of  $q_t - q_b$  exceeds  $-[*]$  percent, the  $\Delta T$  trip setpoint shall be automatically reduced by an equivalent of  $[*]$  percent of rated power.

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

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

Note 2: Overpower  $\Delta T$

$$\Delta T \left( \frac{1}{1 + \tau_3 S} \right) \leq \Delta T_o [K_4 - K_5 \left( \frac{\tau_5 S}{\tau_5 S + 1} \right) \left( \frac{1}{1 + \tau_4 S} \right) T - K_6 \left[ T \left( \frac{1}{1 + \tau_4 S} \right) - T' \right]]$$

where (values are applicable to operation at both 2000 psia and 2250 psia)

$\Delta T_o$	=	indicated $\Delta T$ at rated power, °F
T	=	average temperature, °F
T'	≤	[*]°F (for cores containing 422V+ fuel assemblies)
T'	≤	[*]°F (for cores not containing 422V+ fuel assemblies)
K <sub>4</sub>	≤	[*] of rated power (for cores containing 422V+ fuel assemblies)
K <sub>4</sub>	≤	[*] of rated power (for cores not containing 422V+ fuel assemblies)
K <sub>5</sub>	=	[*] for increasing T
	=	[*] for decreasing T
K <sub>6</sub>	=	[*] for T ≥ T' (for cores containing 422V+ fuel assemblies)
K <sub>6</sub>	=	[*] for T ≥ T' (for cores not containing 422V+ fuel assemblies)
	=	[*] for T < T'
$\tau_5$	=	[*] sec
$\tau_3$	=	[*] sec for Rosemont or equivalent RTD
	=	[*] sec for Sostman or equivalent RTD
$\tau_4$	=	[*] sec for Rosemont or equivalent RTD
	=	[*] sec for Sostman or equivalent RTD

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

3.3 INSTRUMENTATION

3.3.2 Engineered Safety Feature Actuation System (ESFAS) Instrumentation

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

APPLICABILITY: According to Table 3.3.2-1.

ACTIONS

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

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

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One train inoperable.	C.1 Restore train to OPERABLE status.	6 hours
	<u>OR</u>	
	C.2.1 Be in MODE 3.	12 hours
	<u>AND</u>	
D. One channel inoperable.	D.1 Place channel in trip.	1 hour
	<u>OR</u>	
	D.2.1 Be in MODE 3.	7 hours
	<u>AND</u>	
E. One or both channel(s) inoperable.	E.1 Restore channel(s) to OPERABLE status.	1 hour
	<u>OR</u>	
	E.2.1 Be in MODE 3.	7 hours
	<u>AND</u>	
	E.2.2 Be in MODE 5.	37 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. One channel inoperable.	F.1 Restore channel to OPERABLE status.	1 hour
	<u>OR</u>	
	F.2.1 Be in MODE 3.	7 hours
	<u>AND</u>	
	F.2.2 Be in MODE 4.	13 hours
G. One train inoperable.	G.1 Restore train to OPERABLE status.	6 hours
	<u>OR</u>	
	G.2.1 Be in MODE 3.	12 hours
	<u>AND</u>	
	G.2.2 Be in MODE 4.	18 hours
H. One channel inoperable.	H.1 Place channel in trip.	6 hours
	<u>OR</u>	
	H.2 Be in MODE 3.	12 hours
I. One or more channels inoperable.	I.1 Verify interlock is in required state for existing unit condition.	1 hour
	<u>OR</u>	
	I.2.1 Be in MODE 3.	7 hours
	<u>AND</u>	
	I.2.2 Be in MODE 4.	13 hours

**SURVEILLANCE REQUIREMENTS**

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

SURVEILLANCE		FREQUENCY
SR 3.3.2.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.2.2	-----NOTE----- The continuity check may be excluded. -----  Perform ACTUATION LOGIC TEST.	31 days on a STAGGERED TEST BASIS
SR 3.3.2.3	Perform COT.	92 days
SR 3.3.2.4	Perform MASTER RELAY TEST.	18 months
SR 3.3.2.5	Perform SLAVE RELAY TEST.	18 months
SR 3.3.2.6	Perform TADOT.	31 days
SR 3.3.2.7	Perform TADOT.	18 months
SR 3.3.2.8	-----NOTE----- This Surveillance shall include verification that the time constants are adjusted to the prescribed values. -----  Perform CHANNEL CALIBRATION.	18 months

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

FUNCTION	APPLICABLE MODES	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
<b>1. Safety Injection</b>					
a. Manual Initiation	1,2,3,4	2	B	SR 3.3.2.7	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.5	NA
c. Containment Pressure—High	1,2,3	3	D	SR 3.3.2.1 SR 3.3.2.3 SR 3.3.2.8	≤ 6 psig
d. Pressurizer Pressure—Low	1,2,3(a)	3	D	SR 3.3.2.1 SR 3.3.2.3 SR 3.3.2.8	≥ 1715 psig
e. Steam Line Pressure—Low	1,2,3(b)	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.3 SR 3.3.2.8	≥ 500 <sup>(c)</sup> psig
<b>2. Containment Spray</b>					
a. Manual Initiation	1,2,3,4	2	E	SR 3.3.2.7	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.5	NA
c. Containment Pressure—High High	1,2,3	2 sets of 3	D	SR 3.3.2.1 SR 3.3.2.3 SR 3.3.2.8	≤ 30 psig

(continued)

(a) Pressurizer Pressure > 1800 psig.

(b) Pressurizer Pressure > 1800 psig, except during Reactor Coolant System hydrostatic testing.

(c) Time constants used in the lead/lag controller are  $t_1 \geq 12$  seconds and  $t_2 \leq 2$  seconds.

Table 3.3.2-1 (page 2 of 3)  
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
<b>3. Containment Isolation</b>					
a. Manual Initiation	1,2,3,4	2	B	SR 3.3.2.7	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.4 SR 3.3.2.5	NA
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements, except Manual SI Initiation.				
<b>4. Steam Line Isolation</b>					
a. Manual Initiation	1,2(d),3(d)	1/loop	F	SR 3.3.2.7	NA
b. Automatic Actuation Logic and Actuation Relays	1,2(d),3(d)	2 trains	G	SR 3.3.2.2 SR 3.3.2.5	NA
c. Containment Pressure—High High	1,2(d),3(d)	3	D	SR 3.3.2.1 SR 3.3.2.3 SR 3.3.2.8	≤ 20 psig
d. High Steam Flow	1,2(d),3(d)	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.3 SR 3.3.2.8	≤ Δp corresponding to 0.66 x 10 <sup>6</sup> lb/hr at 1005 psig
Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
and					
Coincident with T <sub>avg</sub> —Low	1,2(d),3(d)	3	D	SR 3.3.2.1 SR 3.3.2.3 SR 3.3.2.8	≥ 540°F
e. High High Steam Flow	1,2(d),3(d)	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.3 SR 3.3.2.8	≤ Δp corresponding to 4 x 10 <sup>6</sup> lb/hr at 806 psig
Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				

(continued)

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

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

FUNCTION	APPLICABLE MODES	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
5. Feedwater Isolation					
a. Automatic Actuation Logic and Actuation Relays	1,2(e),3(e)	2 trains	G	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.5	NA
b. SG Water Level—High	1,2(e),3(e)	3 per SG	D	SR 3.3.2.1 SR 3.3.2.3 SR 3.3.2.8	NA
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	G	SR 3.3.2.2	NA
b. SG Water Level—Low Low	1,2,3	3 per SG	D	SR 3.3.2.1 SR 3.3.2.3 SR 3.3.2.8	≥ 20%
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
d. Undervoltage Bus A01 and A02	1,2	2 per bus	H	SR 3.3.2.6 SR 3.3.2.8	≥ 3120 V
7. Condensate Isolation					
a. Containment Pressure—High	1,2(e),3(e)	3	D	SR 3.3.2.1 SR 3.3.2.3 SR 3.3.2.8	≤ 6 psig
b. Automatic Actuation Logic and Actuation Relays	1,2(e),3(e)	2 trains	G	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.5	N/A
8. SI Block-Pressurizer Pressure	1,2,3	3	I	SR 3.3.2.1 SR 3.3.2.3 SR 3.3.2.8	≤ 1800 psig

(e) Except when all MFRVs and associated bypass valves are closed and de-activated.

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

-----NOTES-----

1. LCO 3.0.4 is not applicable.
  2. Separate Condition entry is allowed for each Function.
- 

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one required channel inoperable.	A.1 Restore required channel to OPERABLE status.	30 days
B. Required Action and associated Completion Time of Condition A not met.	B.1 Initiate action in accordance with Specification 5.6.6.	Immediately
C. -----NOTE----- Not applicable to hydrogen monitor channels. -----  One or more Functions with two required channels inoperable.	C.1 Restore one channel to OPERABLE status.	7 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Two hydrogen monitor channels inoperable.	D.1 Restore one hydrogen monitor channel to OPERABLE status.	72 hours
E. Required Action and associated Completion Time of Condition C or D not met.	E.1 Enter the Condition referenced in Table 3.3.3-1 for the channel.	Immediately
F. As required by Required Action E.1 and referenced in Table 3.3.3-1.	F.1 Be in MODE 3.	6 hours
	<u>AND</u> F.2 Be in MODE 4.	12 hours
G. As required by Required Action E.1 and referenced in Table 3.3.3-1.	G.1 Initiate action in accordance with Specification 5.6.6.	Immediately

**SURVEILLANCE REQUIREMENTS**

-----NOTE-----  
 SR 3.3.3.1 applies to each PAM instrumentation Function in Table 3.3.3-1. SR 3.3.3.2 applies to Function 14 only. SR 3.3.3.3 applies to each PAM instrumentation Function in Table 3.3.3-1, except Function 12. SR 3.3.3.4 applies to Function 12 only.  
 -----

SURVEILLANCE		FREQUENCY
SR 3.3.3.1	Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	31 days
SR 3.3.3.2	Calibrate gas portion of the Hydrogen Monitors.	92 days
SR 3.3.3.3	-----NOTE----- CHANNEL CALIBRATION of Containment Area Radiation (High Range) detectors shall consist of verification of a response to a source. -----  Perform CHANNEL CALIBRATION.	18 months
SR 3.3.3.4	Perform TADOT.	18 months

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

FUNCTION	REQUIRED CHANNELS	CONDITION REFERENCED FROM REQUIRED ACTION E.1
1. Reactor Coolant System (RCS) Subcooling Monitor	2	F
2. RCS Hot Leg Temperature (Wide Range)	2 per loop	F
3. RCS Cold Leg Temperature (Wide Range)	2 per loop	F
4. RCS Pressure (Wide Range)	2	F
5. RCS Pressure (Narrow Range)	2	F
6. Reactor Vessel Water Level (Wide Range)	2	F
7. Reactor Vessel Water Level (Narrow Range)	2	F
8. Containment Sump B Water Level	2	F
9. Containment Pressure (Wide Range)	2	F
10. Containment Pressure (Intermediate Range)	2	F
11. Containment Pressure (Low Range)	2	F
12. Containment Isolation Valve Position	2 per penetration flow path (a)(b)	F
13. Containment Area Radiation (High Range)	2	G
14. Hydrogen Monitors	2(c)	F
15. Pressurizer Level	2	F
16. Steam Generator Water Level (Wide Range)	2 per steam generator	F
17. Steam Generator Water Level (Narrow Range)	2 per steam generator	F
18. Steam Generator Pressure	2 per steam generator	F
19. Condensate Storage Tank Level	2 per tank	F
20. Core Exit Temperature — Quadrant 1	2	F
21. Core Exit Temperature — Quadrant 2	2	F
22. Core Exit Temperature — Quadrant 3	2	F
23. Core Exit Temperature — Quadrant 4	2	F
24. Auxiliary Feedwater Flow	2	F
25. Refueling Water Storage Tank Level	2	F

- (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) Each monitor shall be powered from an independent power supply.

