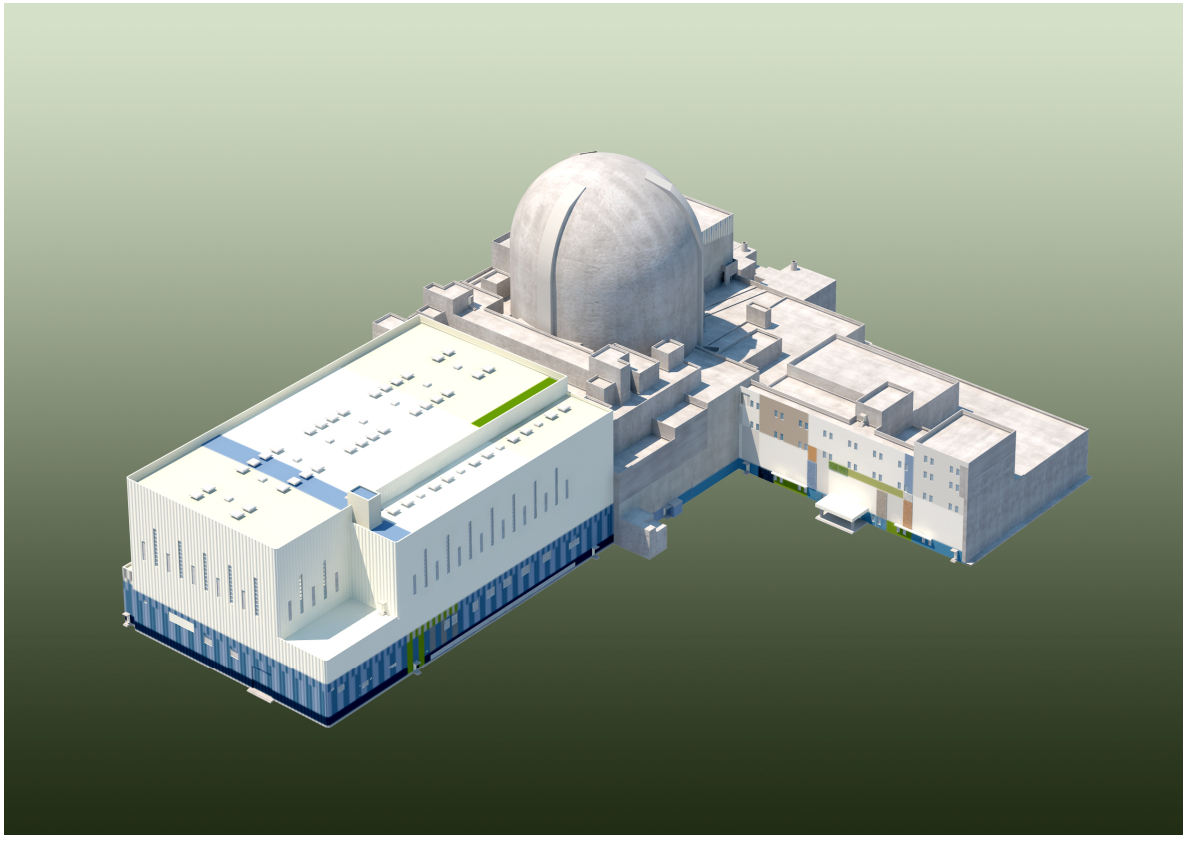
APR1400
DESIGN CONTROL DOCUMENT TIER 2

CHAPTER 16
TECHNICAL SPECIFICATIONS

APR1400-K-X-FS-13002
REVISION 0
SEPTEMBER 2013



KOREA ELECTRIC POWER CORPORATION
KOREA HYDRO & NUCLEAR POWER CO., LTD

CHAPTER 16 - TECHNICAL SPECIFICATIONS

16.1 Introduction to Technical Specifications

16.1.1 Limiting Conditions for Operation (LCOs) Selection Criteria

The APR1400 Technical Specifications LCOs have included the structures, systems, components, and parameters which were been identified by the LCO criteria of 10 CFR 50.36(c)(2)(ii) (Reference 1) as below:

- Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.
- A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.
- A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.
- A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

16.1.2 Technical Specification Content

The content of the APR1400 Technical Specifications meets the requirements of 10 CFR 50.36. The APR1400 Technical Specifications were developed using the most appropriate guidance, NUREG-1432 Rev. 4.0 (Reference 2).

The difference between NUREG-1432 and the APR1400 Technical Specification exists only as necessary to reflect advanced design features and operational features. The units specified in the APR1400 Technical Specifications are the International system of units (SI units) and the English units. The SI units have been used as the primary unit and the English units have been used in parentheses.

16.1.2.1 Completion Times and Surveillance Frequencies

The Completion Times and Surveillance Frequencies specified in NUREG-1432 have generally applied to the associated Actions and Surveillance Requirements of the APR1400 Technical Specifications. For unique systems and features of APR1400 design, similar Completion Times and Surveillance Frequencies have been adopted as appropriate.

16.1.2.2 Plant Design Difference

There are some design differences between the APR1400 Technical Specifications and current design in NUREG-1432. Major design differences include the four train emergency core cooling system design, the adoption of POSRVs, the change of ventilation systems, and auxiliary feedwater system configuration.

16.1.2.3 LCO and Bases information

Some LCOs of APR1400 Technical Specifications have been added and changed compared to NUREG-1432, the related specifications are as below:

- Charging Flow (Specification 3.1.9)
- Special Test Exception (STE) – Reactivity Coefficient Testing (Specification 3.1.12)
- Boron Dilution Alarms (Specification 3.3.14)
- Reactor Coolant Gas Vent (RCGV) Function (Specification 3.4.16)
- Low Temperature Overpressure Protection (LTOP) System (Specification 3.4.11)
- RCS Specific Activity (Specification 3.4.15)

The Surveillance Frequency Control Program of the NUREG-1432 has not been applied to APR1400 plants.

16.1.2.4 Combined License Information

The intention of the APR1400 Technical Specifications is to be used as a guide for the development of the plant-specific Technical Specifications for plants which will reference the standard APR1400 plant. Single brackets ([ ]) are used to identify the preliminary design information or plant-specific information. Double brackets ([[ ]]) indicate the conceptual

design information for those portions of the plant for which the application does not seek certification.

16.1.3 Reference

1. 10 CFR 50.36, “Technical Specifications.”

2. NUREG-1432, “Standard Technical Specifications, Combustion Engineering Plants,” Rev. 4.0, April 2012.

CHAPTER 16 – TECHNICAL SPECIFICATIONS

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1.0 USE AND APPLICATIONS

1.1 Definitions

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

Term	Definition
ACTIONS	ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.
AXIAL SHAPE INDEX (ASI)	ASI shall be the power generated in the lower half of the core less the power generated in the upper half of the core, divided by the sum of the power generated in the lower and upper halves of the core. $ASI = \frac{lower - upper}{lower + upper}$
AZIMUTHAL POWER TILT (T_q)	AZIMUTHAL POWER TILT shall be the power asymmetry between azimuthally symmetric fuel assemblies.
CHANNEL CALIBRATION	A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel, including the required sensor, alarm, and trip functions, and shall include the CHANNEL FUNCTIONAL TEST. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an in-place cross calibration of the sensing elements and normal calibration of the remaining adjustable devices in the channel. Whenever a sensing element is replaced, the next required in-place cross calibration consists of comparing the other sensing elements with the recently installed sensing element. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps so that the entire channel is calibrated.

CHANNEL CHECK	A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter.
CHANNEL FUNCTIONAL TEST	A CHANNEL FUNCTIONAL TEST shall be: a. Analog and bistable logic channels – the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY, including required alarms, interlocks, display and trip functions. b. Digital computer channels – the use of diagnostic programs to test digital computer hardware and the injection of simulated process data into the channel to verify OPERABILITY, including alarms and trip functions. The CHANNEL FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total channel steps so that the entire channel is tested.
CORE ALTERATION	CORE ALTERATION shall be the movement or manipulation of any fuel, sources, reactivity control components, or other components (excluding control element assemblies [CEAs] withdrawn into the upper guide structure) affecting reactivity 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 5.6.3. Plant operation within these limits is addressed in individual Specifications.