**3.3 INSTRUMENTATION**

**3.3.4 Loss of Power (LOP) Diesel Generator (DG) Start and Load Sequence Instrumentation**

**LCO 3.3.4** The following LOP DG Start and Load Sequence Instrumentation shall be OPERABLE:

- a. Three channels per bus of the 4.16 kV loss of voltage Function,
- b. Three channels per bus of the 4.16 kV degraded voltage Function, and
- c. Three channels per bus of the 480 V loss of voltage Function.

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

**ACTIONS**

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one channel per bus inoperable.	A.1 Place channel in trip.	1 hour
B. Two or more 4.16 kV loss of voltage or 4.16 kV degraded voltage channels per bus inoperable.	B.1 Restore all but one channel to OPERABLE status.	1 hour

(continued)

**ACTIONS (continued)**

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A for 4.16 kV Functions or Condition B not met.	C.1 Enter applicable Condition(s) and Required Action(s) for the associated standby emergency power source made inoperable by LOP DG start instrumentation.	Immediately
D. Two or more 480 V loss of voltage channels per bus inoperable.	D.1 Restore all but one channel to OPERABLE status.	1 hour
E. Required Action and associated Completion Time of Condition A for 480 V loss of voltage Function or Condition D not met.	E.1 Be in MODE 3.	6 hours
	<u>AND</u> E.2 Be in MODE 5.	36 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.3.4.1 Perform CHANNEL CHECK.	12 hours
SR 3.3.4.2 Perform TADOT.	31 days

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

SURVEILLANCE		FREQUENCY
SR 3.3.4.3	<p>Perform CHANNEL CALIBRATION with Allowable Value as follows:</p> <ul style="list-style-type: none"> <li>a. 4.16 kV loss of voltage Allowable Value <math>\geq 3156</math> V with a time delay of <math>\geq 0.7</math> seconds and <math>\leq 1.0</math> second.</li> <li>b. 4.16 kV degraded voltage Allowable Value <math>\geq 3937</math> V with a time delay of <math>&lt; 6.47</math> seconds (with SI signal present) and <math>&lt; 54</math> seconds (without SI signal present.)</li> <li>c. 480 V loss of voltage Allowable Value 256 V <math>\pm 3\%</math> with a time delay of <math>\leq 0.5</math> seconds.</li> </ul>	18 months

3.3 INSTRUMENTATION

3.3.5 Control Room Emergency Filtration System (CREFS) Actuation Instrumentation

LCO 3.3.5            The CREFS actuation instrumentation for each Function in Table 3.3.5-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.5-1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions inoperable.	A.1 Place CREFS in the emergency mode of operation.	7 days
B. Required Action and associated Completion Time not met.	-----NOTE----- Required Actions B.1 and B.2 are not applicable for inoperability of the Containment Isolation actuation function. -----	
	B.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u> B.2 Suspend movement of irradiated fuel assemblies.	Immediately
	<u>AND</u>	(continued)

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.3     Be in MODE 3.	6 hours
	<u>AND</u>	
	B.4     Be in MODE 5.	36 hours

**SURVEILLANCE REQUIREMENTS**

-----NOTE-----

Refer to Table 3.3.5-1 to determine which SRs apply for each CREFS Actuation Function.

-----

SURVEILLANCE	FREQUENCY
SR 3.3.5.1     Perform CHANNEL CHECK.	12 hours
SR 3.3.5.2     Perform COT.	92 days
SR 3.3.5.3     Perform CHANNEL CALIBRATION.	18 months

Table 3.3.5-1 (page 1 of 1)  
CREFS Actuation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	TRIP SETPOINT
1. Control Room Radiation				
a. Control Room Area Monitor	1, 2, 3, 4, (a), (b)	1	SR 3.3.5.1 SR 3.3.5.2 SR 3.3.5.3	NA
b. Control Room Air Intake	1, 2, 3, 4, (a), (b)	1	SR 3.3.5.1 SR 3.3.5.2 SR 3.3.5.3	NA
2. Containment Isolation	Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 3, for all initiation functions and requirements.			

(a) During movement of irradiated fuel assemblies.

(b) During CORE ALTERATIONS.

3.3 INSTRUMENTATION

3.3.6 Boron Dilution Alarm

LCO 3.3.6 Boron Dilution Alarm shall be OPERABLE.

APPLICABILITY: MODE 5.

**ACTIONS**

CONDITION	REQUIRED ACTIONS	COMPLETION TIME
A. Boron Dilution Alarm inoperable.	A.1 Close unborated water source isolation valve(s).	1 hour

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.3.6.1 Perform TADOT.	18 months

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 limits specified in the COLR;
  - b. RCS average temperature is within the limits specified in the COLR; and
  - c. RCS total flow rate  $\geq 182,400$  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 limits specified in the COLR.	12 hours
SR 3.4.1.2	Verify RCS average temperature is within the limits specified in the COLR.	12 hours
SR 3.4.1.3	<p>-----NOTE-----                      Not required to be performed until 24 hours after                      ≥ 90% RTP.                      -----</p> <p>Verify by precision heat balance that RCS total                      flow rate is ≥ 182,400 gpm and greater than or                      equal to the limit specified in the COLR.</p>	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.2 RCS Minimum Temperature for Criticality

LCO 3.4.2 Each RCS loop average temperature ( $T_{avg}$ ) shall be  $\geq 540^{\circ}\text{F}$ .

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.2.1 Verify RCS $T_{avg}$ in each loop $\geq 540^{\circ}\text{F}$ .	12 hours

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 the PTLR.

APPLICABILITY: At all times.

**ACTIONS**

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

(continued)

**ACTIONS (continued)**

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

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
<p>SR 3.4.3.1 -----NOTE----- Only required to be performed during RCS heatup and cooldown operations and RCS inservice leak and hydrostatic testing with <math>k_{eff} &lt; 1.0</math>. ----- Verify RCS pressure, RCS temperature, and RCS heatup and cooldown rates are within the limits specified in the PTLR.</p>	<p>30 minutes</p>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.4 RCS Loops — MODES 1 and 2

LCO 3.4.4 Two 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.	12 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Loops — MODE 3

LCO 3.4.5 Two RCS loops shall be OPERABLE, and one RCS loop shall be in operation.

-----NOTE-----

All reactor coolant pumps may be not in operation for ≤ 1 hour per 8 hour period provided:

- a. No operations are permitted that would cause reduction of the RCS boron concentration;
  - b. Core outlet temperature is maintained at least 10°F below saturation temperature; and
  - c. The Rod Control System is not capable of rod withdrawal.
- 

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

(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Two RCS loops inoperable.  <u>OR</u>  No RCS loop in operation.	C.1 Place the Rod Control System in a condition incapable of rod withdrawal.	Immediately
	<u>AND</u>  C.2 Suspend all operations involving a reduction of RCS boron concentration.	Immediately
	<u>AND</u>  C.3 Initiate action to restore one RCS loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.5.1	Verify one RCS loop is in operation.	12 hours
SR 3.4.5.2	Verify steam generator secondary side water levels are $\geq 30\%$ narrow range for required RCS loops.	12 hours
SR 3.4.5.3	Verify correct breaker alignment and indicated power are available to the required pump that is not in operation.	7 days

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 not in operation for  $\leq 1$  hour per 8 hour period provided:
  - a. No operations are permitted that would cause reduction of the RCS boron concentration; and
  - b. Core outlet temperature is maintained at least 10°F below saturation temperature.
2. No RCP shall be started with any RCS cold leg temperature  $\leq$  Low Temperature Overpressure Protection (LTOP) enabling temperature specified in the PTLR unless the secondary side water temperature of each steam generator (SG) is  $\leq 50^\circ\text{F}$  above each of the RCS cold leg temperatures.

APPLICABILITY: MODE 4.

ACTIONS

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

(continued)

**ACTIONS (continued)**

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. One required RHR loop inoperable.</p> <p><u>AND</u></p> <p>Two required RCS loops inoperable.</p>	<p>B.1 Be in MODE 5.</p>	<p>24 hours</p>
<p>C. Required RCS or RHR loops inoperable.</p> <p><u>OR</u></p> <p>No RCS or RHR loop in operation.</p>	<p>C.1 Suspend all operations involving a reduction of RCS boron concentration.</p> <p><u>AND</u></p> <p>C.2 Initiate action to restore one loop to OPERABLE status and operation.</p>	<p>Immediately</p> <p>Immediately</p>

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.4.6.1	Verify one RHR or RCS loop is in operation.	12 hours
SR 3.4.6.2	Verify SG secondary side water levels are $\geq 30\%$ narrow range for required RCS loops.	12 hours
SR 3.4.6.3	Verify correct breaker alignment and indicated power are available to the required pump that is not in operation.	7 days

### 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 one steam generator (SG) shall be  $\geq 30\%$  narrow range.

-----NOTES-----

1. The RHR pump of the loop in operation may be not in operation for  $\leq 1$  hour per 8 hour period provided:
  - a. No operations are permitted that would cause reduction of the RCS boron concentration; and
  - b. Core outlet temperature is maintained at least  $10^{\circ}\text{F}$  below saturation temperature.
2. One required RHR loop may be inoperable for up to 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.
3. No reactor coolant pump shall be started with one or more RCS cold leg temperatures  $\leq$  Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR unless the secondary side water temperature of each SG is  $\leq 50^{\circ}\text{F}$  above each of the RCS cold leg temperatures.
4. All RHR loops may be removed from operation during planned heatup to MODE 4 or during the performance of required leakage or flow testing when at least one RCS loop is in operation.

-----

APPLICABILITY: MODE 5 with RCS loops filled.

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One RHR loop inoperable.</p> <p><u>AND</u></p> <p>Required SG secondary side water level not within limits.</p>	<p>A.1 Initiate action to restore a second RHR loop to OPERABLE status.</p>	Immediately
	<p><u>OR</u></p> <p>A.2 Initiate action to restore required SG secondary side water level to within limit.</p>	Immediately
<p>B. Required RHR loops inoperable.</p> <p><u>OR</u></p> <p>No RHR loop in operation.</p>	<p>B.1 Suspend all operations involving a reduction of RCS boron concentration.</p>	Immediately
	<p><u>AND</u></p> <p>B.2 Initiate action to restore one RHR loop to OPERABLE status and operation.</p>	Immediately

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.4.7.1      Verify one RHR loop is in operation.	12 hours
SR 3.4.7.2      Verify SG secondary side water level is $\geq$ 30% narrow range in required SG.	12 hours

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.7.3	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	7 days

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 not in operation for  $\leq 15$  minutes when switching from one loop to another provided:
  - a. The core outlet temperature is maintained  $> 10^{\circ}\text{F}$  below saturation temperature.
  - b. No operations are permitted that would cause a reduction of the RCS boron concentration; and
  - c. No draining operations to further reduce the RCS water volume are permitted.
2. One RHR loop may be inoperable for  $\leq 2$  hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

APPLICABILITY: MODE 5 with RCS loops not filled.

ACTIONS

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

(continued)



### 3.4 REACTOR COOLANT SYSTEM (RCS)

#### 3.4.9 Pressurizer

- LCO 3.4.9 The pressurizer shall be OPERABLE with:
- a. Pressurizer water level  $\leq 50.8\%$  in MODE 1 or  $\leq 95\%$  in MODES 2 and 3; and
  - b. At least 100 kW of pressurizer heaters capable of being powered from an emergency power supply are OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

#### ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressurizer water level not within limit in MODE 1.	A.1 Restore pressurizer water level to within limit.	1 hour
B. Required pressurizer heaters inoperable.	B.1 Restore required pressurizer heaters to OPERABLE status.	1 hour
C. Required Action and associated Completion Time not met.  <u>OR</u>  Pressurizer water level not within limit in MODES 2 and 3.	C.1 Be in MODE 3.  <u>AND</u>  C.2 Be in MODE 4.	6 hours  12 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	Verify pressurizer water level is $\leq 50.8\%$ in MODE 1 <u>OR</u> $\leq 95\%$ in MODES 2 and 3.	12 hours
SR 3.4.9.2	Verify capacity of required pressurizer heaters is $\geq 100$ kW.	92 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.10 Pressurizer Safety Valves

LCO 3.4.10 Two pressurizer safety valves shall be OPERABLE with lift settings  $\geq 2410$  psig and  $\leq 2560$  psig.

APPLICABILITY: MODES 1, 2, and 3,  
MODE 4 with all RCS cold leg temperatures > the LTOP enabling temperature specified in the PTLR.

-----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 36 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 pressurizer safety valves inoperable.	B.1 Be in MODE 3.  <u>AND</u>  B.2 Be in MODE 4 with any RCS cold leg temperature $\leq$ the LTOP enabling temperature specified in the PTLR.	6 hours  12 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.4.10.1	Verify each pressurizer safety valve is OPERABLE in accordance with the Inservice Testing Program. Following testing, lift settings shall be $\geq 2440.71$ psig and $\leq 2551.25$ psig	In accordance with the Inservice Testing Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.11 Pressurizer Power Operated Relief Valves (PORVs)

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

APPLICABILITY: MODES 1, 2, MODE 3 with RCS average temperature ( $T_{avg}$ )  $\geq 500^{\circ}\text{F}$ .

ACTIONS

-----NOTES-----

1. Separate Condition entry is allowed for each PORV and each block valve.
  2. LCO 3.0.4 is not applicable.
- 

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
	<u>AND</u>	
	B.3 Restore PORV to OPERABLE status.	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. One block valve inoperable.</p>	<p>-----NOTE----- Required Actions C.1 and C.2 do not apply when block valve is inoperable solely as a result of complying with Required Actions B.2 or E.2 -----</p> <p>C.1 Place associated PORV in manual control.</p> <p><u>AND</u></p> <p>C.2 Restore block valve to OPERABLE status.</p>	<p>1 hour</p> <p>72 hours</p>
<p>D. Required Action and associated Completion Time of Condition A, B, or C not met.</p>	<p>D.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>D.2 Reduce T<sub>avg</sub> to &lt; 500°F.</p>	<p>6 hours</p> <p>12 hours</p>
<p>E. Two PORVs inoperable and not capable of being manually cycled.</p>	<p>E.1 Close associated block valves.</p> <p><u>AND</u></p> <p>E.2 Remove power from associated block valves.</p> <p><u>AND</u></p> <p>E.3 Be in MODE 3.</p> <p><u>AND</u></p> <p>E.4 Reduce T<sub>avg</sub> to &lt; 500°F.</p>	<p>1 hour</p> <p>1 hour</p> <p>6 hours</p> <p>12 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Two block valves inoperable.	-----NOTE----- Required Action F.1 does not apply when block valve is inoperable solely as a result of complying with Required Actions B.2 or E.2 -----	
	F.1 Restore one block valve to OPERABLE status.	2 hours
G. Required Action and associated Completion Time of Condition F not met.	G.1 Be in MODE 3.	6 hours
	<u>AND</u> G.2 Reduce T <sub>avg</sub> to < 500°F.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.11.1 -----NOTE----- Not required to be met with block valve closed in accordance with the Required Action of Condition B or E. ----- Perform a complete cycle of each block valve.	92 days
SR 3.4.11.2 Perform a complete cycle of each PORV.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.12 Low Temperature Overpressure Protection (LTOP) System

LCO 3.4.12

An LTOP System shall be OPERABLE with:

- a. A maximum of one Safety Injection (SI) pump capable of injecting into the RCS;
- b. Each accumulator isolated, whose pressure is  $\geq$  the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR, and
- c. One of the following pressure relief capabilities:
  - 1. Two power operated relief valves (PORVs) with lift settings within the limits specified in the PTLR, or
  - 2. The RCS depressurized and an RCS vent path with venting capability equivalent to or greater than a PORV.

APPLICABILITY: MODE 4 when any RCS cold leg temperature is  $\leq$  LTOP enabling temperature specified in the PTLR,  
MODE 5,  
MODE 6 when the reactor vessel head is on.

ACTIONS

-----NOTE-----

While this LCO is not met, entry into MODE 6, with the reactor vessel head on, from MODE 6, with the reactor vessel head removed, is not permitted.

-----

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

(continued)

ACTIONS (continued)

<p>B. An accumulator not isolated when the accumulator pressure is greater than or equal to the maximum RCS pressure for existing cold leg temperature allowed in the PTLR.</p>	<p>B.1 Isolate affected accumulator.</p>	<p>1 hour</p>
<p>C. Required Action and associated Completion Time of Condition B not met.</p>	<p>C.1 Increase RCS cold leg temperature to &gt; LTOP enabling temperature specified in the PTLR.</p> <p><u>OR</u></p> <p>C.2 Depressurize affected accumulator to less than the maximum RCS pressure for existing cold leg temperature allowed in the PTLR.</p>	<p>12 hours</p> <p>12 hours</p>
<p>D. One required PORV inoperable in MODE 4.</p>	<p>D.1 Restore required PORV to OPERABLE status.</p>	<p>7 days</p>
<p>E. One required PORV inoperable in MODE 5 or 6.</p>	<p>E.1 Restore required PORV to OPERABLE status.</p>	<p>24 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>F. Two required PORVs inoperable.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition A, C, D or E not met.</p> <p><u>OR</u></p> <p>LTOP System inoperable for any reason other than Condition A, B, C, D or E.</p>	<p>F.1 Depressurize RCS and establish RCS vent path with venting capability equivalent to or greater than a PORV.</p>	<p>8 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.12.1	Verify a maximum of one SI pump is capable of injecting into the RCS.	12 hours
SR 3.4.12.2	<p>-----NOTE-----            Only required when accumulator pressure is <math>\geq</math> the maximum RCS pressure for existing cold leg temperature allowed by the P/T limit curves provided in the PTLR.            -----</p> <p>Verify each accumulator is isolated.</p>	12 hours
SR 3.4.12.3	<p>-----NOTE-----            Only required to be performed when complying with LCO 3.4.12.c.2.            -----</p> <p>Verify required RCS vent path with venting capability equivalent to or greater than a PORV.</p>	<p>12 hours for unlocked open vent valve(s)</p> <p><u>AND</u></p> <p>31 days for other vent path(s)</p>
SR 3.4.12.4	Verify required trains of LTOP armed.	72 hours
SR 3.4.12.5	Perform a COT on each required PORV, excluding actuation.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.12.6	Perform CHANNEL CALIBRATION for each required PORV actuation channel.	18 months
SR 3.4.12.7	Perform a complete cycle of each required PORV solenoid air control valve and check valve on the nitrogen gas bottles.	18 months
SR 3.4.12.8	Perform a complete cycle of each required PORV.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 RCS Operational LEAKAGE

LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

- a. No pressure boundary LEAKAGE;
- b. 1 gpm unidentified LEAKAGE;
- c. 10 gpm identified LEAKAGE;
- d. 500 gallons per day primary to secondary LEAKAGE through any one SG.

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

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RCS LEAKAGE not within limits for reasons other than pressure boundary LEAKAGE.	A.1 Reduce LEAKAGE to within limits.	4 hours
B. Required Action and associated Completion Time of Condition A not met.  <u>OR</u>  Pressure boundary LEAKAGE exists.	B.1 Be in MODE 3.  <u>AND</u>  B.2 Be in MODE 5.	6 hours    36 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.4.13.1	<p>-----NOTE-----            Not required to be performed until 12 hours after establishment of steady state operation.            -----</p> <p>Verify RCS Operational Leakage is within limits by performance of RCS water inventory balance.</p>	72 hours
SR 3.4.13.2	Verify steam generator tube integrity is in accordance with the Steam Generator Tube Surveillance Program.	In accordance with the Steam Generator Tube Surveillance 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.

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

ACTIONS

-----NOTES-----

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One or more flow paths with leakage from one or more RCS PIVs not within limit.</p>	<p>-----NOTE----- Each valve used to satisfy Required Action A.1 and Required Action A.2 must have been verified to meet SR 3.4.14.1 and be in the reactor coolant pressure boundary or the high pressure portion of the system. -----</p>	<p>(continued)</p>

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	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
	<u>AND</u> A.2 Isolate the high pressure portion of the affected system from the low pressure portion by use of a second closed manual, deactivated automatic, or check valve.	72 hours
B. Required Action and associated Completion Time for Condition A not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	36 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
<p>SR 3.4.14.1 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Not required to be performed in MODES 3 and 4.</li> <li>2. Not required to be performed on the RCS PIVs located in the RHR flow path when in the shutdown cooling mode of operation.</li> <li>3. RCS PIVs actuated during the performance of this Surveillance are not required to be tested more than once if a repetitive testing loop cannot be avoided.</li> </ol> <p>-----</p> <p>Verify leakage from each RCS PIV is within the limits contained in the RCS PIV Leakage Program.</p>	<p>In accordance with the Inservice Testing Program, and 18 months</p> <p><u>AND</u></p> <p>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</p> <p><u>AND</u></p> <p>(continued)</p>

SURVEILLANCE	FREQUENCY
SR 3.4.14.1 (continued)	Within 24 hours following valve actuation due to automatic or manual action or flow through the valve

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.15 RCS Leakage Detection Instrumentation

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

- a. One containment sump level alarm; and
- b. One containment atmosphere radioactivity monitor (gaseous or particulate).

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

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. Required containment sump level alarm inoperable.</p>	<p>-----NOTE----- LCO 3.0.4 is not applicable. -----</p>	
	<p>-----NOTE----- Not required until 12 hours after establishment of steady state operation. -----</p>	
	<p>A.1 Perform SR 3.4.13.1.  <u>AND</u>  A.2 Restore required containment sump monitor to OPERABLE status.</p>	<p>Once per 24 hours          30 days</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. Required containment atmosphere radioactivity monitor inoperable.</p>	<p>-----NOTE-----                      LCO 3.0.4 is not applicable.                      -----</p> <p>B.1.1 Analyze grab samples of the containment atmosphere.</p> <p><u>OR</u></p> <p>-----NOTE-----                      Not required until 12 hours after establishment of steady state operation.                      -----</p> <p>B.1.2 Perform SR 3.4.13.1.</p> <p><u>AND</u></p> <p>B.2 Restore required containment atmosphere radioactivity monitor to OPERABLE status.</p>	<p>Once per 24 hours</p> <p>Once per 24 hours</p> <p>30 days</p>
<p>C. Required Action and associated Completion Time not met.</p>	<p>C.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>C.2 Be in MODE 5.</p>	<p>6 hours</p> <p>36 hours</p>
<p>D. All required monitors and level alarm inoperable.</p>	<p>D.1 Enter LCO 3.0.3.</p>	<p>Immediately</p>

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.4.15.1	Perform CHANNEL CHECK of the required containment atmosphere radioactivity monitor.	12 hours
SR 3.4.15.2	Perform CHANNEL CALIBRATION of the required containment sump level alarm.	18 months
SR 3.4.15.3	Perform CHANNEL CALIBRATION of the required containment atmosphere radioactivity monitor.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.16 RCS Specific Activity

LCO 3.4.16 The specific activity of the reactor coolant shall be within limits.