DOSE EQUIVALENT I-131	DOSE EQUIVALENT I-131 shall be that concentration of I-131 (Bq/g) that alone would produce the same dose when inhaled as the combined activities of iodine isotopes I-131, I-132, I-133, I-134, and I-135 actually present. The determination of DOSE EQUIVALENT I-131 shall be performed using thyroid dose conversion factors from Table 2.1 of EPA Federal Guidance Report No. 11, "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion," EPA-520/1-88-020, September 1988.
DOSE EQUIVALENT XE-133	DOSE EQUIVALENT XE-133 shall be that concentration of Xe-133 (Bq/g) that alone would produce the same acute dose to the whole body as the combined activities of noble gas nuclides Kr-85m, Kr-85, Kr-87, Kr-88, Xe-131m, Xe-133m, Xe-133, Xe-135m, Xe-135 and Xe-138 actually present. The determination of DOSE EQUIVALENT Xe-133 shall be performed using effective dose conversion factors for air submersion listed in Table III.1 of EPA Federal Guidance Report No. 12, "External Exposure to Radionuclides in Air, Water, and Soil," EPA 402-R-93-081, September 1993.
ENGINEERED SAFETY FEATURE (ESF) RESPONSE TIME	The ESF RESPONSE TIME shall be the time interval from when the monitored parameter exceeds its ESF actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (e.g., valves travel to their required positions, pump discharge pressures reach their required values). Times shall include emergency diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.
LCO SELECTION CRITERIA	LCO (Limiting Conditions for Operation) is the lowest functional capability and performance level required for the safe operation of the nuclear facility. The selection criteria for LCO are classified as the following four categories per 10 CFR 50: <u>CRITERION 1</u> Installed instrument that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

LCO SELECTION CRITERIA (continued)	CRITERION 2 A process variable, design feature or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. CRITERION 3 A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. CRITERION 4 A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.
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 transported to a collection system 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. 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) which is not identified LEAKAGE. c. Pressure Boundary LEAKAGE LEAKAGE (except SG LEAKAGE) through a non-isolable fault in an RCS component body, pipe wall, or vessel wall.

MAXIMUM ALLOWABLE CONTAINMENT LEAKAGE RATE (L_a)	MAXIMUM ALLOWABLE CONTAINMENT LEAKAGE RATE (L_a) shall be 0.1 % of containment air weight per day at the calculated peak containment pressure (P_a).
MID-LOOP	MID-LOOP is defined as the plant condition with the fuel in the reactor vessel and the reactor coolant level below the top of the hot legs at their junction with the reactor vessel.
MODE	A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, reactor coolant cold leg temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in reactor vessel.
OPERABLE - OPERABILITY	A system, subsystem, division, 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, division, train, component, or device to perform its specified function(s) are also capable of performing their related support function(s).
PHYSICS TESTS	PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation. These tests are: a. Described in Chapter 14, Initial Test Program, of the DCD Tier 2 b. Authorized under the provisions of 10 CFR 50.59 c. Otherwise approved by the NRC
PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)	The PTLR is the unit specific document that provides the reactor vessel pressure and temperature limits, including heatup and cooldown rates, for the current reactor vessel fluence period. These pressure and temperature limits shall be determined for each fluence period in accordance with Specification 5.6.4.
RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 3,983 MWt.