APPLICABILITY: MODES 1 and 2,  
MODE 3 with RCS average temperature ( $T_{avg}$ )  $\geq$  500°F.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. DOSE EQUIVALENT I-131 > 0.8 $\mu$ Ci/gm.	-----Note----- LCO 3.0.4 is not applicable. -----	Once per 4 hours
	A.1 Verify DOSE EQUIVALENT I-131 within the acceptable region of Figure 3.4.16-1.  <u>AND</u> A.2 Restore DOSE EQUIVALENT I-131 to within limit.	
B. Gross specific activity of the reactor coolant not within limit.	B.1 Be in MODE 3 with $T_{avg}$ < 500°F.	6 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. Required Action and associated Completion Time of Condition A not met.</p> <p><u>OR</u></p> <p>DOSE EQUIVALENT I-131 in the unacceptable region of Figure 3.4.16-1.</p>	<p>C.1 Be in MODE 3 with <math>T_{avg} &lt; 500^{\circ}F</math>.</p>	<p>6 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.4.16.1 Verify reactor coolant gross specific activity <math>\leq 100/\bar{E}</math> <math>\mu Ci/gm</math>.</p>	<p>7 days</p>
<p>SR 3.4.16.2 -----NOTE----- Only required to be performed in MODE 1. -----</p> <p>Verify reactor coolant DOSE EQUIVALENT I-131 specific activity <math>\leq 0.8 \mu Ci/gm</math>.</p>	<p>14 days</p> <p><u>AND</u></p> <p>Between 2 and 6 hours after a THERMAL POWER change of <math>\geq 15\%</math> RTP within a 1 hour period</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.4.16.3</p> <p>-----NOTE-----            Not required to be performed until 31 days after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for <math>\geq 48</math> hours.            -----</p> <p>Determine <math>\bar{E}</math> from a sample taken in MODE 1 after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for <math>\geq 48</math> hours.</p>	<p>184 days</p>

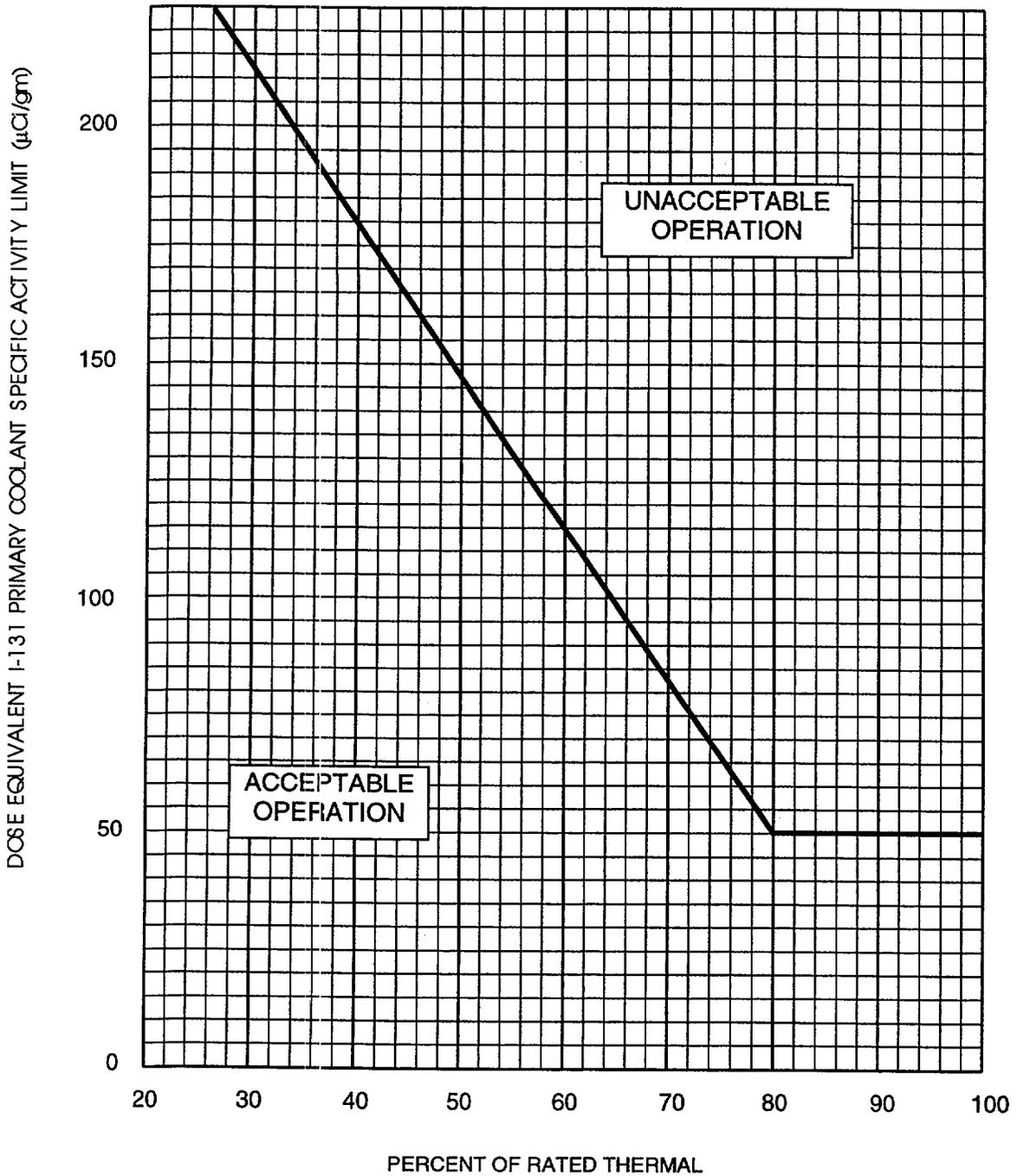


Figure 3.4.16-1 (page 1 of 1)  
Reactor Coolant DOSE EQUIVALENT I-131 Specific Activity Limit  
Versus Percent of RATED THERMAL POWER

### 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

#### 3.5.1 Accumulators

LCO 3.5.1 Two Safety Injection 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. Power not removed from one or both accumulator isolation valve(s) for maintenance or testing.	B.1 Remove power from accumulator isolation valve(s).	4 hours
C. One accumulator inoperable for reasons other than Conditions A or B.	C.1 Restore accumulator to OPERABLE status.	1 hour
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 Be in MODE 3.	6 hours
	<u>AND</u> D.2 Reduce RCS pressure to $\leq$ 1000 psig.	12 hours
E. Two accumulators inoperable for reasons other than Condition B.	E.1 Enter LCO 3.0.3.	Immediately

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify each accumulator isolation valve is fully open.	12 hours
SR 3.5.1.2	Verify borated water volume in each accumulator is $\geq 1100 \text{ ft}^3$ and $\leq 1136 \text{ ft}^3$ .	12 hours
SR 3.5.1.3	Verify nitrogen cover pressure in each accumulator is $\geq 700 \text{ psig}$ and $\leq 800 \text{ psig}$ .	12 hours
SR 3.5.1.4	Verify boron concentration in each accumulator is $\geq 2600 \text{ ppm}$ and $\leq 3100 \text{ ppm}$ .	31 days  <u>AND</u>  -----NOTE----- Only required to be performed for affected accumulators -----  Once within 24 hours after each solution volume increase of $\geq 5\%$ of indicated level that is not the result of addition from the refueling water storage tank with boron concentration $\geq 2600 \text{ ppm}$ and $\leq 3100 \text{ ppm}$
SR 3.5.1.5	Verify power is removed from each accumulator isolation valve operator when RCS pressure is $> 1000 \text{ psig}$ .	31 days

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS—Operating

LCO 3.5.2 Two ECCS trains shall be OPERABLE.

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

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ECCS train inoperable.	A.1 Restore train to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.5.2.1 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.	31 days
SR 3.5.2.2 Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

<b>SURVEILLANCE</b>		<b>FREQUENCY</b>
SR 3.5.2.3	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.	18 months
SR 3.5.2.4	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	18 months
SR 3.5.2.5	Verify, by visual inspection, each ECCS train containment sump suction inlet is not restricted by debris and the suction inlet debris screens show no evidence of structural distress or abnormal corrosion.	18 months

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

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.5.3.1	<p>The following SRs are applicable for all equipment required to be OPERABLE:</p> <p>SR 3.5.2.1                      SR 3.5.2.4  SR 3.5.2.2                      SR 3.5.2.5  SR 3.5.2.3</p>	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
<p>A. RWST boron concentration not within limits.</p> <p><u>OR</u></p> <p>RWST borated water temperature not within limits.</p>	<p>A.1 Restore RWST to OPERABLE status.</p>	<p>8 hours</p>
<p>B. RWST inoperable for reasons other than Condition A.</p>	<p>B.1 Restore RWST to OPERABLE status.</p>	<p>1 hour</p>
<p>C. Required Action and associated Completion Time not met.</p>	<p>C.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>C.2 Be in MODE 5.</p>	<p>6 hours</p> <p>36 hours</p>

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.5.4.1	Verify RWST borated water temperature is $\geq 40^{\circ}\text{F}$ and $\leq 100^{\circ}\text{F}$ .	24 hours
SR 3.5.4.2	Verify RWST borated water volume is $\geq 275,000$ gallons.	7 days
SR 3.5.4.3	Verify RWST boron concentration is $\geq 2700$ ppm and $\leq 3200$ ppm.	7 days

3.6 CONTAINMENT SYSTEMS

3.6.1 Containment

LCO 3.6.1 Containment shall be OPERABLE.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
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 Containment Tendon Surveillance Program.	In accordance with the 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
<p>A. One or more containment air locks with one bulkhead inoperable.</p>	<p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Required Actions A.1, A.2, and A.3 are not applicable if both bulkheads in the same air lock are inoperable and Condition C is entered.</li> <li>2. Entry and exit is permissible for 7 days under administrative controls if both air locks are inoperable.</li> </ol> <p>-----</p>	<p>(continued)</p>

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

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME	
<p>B. One or more containment air locks with containment air lock interlock mechanism inoperable.</p>	<p>-----NOTES-----</p> <p>1. Required Actions B.1, B.2, and B.3 are not applicable if both bulkheads in the same air lock are inoperable and Condition C is entered.</p> <p>2. Entry and exit of containment is permissible under the control of a dedicated individual.</p> <p>-----</p>		
	<p>B.1 Verify the bulkhead door and equalizing valve are closed on an OPERABLE bulkhead in the affected air lock.</p>		1 hour
	<p><u>AND</u></p>		
	<p>B.2 Lock the bulkhead door and equalizing valve closed on an OPERABLE bulkhead in the affected air lock.</p> <p><u>AND</u></p>		24 hours
		(continued)	

**ACTIONS**

CONDITIONS	REQUIRED ACTION	COMPLETION TIME
B. (continued)	<p>B.3 -----NOTE----- Bulkhead doors and equalizing valves in high radiation areas may be verified locked closed by administrative means. -----</p> <p>Verify the bulkhead door and equalizing valve on an OPERABLE bulkhead in the affected airlock are locked closed.</p>	Once per 31 days
C. One or more containment air locks inoperable for reasons other than Condition A or B.	<p>C.1 Initiate action to evaluate overall containment leakage rate per LCO 3.6.1.</p> <p><u>AND</u></p> <p>C.2 Verify a bulkhead door and associated equalizing valve are closed in the affected air lock.</p> <p><u>AND</u></p> <p>C.3 Restore air lock to OPERABLE status.</p>	<p>Immediately</p> <p>1 hour</p> <p>36 hours</p>
D. Required Action and associated Completion Time not met.	<p>D.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>D.2 Be in MODE 5.</p>	<p>6 hours</p> <p>36 hours</p>

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
<p>SR 3.6.2.1</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. An inoperable air lock bulkhead does not invalidate the previous successful performance of the overall air lock leakage test.</li> <li>2. Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1.</li> </ol> <p>-----</p> <p>Perform required air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program.</p>	<p>In accordance with the Containment Leakage Rate Testing Program</p>
<p>SR 3.6.2.2</p> <p>Verify only one bulkhead door and its associated equalizing valve in the air lock can be opened at a time.</p>	<p>24 months</p>

3.6 CONTAINMENT SYSTEMS

3.6.3 Containment Isolation Valves

LCO 3.6.3        Each containment isolation valve shall be OPERABLE.

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

ACTIONS

-----NOTES-----

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. -----NOTE----- Only applicable to penetration flow paths with two containment isolation valves. -----  One or more penetration flow paths with one containment isolation valve inoperable.</p>	<p>A.1        Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.</p> <p style="text-align: center;"><u>AND</u></p>	<p>4 hours</p> <p style="text-align: right;">(continued)</p>

ACTIONS		
CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	<p>A.2 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Isolation devices in high radiation areas may be verified by use of administrative means.</li> <li>2. Isolation devices that are locked, sealed or otherwise secured may be verified by use of administrative means.</li> </ol> <p>-----</p> <p>Verify the affected penetration flow path is isolated.</p>	<p>Once per 31 days for isolation devices outside containment</p> <p><u>AND</u></p> <p>Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment</p>
<p>B. -----NOTE-----</p> <p>Only applicable to penetration flow paths with two containment isolation valves.</p> <p>-----</p> <p>One or more penetration flow paths with two containment isolation valves inoperable.</p>	<p>B.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.</p>	<p>1 hour</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>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.</p>	<p>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.</p> <p><u>AND</u></p> <p>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.</p>	<p>72 hours</p> <p>Once per 31 days for isolation devices outside containment</p> <p><u>AND</u></p> <p>Prior to entering Mode 4 from Mode 5 if not performed within the previous 92 days for isolation devices inside containment</p>

(continued)

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.3.1 Verify each purge supply and exhaust valve is closed with the control switch locked, except for one purge valve in a penetration flow path to perform leakage rate corrective maintenance.	31 days
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.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.6.3.3</p> <p>-----NOTE----- Valves and blind flanges in high radiation areas may be verified by use of administrative means. -----</p> <p>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.</p>	<p>Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days</p>
<p>SR 3.6.3.4</p> <p>Verify the isolation time of each automatic power operated containment isolation valve is within Inservice Testing Program limits.</p>	<p>In accordance with the Inservice Testing Program</p>
<p>SR 3.6.3.5</p> <p>Verify each automatic containment isolation valve that is not locked, sealed or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal.</p>	<p>18 months</p>

3.6 CONTAINMENT SYSTEMS

3.6.4 Containment Pressure

LCO 3.6.4          Containment pressure shall be  $\geq -2.0$  psig and  $\leq +3.0$  psig.

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

**ACTIONS**

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

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.6.4.1      Verify containment pressure is within limits.	12 hours

3.6 CONTAINMENT SYSTEMS

3.6.5 Containment Air Temperature

LCO 3.6.5 Containment average air temperature shall be  $\leq 120^{\circ}\text{F}$ .

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
	<u>AND</u> 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.	24 hours

3.6 CONTAINMENT SYSTEMS

3.6.6 Containment Spray and Cooling Systems

LCO 3.6.6 Two containment spray trains and four accident fan cooler 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>AND</u> 144 hours from discovery of failure to meet the LCO
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 5.	6 hours  84 hours
C. One or two accident fan cooler unit(s) inoperable.	C.1 Restore accident fan cooler unit(s) to OPERABLE status.	72 hours <u>AND</u> 144 hours from discovery of failure to meet the LCO

(continued)

**ACTIONS (continued)**

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One required accident fan cooler unit service water outlet valve inoperable.	D.1 Restore required accident fan cooler unit outlet valve to OPERABLE status.	72 hours  <u>AND</u> 144 hours from discovery of failure to meet the LCO
E. Required Action and associated Completion Time of Condition C or D not met.	E.1 Be in MODE 3.  <u>AND</u> E.2 Be in MODE 5.	6 hours  36 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.6.6.1 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.	31 days
SR 3.6.6.2 Operate each containment cooling accident fan.	31 days

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

<b>SURVEILLANCE</b>		<b>FREQUENCY</b>
SR 3.6.6.3	Verify each containment fan cooler unit can achieve a cooling water flow rate within design limits with a fan cooler service water outlet valve open.	31 days
SR 3.6.6.4	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 3.6.6.5	Verify each automatic containment spray and containment fan cooler unit service water outlet 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.	18 months
SR 3.6.6.6	Verify each containment spray pump starts automatically on an actual or simulated actuation signal.	18 months
SR 3.6.6.7	Verify each containment fan cooler unit accident fan starts automatically on an actual or simulated actuation signal.	18 months
SR 3.6.6.8	Verify proper operation of the accident fan cooler unit backdraft dampers.	18 months
SR 3.6.6.9	Verify each spray nozzle is unobstructed.	10 years

3.6 CONTAINMENT SYSTEMS

3.6.7 Spray Additive System

LCO 3.6.7 The Spray Additive System shall be OPERABLE.

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

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Spray Additive System flowpath inoperable.	A.1 Restore Spray Additive System flowpath to OPERABLE status.	72 hours
B. Spray Additive System inoperable for any reason other than Condition A.	B.1 Restore at least one Spray Additive System flowpath to OPERABLE status.	1 hour
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3.	6 hours
	<u>AND</u> C.2 Be in MODE 5.	84 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.6.7.1	Verify each spray additive manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	31 days
SR 3.6.7.2	Verify spray additive tank solution volume is $\geq 2675$ gal.	184 days
SR 3.6.7.3	Verify spray additive tank NaOH solution concentration is $\geq 30\%$ and $\leq 33\%$ by weight.	184 days
SR 3.6.7.4	Verify each spray additive 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.	18 months

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
<p>A. One or more Steam Generators with one MSSV inoperable and Moderator Temperature Coefficient (MTC) zero or negative at all power levels.</p>	<p>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.</p>	<p>4 hours</p>
<p>B. One or more Steam Generators with two MSSVs inoperable.</p> <p><u>OR</u></p> <p>One or more Steam Generators with one MSSV inoperable and Moderator Temperature Coefficient (MTC) positive at any power level.</p>	<p>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.</p> <p><u>AND</u></p>	<p>4 hours</p> <p>(continued)</p>

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	<p style="text-align: center;">-----NOTE----- Only required in MODE 1. -----</p> <p>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.</p>	36 hours
<p>C. Required Action and associated Completion Time not met.</p> <p><u>OR</u></p> <p>One or more steam generators with three or more MSSVs inoperable.</p>	<p>C.1      Be in MODE 3.</p> <p><u>AND</u></p> <p>C.2      Be in MODE 4.</p>	<p>6 hours</p> <p>12 hours</p>

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
<p>SR 3.7.1.1</p> <p style="text-align: center;">-----NOTE----- Only required to be performed in MODES 1 and 2. -----</p> <p>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 <math>\pm 1\%</math>.</p>	<p>In accordance with the Inservice Testing Program</p>

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

NUMBER OF OPERABLE MSSVs PER STEAM GENERATOR	MAXIMUM ALLOWABLE POWER (% RTP)
3	≤ 49
2	≤ 29

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

VALVE NUMBER		LIFT SETTING (psig ± 3%)
<u>STEAM GENERATOR</u>		
A	B	
MS 2010	MS 2005	1085
MS 2011	MS 2006	1100
MS 2012	MS 2007	1125
MS 2013	MS 2008	1125



ACTIONS		
CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.3      Verify MSIV and non-return check valve in the affected flowpath are closed and the MSIV is de-activated.	Once per 7 days
D. Required Action and associated Completion Time of Condition C not met.	D.1      Be in MODE 3.	6 hours
	<u>AND</u> D.2      Be in MODE 4.	12 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.7.2.1      -----NOTE----- Only required to be performed in MODE 1. ----- Verify closure time of each MSIV is ≤ 5.0 seconds.	In accordance with the Inservice Testing Program
SR 3.7.2.2      -----NOTE----- Only required to be performed in MODE 1. ----- Verify each MSIV actuates to the isolation position on an actual or simulated actuation signal.	18 months
SR 3.7.2.3      Verify each main steam non-return check valve can close.	In accordance with the Inservice Testing Program

3.7 PLANT SYSTEMS

3.7.3 Main Feedwater Isolation

LCO 3.7.3 Main Feedwater Isolation shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. -----NOTE----- Separate Condition entry is allowed for each valve. -----</p> <p>One or more Main Feedwater Regulating Valves (MFRVs) or MFRV bypass valves inoperable.</p>	<p>A.1 Close or isolate valve.</p> <p><u>AND</u></p> <p>A.2 Verify valve is closed or isolated.</p>	<p>72 hours</p> <p>Once per 7 days</p>
<p>B. -----NOTE----- Separate Condition entry is allowed for each pump trip circuit. -----</p> <p>One or more Main Feed Water, Heater Drain Tank, or Condensate pump trip circuits inoperable.</p>	<p>B.1 Secure pump from operation.</p> <p><u>AND</u></p> <p>B.2 Verify pump is not operating.</p>	<p>72 hours</p> <p>Once per 7 days</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. One or more unisolated Main Feedwater Regulating Valves (MFRVs) or unisolated bypass valves inoperable.</p> <p><u>AND</u></p> <p>One or more operating pumps with inoperable trip circuits.</p>	<p>C.1 Restore MFRV or bypass valves to OPERABLE status</p> <p><u>OR</u></p> <p>C.2 Restore pump trip circuits to OPERABLE status</p>	<p>8 hours</p> <p>8 hours</p>
	<p>D. Required Action and associated Completion Time not met.</p> <p><u>AND</u></p> <p>D.2 Be in MODE 4.</p>	<p>D.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>D.2 Be in MODE 4.</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.3.1 Verify each MFRV and associated bypass valve, actuate to the isolation position on an actual or simulated actuation signal.</p>	18 months
<p>SR 3.7.3.2 Verify each Main Feedwater pump automatically trips on an actual or simulated actuation signal.</p>	18 months
<p>SR 3.7.3.3 Verify each Condensate and Heater Drain pump automatically trips on an actual or simulated actuation signal.</p>	18 months

3.7 PLANT SYSTEMS

3.7.4 Atmospheric Dump Valve (ADV) Flowpaths

LCO 3.7.4 Two ADV flowpaths shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required ADV flowpath inoperable.	A.1 -----NOTE----- LCO 3.0.4 is not applicable. -----  Restore required ADV flowpath to OPERABLE status.	7 days
B. Two required ADV flowpaths inoperable.	B.1 Restore one ADV flowpath to OPERABLE status.	1 hour
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.  <u>AND</u>  C.2 Be in MODE 4 without reliance upon steam generator for heat removal.	6 hours   18 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Verify one complete manual cycle of each ADV.	18 months
SR 3.7.4.2	Verify one complete manual cycle of each ADV block valve.	18 months

3.7 PLANT SYSTEMS

3.7.5 Auxiliary Feedwater (AFW)

LCO 3.7.5 The AFW System shall be OPERABLE with; one turbine driven AFW pump system and two motor driven AFW pump systems.