REACTOR PROTECTION SYSTEM (RPS) RESPONSE TIME	The RPS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RPS trip setpoint at the input to the input to the channel sensor until electrical power to the control element assemblies (CEAs) drive mechanism is interrupted. The response time may be measured by means of any series of sequential, overlapping, or total steps so the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.
REDUCED RCS INVENTORY	REDUCED RCS INVENTORY is the plant condition when the RCS level is below the 38.72 m (127 ft 1/4 in) elevation and fuel is in the reactor vessel. The 38.72 m (127 ft 1/4 in) elevation corresponds to 91.44 cm (3 ft) below the reactor vessel flange.
SHUTDOWN MARGIN (SDM)	SDM shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming: a. All full strength CEAs (shutdown and regulating) are fully inserted except for the single CEA of highest reactivity worth, which is assumed to be fully withdrawn. However, with all CEAs verified fully inserted by two independent means, it is not necessary to account for a stuck CEA in the SDM calculation. With any CEAs not capable of being fully inserted, the reactivity worth of these CEAs must be accounted for in the determination of SDM. b. In MODES 1 and 2, the fuel and moderator temperatures are changed to the nominal zero power design level. c. There is no change in part strength CEA position.
STAGGERED TEST BASIS	A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems, channels, or other designated components during the interval specified by the Surveillance Frequency, so that all systems, subsystems, channels, or other designated components are tested during *n* Surveillance Frequency intervals, where *n* is the total number of systems, subsystems, channels, or other designated components in the associated function.
THERMAL POWER	THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.

Table 1.1-1

MODES

MODE	TITLE	REACTIVITY CONDITION (k_{eff})	% RATED THERMAL POWER(1)	REACTOR COOLANT COLD LEG TEMPERATURES
1	Power Operation	≥ 0.99	> 5	NA
2	Startup	≥ 0.99	≤ 5	NA
3	Hot Standby	< 0.99	NA	≥ 177 °C (350 °F)
4	Hot Shutdown(2)	< 0.99	NA	177 °C (350 °F) > Tcold > 99 °C (210 °F)
5	Cold Shutdown(2)	< 0.99	NA	≤ 99 °C (210 °F)
6	Refueling(3)	NA	NA	NA

(1) Excluding decay heat

(2) All reactor vessel head closure bolts fully tensioned

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

1.0 USE AND APPLICATIONS

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 indentions 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 example illustrates the use of logical connectors.

EXAMPLE 1.2-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met.	A.1 Verify … AND 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.

EXAMPLES (continued)

EXAMPLE 1.2-2

ACTIONS

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

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

1.0 USE AND APPLICATIONS

1.3 Completion Times

PURPOSE	The purpose of this section is to establish the Completion Time convention and to provide guidance for its use.
BACKGROUND	Limiting Conditions for Operation (LCOs) specify minimum requirements for ensuring safe operation of the unit. The ACTIONS associated with an LCO state Conditions that typically describe the ways in which the requirements of the LCO can fail to be met. Specified with each started Condition are Required Action(s) and Completion Time(s).
DESCRIPTION	The Completion Time is the amount of time allowed for completing a Required Action. It is referenced to the time of discovery of a situation (e.g., inoperable equipment or variable not within limits) that requires entering an ACTIONS Condition, unless otherwise specified, providing the unit is in a MODE or specified condition stated in the Applicability of the LCO. Required Actions must be completed prior to the expiration of the specified Completion Time. An ACTIONS Condition remains in effect and the Required Actions apply until the Condition no longer exists or the unit is not within the LCO Applicability. If situations are discussed that require entry into more than one Condition at a time within a single LCO (multiple Conditions), the Required Actions for each Condition must be performed within the associated Completion Time. When in multiple Conditions, separate Completion Times are tracked for each Condition starting from the time of discovery of the situation that required entry into the Condition. Once a Condition has been entered, subsequent trains, subsystems, components, or variables expressed in the Condition, discovered to be inoperable or not within limits, will <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.

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…”

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 Actions and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

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

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

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

EXAMPLES (continued)

EXAMPLE 1.3-2

ACTIONS

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

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

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

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

While in LCO 3.0.3, if one of the inoperable pumps is restored to OPERABLE status and the Completion Time for Condition A has expired, LCO 3.0.3 may be exited and operation continued in accordance with Condition B. The Completion Time for Condition B is tracked from the time 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 greater than 7 days.

EXAMPLES
(continued)

EXAMPLE 1.3-3

ACTIONS

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

When one Function X train and one Function Y train are inoperable, Condition A and Condition B are concurrently applicable. The Completion Times for Condition A and Condition B are tracked separately for each 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).

EXAMPLES (continued)

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

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

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. AND B.2 Be in MODE 4.	6 hours 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.

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. AND B.2 Be in MODE 4.	6 hours 12 hours

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

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

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

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

EXAMPLES
(continued)

EXAMPLE 1.3-6

ACTIONS

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

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.

EXAMPLES (continued)

EXAMPLE 1.3-7

ACTIONS

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

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.

IMMEDIATE COMPLETION TIME

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

1.0 USE AND APPLICATIONS

1.4 Frequency

PURPOSE	The purpose of this section is to define the proper use and application of Frequency requirements.
DESCRIPTION	Each Surveillance Requirement (SR) has a specified Frequency in which the Surveillance must be met in order to meet the associated LCO. An understanding of the correct application of the specified Frequency is necessary for compliance with the SR. The “specified Frequency” is referred to throughout this section and each of the Specifications of Section 3.0, Surveillance Requirement (SR) Applicability. The “specified Frequency” consists of the requirements of the Frequency column of each SR, as well as certain Notes in the Surveillance column that modify performance requirements. Sometimes special situations dictate when the requirements of a Surveillance are to be met. They are "otherwise stated" conditions allowed by SR 3.0.1. They may be stated as clarifying Notes in the Surveillance, as part of the Surveillances, or both. Situations where a Surveillance could be required (i.e., its Frequency could expire), but where it is not possible or not desired that it be performed until sometime after the associated LCO is within its Applicability, represent potential SR 3.0.4 conflicts. To avoid these conflicts, the SR (i.e., the Surveillance or the Frequency) is stated such that it is only “required” when it can be and should be performed. With an SR satisfied, SR 3.0.4 imposes no restriction. The use of "met" or "performed" in these instances conveys specific meanings. A Surveillance is "met" only when the acceptance criteria are satisfied. Known failure of the requirements of a Surveillance, even without a Surveillance specifically being "performed," constitutes a Surveillance not "met." "Performance" refers only to the requirement to specifically determine the ability to meet the acceptance criteria.

DESCRIPTION (continued)

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

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

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

or

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

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

EXAMPLES

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

EXAMPLE 1.4-1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Perform CHANNEL CHECK.	12 hours

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

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

EXAMPLES
(continued)

EXAMPLE 1.4-2

SURVEILLANCE REQUIREMENTS

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

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

The use of "once" indicates a single performance will satisfy the specified Frequency (assuming no other Frequencies are connected by "AND"). This type of Frequency does not qualify for the 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.

EXAMPLES (continued)

EXAMPLE 1.4-3

SURVEILLANCE REQUIREMENTS

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

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

As the Note modifies the required performance of the Surveillance, it is construed to be part of the "specified Frequency." Should the 7-day interval be exceeded while operation is < 25 % RTP, this Note allows 12 hours after power reaches $\geq$ 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 (plus the extension allowed by SR 3.0.2) with power ≥ 25 % RTP.

Once the unit reaches 25 % RTP, 12 hours would be allowed for completing the Surveillance. If the Surveillance were not performed within this 12-hour interval (plus the extension allowed by SR 3.0.2), there would then be a failure to perform a Surveillance within the specified Frequency, and the provisions of SR 3.0.3 would apply.