-----NOTE-----  
Only the motor driven AFW pump systems associated with steam generators relied upon for heat removal are required to be OPERABLE in MODE 4.  
-----

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One steam supply to turbine driven AFW pump system inoperable.	A.1 Restore steam supply to OPERABLE status.	7 days <u>AND</u> 10 days from discovery of failure to meet the LCO
B. One turbine driven AFW pump system inoperable in MODE 1, 2 or 3 for reasons other than Condition A.	B.1 Restore turbine driven AFW pump system to OPERABLE status.	72 hours <u>AND</u> 10 days from discovery of failure to meet the LCO

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. One motor driven AFW pump system inoperable in MODE 1, 2 or 3.</p>	<p>C.1 Restore motor driven AFW pump system to OPERABLE status.</p>	<p>7 days <u>AND</u> 10 days from discovery of failure to meet the LCO</p>
<p>D. Required Action and associated Completion Time for Condition A, B, or C not met.</p> <p><u>OR</u></p> <p>Two AFW pump systems inoperable in MODE 1, 2, or 3.</p>	<p>D.1 -----NOTE----- Each unit may be sequentially placed in MODE 3 within 12 hours when both units are in Condition D concurrently. -----</p> <p>Be in MODE 3.</p> <p><u>AND</u></p> <p>D.2 -----NOTE----- Entry into MODE 4 is not required unless one motor driven AFW pump system is OPERABLE. -----</p> <p>Be in MODE 4.</p>	<p>6 hours</p> <p>18 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Three AFW pump systems inoperable in MODE 1, 2, or 3.	E.1 -----NOTE----- LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW pump system is restored to OPERABLE status. ----- Initiate action to restore one AFW pump system to OPERABLE status.	Immediately
F. One or more required AFW pump systems inoperable in MODE 4.	F.1 Initiate action to restore AFW pump system(s) to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.5.1 -----NOTE----- AFW pump system(s) may be considered OPERABLE during alignment and operation for steam generator level control, if it is capable of being manually realigned to the AFW mode of operation. ----- Verify each AFW manual, power operated, and automatic valve in each water flow path, and in both steam supply flow paths to the steam turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

SURVEILLANCE	FREQUENCY
<p>SR 3.7.5.2 -----NOTE-----            Not required to be performed for the turbine driven AFW pump until 24 hours after THERMAL POWER exceeds 2% RTP.            -----            Verify the developed head of each required AFW pump at the flow test point is greater than or equal to the required developed head.</p>	<p>In accordance with the Inservice Testing Program</p>
<p>SR 3.7.5.3 -----NOTE-----            AFW pump system(s) may be considered OPERABLE during alignment and operation for steam generator level control, if it is capable of being manually realigned to the AFW mode of operation.            -----            Verify each AFW automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.</p>	<p>18 months</p>
<p>SR 3.7.5.4 -----NOTES-----            1. Not required to be performed for the turbine driven AFW pump until 24 hours after <math>\geq 1000</math> psig in the steam generator.            2. AFW pump system(s) may be considered OPERABLE during alignment and operation for steam generator level control, if it is capable of being manually realigned to the AFW mode of operation.            -----            Verify each AFW pump starts automatically on an actual or simulated actuation signal.</p>	<p>18 months</p>

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

<b>SURVEILLANCE</b>		<b>FREQUENCY</b>
<b>SR 3.7.5.5</b>	Verify proper alignment of the required AFW flow paths by verifying flow from the condensate storage tank to each steam generator supplied by the respective AFW pump system.	Prior to THERMAL POWER exceeding 2% RTP whenever unit has been in MODE 5, MODE 6, or defueled for a cumulative period of > 30 days

3.7 PLANT SYSTEMS

3.7.6 Condensate Storage Tank (CST)

LCO 3.7.6 The CST shall be OPERABLE.

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

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CST inoperable.	A.1 Restore CST to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 4, without reliance on steam generator for heat removal.	18 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.7.6.1 Verify the CST level is $\geq$ 13,000 gallons.	12 hours

3.7 PLANT SYSTEMS

3.7.7 Component Cooling Water (CC) System

LCO 3.7.7 The CC System shall be OPERABLE with; two CC pumps, and two required CC heat exchangers.

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

ACTIONS

-----NOTE-----

Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops — MODE 4," for residual heat removal loops made inoperable by CC.  
-----

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CC pump inoperable.	A.1 Restore CC pump to OPERABLE status.	72 hours <u>AND</u> 144 hours from discovery of failure to meet the LCO
B. One required CC heat exchanger inoperable.	B.1 Restore required CC heat exchanger to OPERABLE status.	72 hours <u>AND</u> 144 hours from discovery of failure to meet the LCO
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 5.	6 hours  36 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
<p>SR 3.7.7.1</p> <p>-----NOTE----- Isolation of CC flow to individual components does not render the CC System inoperable. -----</p> <p>Verify each CC manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	<p>31 days</p>

3.7 PLANT SYSTEMS

3.7.8 Service Water (SW) System

- LCO 3.7.8 The SW System shall be OPERABLE with:
- a. Six OPERABLE SW pumps;
  - b. SW ring header continuous flowpath not interrupted;
  - c. Required automatic non-essential-SW-load isolation valves OPERABLE or affected non-essential flowpath isolated; and
  - d. Opposite unit containment accident fan cooler unit SW outlet motor operated valves closed or SW flowpath isolated.

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

ACTIONS

-----NOTE-----  
Enter applicable Conditions and Required Actions for systems made inoperable by SW System.  
-----

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SW pump inoperable.	A.1 Restore SW pump to OPERABLE status.	7 days  <u>AND</u> 14 days from discovery of failure to meet the LCO
B. Two or three SW pumps inoperable.	B.1 Restore SW pump(s) to OPERABLE status.	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. SW ring header continuous flowpath interrupted.</p>	<p>C.1 Verify SW System capable of providing required cooling water flow to required equipment.</p> <p><u>AND</u></p> <p>C.2 Restore the SW ring header continuous flowpath.</p>	<p>1 hour</p> <p>7 days</p> <p><u>AND</u></p> <p>14 days from discovery of failure to meet the LCO</p>
<p>D. -----NOTE----- Separate Condition entry is allowed for each non-essential-SW-load flowpath. -----</p> <p>One or more non-essential-SW-load flowpath(s) with one required automatic isolation valve inoperable.</p> <p><u>AND</u></p> <p>Affected non-essential flowpath(s) not isolated.</p>	<p>D.1 -----NOTE----- Not required to be met if in Condition E. -----</p> <p>Verify required redundant automatic isolation valve in the affected non-essential flowpath(s) OPERABLE.</p> <p><u>AND</u></p> <p>D.2 Isolate the affected non-essential flowpath(s).</p>	<p>1 hour</p> <p>72 hours</p> <p><u>AND</u></p> <p>14 days from discovery of failure to meet the LCO</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>E. One or more non-essential-SW-load flowpath(s) with two required automatic isolation valves inoperable.</p> <p><u>AND</u></p> <p>Affected non-essential flowpath(s) not isolated.</p>	<p>E.1 Isolate the affected non-essential flowpath(s).</p>	<p>1 hour</p>
<p>F. One or more opposite unit containment accident fan cooler unit SW outlet motor operated valves open.</p> <p><u>AND</u></p> <p>Opposite unit containment accident fan cooler unit SW flowpath not isolated.</p>	<p>F.1 Verify SW System capable of providing required cooling water flow to required equipment.</p> <p><u>AND</u></p> <p>F.2 Isolate the opposite unit containment accident fan cooler unit SW flowpath.</p>	<p>1 hour</p> <p>72 hours</p> <p><u>AND</u></p> <p>14 days from discovery of failure to meet the LCO</p>
<p>G. Four or more SW pumps inoperable.</p>	<p>G.1 Restore SW pump(s) to OPERABLE status.</p>	<p>1 hour</p>

(continued)

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.8.1 -----NOTE----- Isolation of SW flow to individual components does not render the SW System inoperable. -----</p> <p>Verify each SW manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	31 days
SR 3.7.8.2 Verify each required SW automatic non-essential-SW-load isolation valve that is not locked, sealed, or otherwise secured in the closed position, actuates to the closed position on an actual or simulated actuation signal.	18 months
SR 3.7.8.3 Verify each SW pump starts automatically on an actual or simulated actuation signal.	18 months

3.7 PLANT SYSTEMS

3.7.9 Control Room Emergency Filtration System (CREFS)

LCO 3.7.9 CREFS shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, 4,  
During movement of irradiated fuel assemblies,  
During CORE ALTERATIONS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CREFS inoperable.	A.1 Restore CREFS to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	B.2 Suspend movement of irradiated fuel assemblies.	Immediately
	<u>AND</u>	
	B.3 Be in MODE 3.	6 hours
	<u>AND</u>	
	B.4 Be in MODE 5.	36 hours

SUREVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.9.1 Operate the CREFS for $\geq$ 15 minutes.	31 days

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

<b>SURVEILLANCE</b>		<b>FREQUENCY</b>
SR 3.7.9.2	Perform required CREFS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with VFTP
SR 3.7.9.3	Verify each CREFS emergency make-up fan actuates on an actual or simulated actuation signal.	18 months
SR 3.7.9.4	Verify each CREFS automatic damper in the emergency mode flow path actuates to the correct position on an actual or simulated actuation signal.	18 months
SR 3.7.9.5	Verify CREFS manual start capability and alignment.	18 months
SR 3.7.9.6	Verify each CREFS emergency make-up fan can maintain a positive pressure of $\geq 0.125$ inches water gauge in the control room envelope, relative to the adjacent turbine building during the emergency mode of operation at a makeup flow rate of 4950 cfm $\pm 10\%$ .	18 months

3.7 PLANT SYSTEMS

3.7.10 Fuel Storage Pool Water Level

LCO 3.7.10 The fuel storage pool water level shall be  $\geq 23$  ft over the top of irradiated fuel assemblies seated in the storage racks.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.10.1 Verify the fuel storage pool water level is $\geq 23$ ft above the top of the irradiated fuel assemblies seated in the storage racks.	7 days

3.7 PLANT SYSTEMS

3.7.11 Fuel Storage Pool Boron Concentration

LCO 3.7.11 The fuel storage pool boron concentration shall be  $\geq$  2100 ppm.

APPLICABILITY: When fuel assemblies are stored in the spent 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 Initiate action to restore fuel storage pool boron concentration to within limit.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.11.1 Verify the fuel storage pool boron concentration is within limit.	7 days

3.7 PLANT SYSTEMS

3.7.12 Spent Fuel Pool Storage

LCO 3.7.12 Fuel assembly storage in the spent fuel pool shall be as follows:

- a. Fuel assembly initial enrichment  $\leq$  4.6% w/o U-235; or
- b. Fuel assembly contains Integral Fuel Burnable Absorber (IFBA) rods within the "acceptable" range of Figure 3.7.12-1.

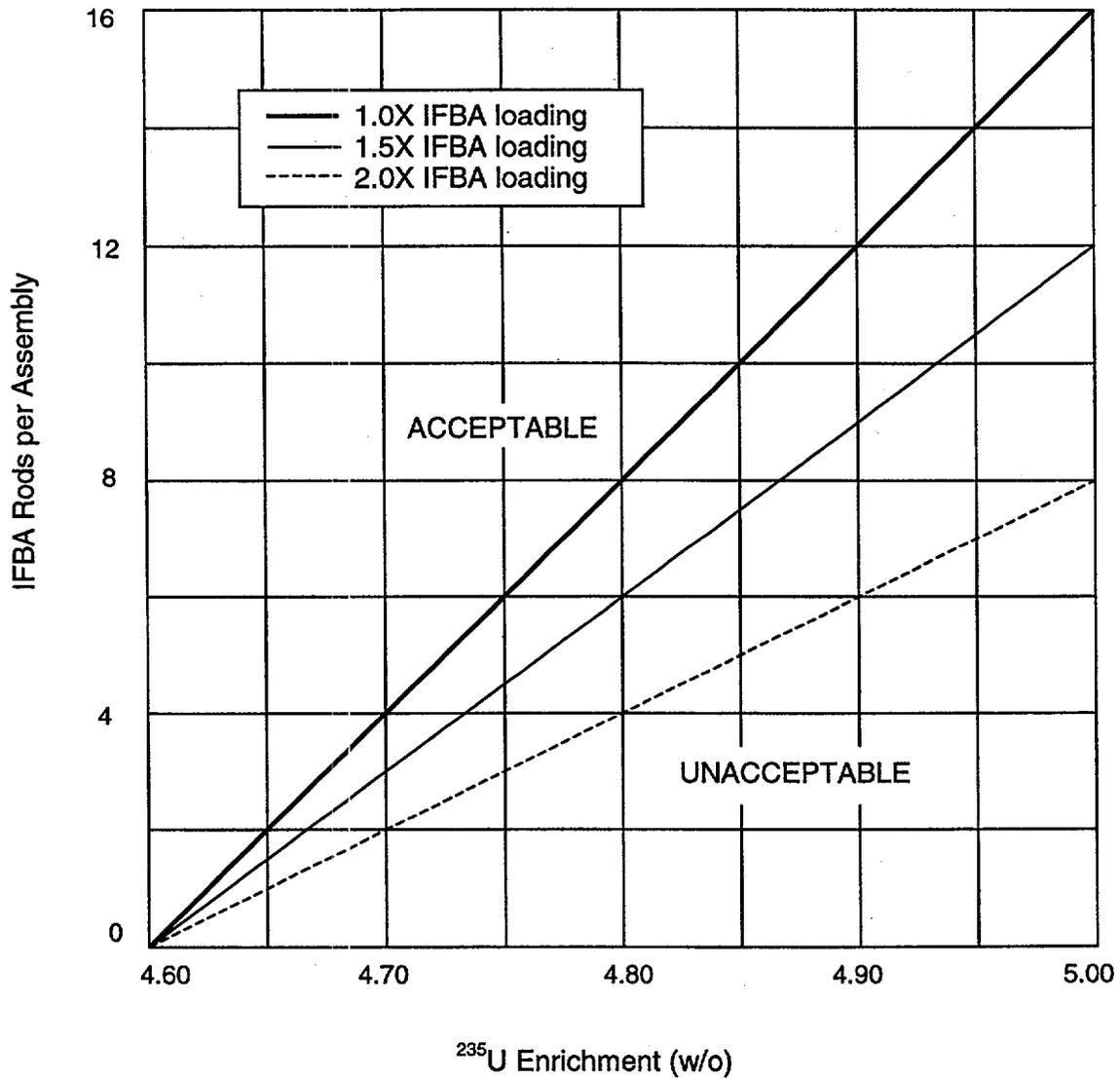
APPLICABILITY: Whenever any fuel assembly is stored in the spent fuel storage pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met.	-----NOTE----- LCO 3.0.3 is not applicable. -----	Immediately
	A.1 Restore spent fuel pool within fuel storage limits.	

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.12.1 Verify by administrative means each fuel assembly meets fuel storage limits.	Prior to storing the fuel assemblies in the spent fuel storage pool



Note: 1.0X, 1.5X, and 2.0X IFBA rods have normal poison material loadings of 1.67, 2.50, and 3.34 milligrams B-10 per inch, respectively.

Figure 3.7.12-1 (page 1 of 1)  
Fuel Assembly IFBA Requirements

3.7 PLANT SYSTEMS

3.7.13 Secondary Specific Activity

LCO 3.7.13 The specific activity of the secondary coolant shall be  $\leq 1.0 \mu\text{Ci/gm}$  DOSE EQUIVALENT I-131.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.13.1 Verify the specific activity of the secondary coolant is $\leq 1.0 \mu\text{Ci/gm}$ DOSE EQUIVALENT I-131.	31 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources—Operating

LCO 3.8.1 The following AC electrical power sources shall be OPERABLE:

- a. One circuit between the offsite transmission network and the associated unit's 4.16 kV Class 1E safeguards buses, A05 and A06, utilizing the associated unit's 345/13.8 kV (X03) transformer or the opposite unit's 345/13.8 kV (X03) transformer with the gas turbine in operation, and the associated unit's 13.8/4.16 kV (X04) transformer;
- b. One circuit between the offsite transmission network and the opposite unit's 4.16 kV Class 1E safeguards buses, A05 and A06; and
- c. One standby emergency power source capable of supplying each 4.16 kV/480 V Class 1E safeguards bus.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. Associated unit 345/13.8 kV (X03) transformer inoperable.</p> <p><u>OR</u></p> <p>Gas turbine not in operation when utilizing opposite unit's 345/13.8 kV (X03) transformer.</p>	<p>A.1 Verify one circuit between the offsite transmission network and the associated unit's 4.16 kV Class 1E safeguards buses, A05 and A06, utilizing the opposite unit's 345/13.8 kV (X03) transformer.</p>	24 hours
	<p><u>AND</u></p> <p>A.2 Verify gas turbine in operation.</p>	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. Associated unit's 13.8/4.16 kV (X04) transformer inoperable.</p>	<p>B.1 Restore associated unit's 13.8/4.16 kV (X04) transformer to OPERABLE status.</p>	<p>24 hours</p>
<p>C. Associated unit's required offsite power source to buses A05 and A06 inoperable.</p> <p><u>OR</u></p> <p>Required offsite power source to buses 1A05 and 2A06 inoperable.</p>	<p>C.1 Restore required offsite power source(s) to OPERABLE status.</p>	<p>24 hours</p>
<p>D. One or more required offsite power source(s) to one or more required Class 1E 4.16 kV bus(es) inoperable.</p>	<p>D.1 Declare required feature(s) supported by the inoperable required offsite power source inoperable when its required redundant feature(s) is inoperable.</p> <p><u>AND</u></p> <p>D.2 Restore required offsite power source(s) to OPERABLE status.</p>	<p>12 hours from discovery of Condition D concurrent with inoperability of redundant required feature(s)</p> <p>7 days</p> <p><u>AND</u></p> <p>14 days from discovery of failure to meet LCO</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>-----NOTE----- Separate Condition entry is allowed for each inoperable standby emergency power source. -----</p> <p>E. One or more required standby emergency power source(s) inoperable.</p>	<p>E.1 Declare required feature(s) supported by the inoperable standby emergency power source inoperable when its required redundant feature(s) is inoperable.</p> <p><u>AND</u></p> <p>E.2.1 Determine other required standby emergency power source(s) is not inoperable due to common cause failure.</p> <p><u>OR</u></p> <p>E.2.2 Perform SR 3.8.1.2 for other required standby emergency power source(s).</p> <p><u>OR</u></p> <p>E.2.3 Declare other required standby emergency power source(s) inoperable.</p> <p><u>AND</u></p> <p>E.3 Restore required standby emergency power source(s) to OPERABLE status.</p>	<p>4 hours from discovery of Condition E concurrent with inoperability of redundant required feature(s)</p> <p>24 hours</p> <p>24 hours</p> <p>24 hours</p> <p>7 days</p> <p><u>AND</u></p> <p>14 days from discovery of failure to meet LCO</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>F. One or more required offsite power source to one or more Class 1E 4.16 kV safeguards bus(es) inoperable.</p> <p><u>AND</u></p> <p>Standby emergency power inoperable to redundant equipment.</p>	<p>-----NOTE----- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems—Operating," when Condition F is entered with no AC power to any train. -----</p> <p>F.1 Restore required offsite circuit to OPERABLE status.</p> <p><u>OR</u></p> <p>F.2 Restore required standby emergency power source to OPERABLE status.</p>	<p>12 hours</p> <p>12 hours</p>
<p>G. Standby emergency power to buses 1A05/1B03 and 1A06/1B04 inoperable.</p> <p><u>OR</u></p> <p>Standby emergency power to buses 2A05/2B03 and 2A06/2B04 inoperable.</p> <p><u>OR</u></p> <p>Standby emergency power to buses 1A05/1B03 and 2A06/2B04 inoperable.</p>	<p>G.1 Restore one required standby emergency power source to OPERABLE status.</p>	<p>2 hours</p>

(continued)

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.1.1      Verify correct breaker alignment and indicated power availability for each required offsite circuit.	7 days
SR 3.8.1.2      -----NOTES----- 1.    All standby emergency power source starts may be preceded by an engine prelube period and followed by a warmup period prior to loading.  2.    A modified standby emergency power source start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer.  ----- Verify each standby emergency power source starts from standby conditions and achieves rated voltage and frequency.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.3</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Standby emergency power source loadings may include gradual loading.</li> <li>2. Momentary transients outside the load range do not invalidate this test.</li> <li>3. This SR shall be preceded by and immediately follow without shutdown a successful performance of SR 3.8.1.2.</li> </ol> <p>-----</p> <p>Verify each standby emergency power source is synchronized and loaded and operates for <math>\geq 60</math> minutes at a load <math>\geq 2500</math> kW and <math>\leq 2850</math> kW.</p>	<p>31 days</p>
<p>SR 3.8.1.4</p> <p>Verify the fuel oil transfer system operates to automatically transfer fuel oil from storage tank to the day tank.</p>	<p>31 days</p>

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.5</p> <p>-----NOTE-----            This surveillance shall not be performed with the associated unit in MODE 1, 2, 3, or 4.            -----</p> <p>Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal:</p> <ul style="list-style-type: none"> <li>a. De-energization of emergency buses;</li> <li>b. Load shedding from emergency buses; and</li> <li>c. Standby emergency power source auto-starts from standby condition and:               <ul style="list-style-type: none"> <li>1. energizes permanently connected loads,</li> <li>2. energizes auto-connected emergency loads through load logic and sequencer,</li> <li>3. achieves steady state voltage within limits,</li> <li>4. achieves steady state frequency within limits, and</li> <li>5. supplies permanently connected and auto-connected emergency loads for <math>\geq 5</math> minutes.</li> </ul> </li> </ul>	<p>18 months</p>

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

SURVEILLANCE		FREQUENCY
SR 3.8.1.6	Verify each standby emergency power source: <ul style="list-style-type: none"> <li>a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power;</li> <li>b. Transfers loads to offsite power source; and</li> <li>c. Returns to ready-to-load operation.</li> </ul>	18 months

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 circuit between the offsite transmission network and the 480 V Class 1E safeguards bus(es) B03 and B04, required by LCO 3.8.10, "Distribution Systems—Shutdown"; and
- b. One standby emergency power source capable of supplying one of the associated unit's 480 V Class 1E safeguards bus(es) B03 or B04, required by LCO 3.8.10.

APPLICABILITY: MODES 5 and 6.

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required offsite circuit inoperable.	A.1 Declare affected required feature(s) with no offsite power available inoperable.	Immediately
	<u>AND</u> A.2 Initiate action to restore required offsite power circuit to OPERABLE status.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One required standby emergency power source inoperable.	B.1 Declare affected required feature(s) with no standby emergency power source available inoperable.	Immediately
	<u>AND</u> B.2 Initiate action to restore required standby emergency power source to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.2.1 Verify correct breaker alignment and indicated power availability for each required offsite circuit.	7 days
SR 3.8.2.2 -----NOTE----- All standby emergency power source starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. ----- Verify each required standby emergency power source starts from standby conditions and achieves rated voltage and frequency.	31 days
SR 3.8.2.3 Verify the fuel oil transfer system operates to automatically transfer fuel oil from storage tank to the day tank.	31 days

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

SURVEILLANCE	FREQUENCY
<p>SR 3.8.2.4</p> <p>-----NOTE----- The following SR is not required to be performed if it is not met solely due to an expired frequency. -----</p> <p>Verify on an actual or simulated loss of offsite power signal:</p> <ol style="list-style-type: none"> <li>1. De-energization of the safeguards buses;</li> <li>2. Load shedding of the 480 V safeguards bus;</li> <li>3. Standby emergency power source auto-starts from standby condition and energizes the safeguards buses, and</li> <li>4. supplies bus loads for <math>\geq 5</math> minutes.</li> </ol>	<p>18 months</p>
<p>SR 3.8.2.5</p> <p>-----NOTE----- The following SR is not required to be performed if it is not met solely due to an expired frequency. -----</p> <p>Verify each standby emergency power source synchronizes with offsite power source upon a simulated restoration of offsite power and returns to ready-to-load operation.</p>	<p>18 months</p>

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil and Starting Air

LCO 3.8.3            Stored diesel fuel oil shall be within limits and starting air subsystem shall be OPERABLE for each required standby emergency power source.

APPLICABILITY:    When associated standby emergency power source is required to be OPERABLE.

ACTIONS

-----NOTE-----  
Separate Condition entry is allowed for each standby emergency power source.  
-----

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more standby emergency power sources with < 11,000 gal in storage tank.	A.1 Declare associated standby emergency power source(s) inoperable.	Immediately
B. One or more standby emergency power sources with stored fuel oil total particulates not within limit.	B.1 Restore fuel oil total particulates within limit.	7 days
C. One or more standby emergency power sources with new fuel oil properties not within limits.	C.1 Restore stored fuel oil properties to within limits.	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One or more standby emergency power sources with inoperable starting air system(s).	D.1 Declare associated standby emergency power source(s) inoperable.	Immediately
E. Required Action and associated Completion Time of Condition B or C not met.  <u>OR</u>  One or more standby emergency power sources' diesel fuel oil not within limits for reasons other than Condition B or C.	E.1 Declare associated standby emergency power source(s) inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.3.1 Verify each fuel oil storage tank contains $\geq 11,000$ gal of fuel.	31 days
SR 3.8.3.2 Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.3 Verify each standby emergency power source air start bottle bank pressure is $\geq 165$ psig.	31 days

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

<b>SURVEILLANCE</b>		<b>FREQUENCY</b>
SR 3.8.3.4	Check for and remove accumulated water from each fuel oil storage tank.	92 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources—Operating

LCO 3.8.4 The D-01, D-02, D-03, and D-04 DC electrical power subsystems shall be OPERABLE.

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

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One DC electrical power subsystem inoperable.	-----NOTE----- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems—Operating," when any DC bus is de-energized. -----	
	A.1 Restore DC electrical power subsystem to OPERABLE status.	2 hours
B. Required Action and Associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	36 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.8.4.1 Verify correct battery terminal voltage is within limits on float charge.	7 days

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

SURVEILLANCE		FREQUENCY
SR 3.8.4.2	<p>Verify no visible corrosion at battery terminals and connectors.</p> <p><u>OR</u></p> <p>Verify battery connection resistance is within limits.</p>	92 days
SR 3.8.4.3	Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration that could degrade battery performance.	12 months
SR 3.8.4.4	Remove visible terminal corrosion, and verify battery cell to cell and terminal connections are coated with anti-corrosion material.	12 months
SR 3.8.4.5	Verify battery connection resistance is within limits.	12 months
SR 3.8.4.6	Verify battery chargers D-07, D-08, and D-09 each supply $\geq 203$ amps at $\geq 125$ V for $\geq 8$ hours, and battery chargers D-107, D-108, and D-109 each supply $\geq 273$ amps at $\geq 125$ V for $\geq 8$ hours.	18 months
SR 3.8.4.7	<p>-----NOTES-----</p> <p>The modified performance discharge test in SR 3.8.4.8 may be performed in lieu of the service test in SR 3.8.4.7 once per 60 months.</p> <p>-----</p> <p>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.</p>	18 months

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

SURVEILLANCE	FREQUENCY
<p>SR 3.8.4.8      Verify battery capacity is <math>\geq</math> 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.</p>	<p>60 months</p> <p><u>AND</u></p> <p>12 months when battery shows degradation or has reached 85% of expected life with capacity &lt; 100% of manufacturer's rating</p> <p><u>AND</u></p> <p>24 months when battery has reached 85% of the expected life with capacity <math>\geq</math> 100% of manufacturer's rating</p>

3.8 ELECTRICAL POWER SYSTEMS

3.8.6 Battery Cell Parameters

LCO 3.8.6 Battery cell parameters for safety related batteries shall be within limits.

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

ACTIONS

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

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

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. Required Action and associated Completion Time of Condition A not met.</p> <p><u>OR</u></p> <p>One or more batteries with average electrolyte temperature of the representative cells &lt; 60°F.</p> <p><u>OR</u></p> <p>One or more batteries with one or more battery cell parameters not within Table 3.8.6-1 Category C values.</p>	<p>B.1 Declare associated battery inoperable.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.8.6.1 Verify battery cell parameters meet Table 3.8.6-1 Category A limits.</p>	<p>7 days</p>

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

<b>SURVEILLANCE</b>		<b>FREQUENCY</b>
SR 3.8.6.2	Verify battery cell parameters meet Table 3.8.6-1 Category B limits.	92 days  <u>AND</u>  Once within 24 hours after a battery discharge < 105 V  <u>AND</u>  Once within 24 hours after a battery overcharge > 142.8 V
SR 3.8.6.3	Verify average electrolyte temperature of representative cells is $\geq 60^{\circ}\text{F}$ .	92 days

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

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

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

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Inverters—Operating

LCO 3.8.7 Four inverters shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required inverter inoperable.	<p>A.1 -----NOTE----- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating" with any vital bus de-energized. ----- Restore inverter to OPERABLE status.</p>	8 hours
B. Required Action and associated Completion Time not met.	<p>B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 5.</p>	6 hours  36 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.8.7.1	Verify correct inverter voltage, and alignment to required AC vital instrument buses.	7 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.8 Inverters—Shutdown

LCO 3.8.8 Inverters shall be OPERABLE to support the onsite Class 1E AC vital instrument bus electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems—Shutdown."

APPLICABILITY: MODES 5 and 6.

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required inverters inoperable.	A.1 Declare affected required feature(s) inoperable.	Immediately
	<u>AND</u> A.2 Initiate action to restore required inverters to OPERABLE status.	Immediately

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.8.8.1 Verify correct inverter voltage and alignments to required AC vital instrument buses.	7 days

### 3.8 ELECTRICAL POWER SYSTEMS

#### 3.8.9 Distribution Systems—Operating

LCO 3.8.9 The following electrical distribution buses shall be OPERABLE:

- a. The 4.16 kV Class 1E safeguards buses 1A05, 1A06, 2A05, and 2A06;
- b. The 480 V Class 1E safeguards buses 1B03, 1B04, 2B03, and 2B04;
- c. The associated unit's 120 VAC Vital Instrument Buses Y01, Y02, Y03, Y04, Y101, Y102, Y103, and Y104;
- d. DC distribution buses D01, D02, D03 and D04.
- e. Motor Control Centers 1B30/2B30, 1B32/2B32, 1B40/2B40 and 1B42/2B42.

-----NOTES-----

1. The opposite unit's 480 V Class 1E safeguards buses B03 and B04, may be cross-tied for  $\leq 8$  hours providing;
  - a. The opposite unit is in MODE 5, or 6, or defueled;
  - b. All required redundant shared features for the unit in MODE 1, 2, 3, or 4 are OPERABLE; and
  - c. All AC electrical power sources required by LCO 3.8.1 for the required redundant shared features for the unit in MODE 1, 2, 3, or 4 are OPERABLE.
2. The opposite units 480 V Class 1E safeguards buses B03 and B04, may be cross-tied for  $> 8$  hours and  $\leq 7$  days providing;
  - a. The opposite unit is defueled;
  - b. All required redundant shared features for the unit in MODE 1, 2, 3, or 4 are OPERABLE;
  - c. All AC electrical power sources required by LCO 3.8.1 for the required redundant shared features for the unit in MODE 1, 2, 3, or 4 are OPERABLE; and
  - d. Loads on the cross-tied buses are limited to preclude overloading of their standby emergency power source.

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

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more electrical power distribution subsystem inoperable.	A.1 Declare associated supported required feature(s) inoperable.	Immediately
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	36 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.8.9.1 Verify correct breaker alignments and power available for required AC, DC, and AC vital instrument bus electrical power distribution subsystems.	7 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.10 Distribution Systems—Shutdown

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

-----NOTE-----

The unit specific 480 V Class 1E safeguards buses B03 and B04, may be cross-tied for  $\leq 8$  hours providing;

1. Two residual heat removal loops are OPERABLE when the unit is in MODE 5 or MODE 6 with reactor cavity water level  $< 23$  ft above the top of reactor vessel flange; or
  2. One residual heat removal loop is OPERABLE when the unit is in MODE 6 with reactor cavity water level  $\geq 23$  ft above the top of reactor vessel flange.
- 

APPLICABILITY: MODES 5 and 6.

**ACTIONS**

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required electrical power distribution subsystems inoperable.	A.1 Declare associated supported required feature(s) inoperable.	Immediately
	<u>AND</u> A.2 Initiate actions to restore required AC, DC, and AC vital instrument bus electrical power distribution subsystems to OPERABLE status.	Immediately

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.8.10.1    Verify correct breaker alignments and power available for required AC, DC, and AC vital instrument bus electrical power distribution subsystems.	7 days

3.9 REFUELING OPERATIONS

3.9.1 Boron Concentration

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

APPLICABILITY: MODE 6.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.1.1 Verify boron concentration is within the limit specified in the COLR.	72 hours

3.9 REFUELING OPERATIONS

3.9.2 Nuclear Instrumentation

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

AND

One source range audible count rate 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 CORE ALTERATIONS.	Immediately
	<u>AND</u> A.2 Suspend positive reactivity additions.	Immediately
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
	<u>AND</u> B.2 Perform SR 3.9.1.1.	Once per 12 hours
C. Required source range audible count rate circuit inoperable.	C.1 Initiate action to isolate unborated water sources.	Immediately

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.9.2.1	Perform CHANNEL CHECK.	12 hours
SR 3.9.2.2	<p>-----NOTE-----                      Neutron detectors are excluded from CHANNEL CALIBRATION.                      -----</p> <p>Perform CHANNEL CALIBRATION.</p>	18 months

3.9 REFUELING OPERATIONS

3.9.3 Containment Penetrations

LCO 3.9.3 The containment penetrations shall be in the following status:

- a. The equipment hatch closed and held in place with all bolts;
- b. One door in each air lock is capable of being closed; and
- c. Each Containment Purge and Exhaust System penetration either:
  - 1. closed by a manual or automatic isolation valve, blind flange, or equivalent, or
  - 2. capable of being closed by an OPERABLE Containment Purge and Exhaust Isolation System.

APPLICABILITY: During CORE ALTERATIONS,  
During movement of irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more containment penetrations not in required status.	A.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u> A.2 Suspend movement of irradiated fuel assemblies within containment.	Immediately

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.9.3.1	Verify each required containment penetration is in the required status.	7 days
SR 3.9.3.2	<p>-----NOTE-----                      Not applicable to containment purge and exhaust valve(s) in penetrations closed to comply with LCO 3.9.3.c.1.                      -----</p> <p>Verify each required containment purge and exhaust valve actuates to the isolation position on an actual or simulated actuation signal.</p>	18 months

3.9 REFUELING OPERATIONS

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

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

-----NOTES-----

The required RHR loop may be not in operation for  $\leq 1$  hour per 8 hour period, provided no operations are permitted that would cause reduction of the Reactor Coolant System boron concentration.

-----

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RHR loop requirements not met.	A.1 Suspend operations involving a reduction in reactor coolant boron concentration.	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

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.9.4.1      Verify one RHR loop is in operation.	12 hours

3.9 REFUELING OPERATIONS

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

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

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Less than the required number of RHR loops OPERABLE.	A.1 Initiate action to restore required RHR loops to OPERABLE status.	Immediately
	<u>OR</u> A.2 Initiate action to establish $\geq 23$ ft of water above the top of reactor vessel flange.	Immediately
B. No RHR loop in operation.	B.1 Suspend operations involving a reduction in reactor coolant boron concentration.	Immediately
	<u>AND</u> B.2 Initiate action to restore one RHR loop to operation.	Immediately

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.9.5.1	Verify one RHR loop is in operation.	12 hours
SR 3.9.5.2	Verify correct breaker alignment and indicated power available to the required RHR pump that is not in operation.	7 days

3.9 REFUELING OPERATIONS

3.9.6 Refueling Cavity Water Level

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

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.6.1        Verify refueling cavity water level is $\geq$ 23 ft above the top of reactor vessel flange.	24 hours