EXAMPLES
(continued)

EXAMPLE 1.4-4

SURVEILLANCE REQUIREMENTS

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

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

EXAMPLES (continued)

EXAMPLE 1.4-5

SURVEILLANCE REQUIREMENTS

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

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

As the Note modifies the required performance of the Surveillance, the Note is construed to be part of the "specified Frequency." Should the 7 day interval be exceeded while operation is not in MODE 1, this Note allows entry into and operation in MODES 2 and 3 to perform the Surveillance. The Surveillance is still considered to be performed within the "specified Frequency" if completed prior to entering MODE 1. Therefore, if the Surveillance were not performed within the 7 day (plus the extension allowed by SR 3.0.2) interval, but operation was not in MODE 1, it would not constitute a failure of the SR or failure to meet the LCO. Also, no violation of SR 3.0.4 occurs when changing MODES, even with the 7 day Frequency not met, provided operation does not result in entry into MODE 1.

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

EXAMPLES (continued)

EXAMPLE 1.4-6

SURVEILLANCE REQUIREMENTS

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

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

2.0 SAFETY LIMITS (SLs)

2.1 SLs

2.1.1 Reactor Core SLs

2.1.1.1 In MODES 1 and 2, the departure from nucleate boiling ratio (DNBR) shall be maintained ≥ 1.29.

2.1.1.2 In MODES 1 and 2, the peak fuel centerline temperature shall be maintained at < 5,080 °F, decreasing by 58 °F per 10,000 MWD/MTU for burnup and adjusted for burnable poison per CENPD-275-P, Revision 1-P-A.

2.1.2 Reactor Coolant System (RCS) Pressure SLs

In MODES 1, 2, 3, 4 and 5, the RCS pressure shall be maintained ≤ 193.3 kg/cm^2A (2,750 psia).

2.2 SL Violations

2.2.1 If SL 2.1.1.1 or SL 2.1.1.2 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 MODES 1 or 2, restore compliance and be in MODE 3 within 1 hour.

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

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

LCO 3.0.1	LCOs shall be met during the MODES or other specified Conditions in the Applicability, except as provided in LCO's 3.0.2, 3.0.7, 3.0.8, and 3.0.9.
LCO 3.0.2	Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO's 3.0.5 and 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: 1. MODE 3 within 7 hours 2. MODE 4 within 13 hours 3. 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 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. These exceptions allow entry into MODES or other specified Conditions in the Applicability when the associated ACTIONS to be entered allow unit operation in the MODE or other specified condition in the Applicability only for a limited period of time.

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

LCO 3.0.5

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

LCO 3.0.6

When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered. Only the support system LCO ACTIONS are required to be entered. This is an exception to LCO 3.0.2 for the supported system. In this event, additional evaluations and limitations may be required in accordance with Subsection 5.5.15 of TS, “Safety Function Determination Program (SFDP)”. If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered.

When a support system's Required Action directs a supported system to be declared inoperable or directs entry into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with LCO 3.0.2.

LCO 3.0.7

Special test exception (STE) LCOs in LCOs 3.1.10, 3.1.11 and 3.1.12 allow specified TS requirements to be changed to permit performance of special tests and operations. Unless otherwise specified, all other TS requirements remain unchanged. Compliance with STE LCOs is optional. When an STE LCO is desired to be met but is not met, the ACTIONS of the STE LCO shall be met. When an STE LCO is not desired to be met, entry into a MODE or other specified condition in the Applicability shall only be made in accordance with the other applicable Specifications.

LCO 3.0.8

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

a. The snubbers not able to perform their associated support function(s) are associated with only one train or subsystem of a multiple train or subsystem supported system or are associated with a single train or subsystem supported system and are able to perform their associated support function within 72 hours, or

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

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

LCO 3.0.9

When one or more required barriers are unable to perform their related support function(s), any supported system LCO(s) are not required to be declared not met solely for this reason for up to 30 days provided that at least one train or subsystem of the supported system is OPERABLE and supported by barriers capable of providing their LCO related support function(s).

This specification may be concurrently applied to more than one train or subsystem of a multiple train or subsystem supported system provided at least one train or subsystem of the supported system is OPERABLE and the barriers supporting each of these trains or subsystems provide their related support function(s) for different categories of initiating events.

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

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

3.0 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 of 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.

SR 3.0.4

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

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

SR 3.0.4 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) – T_{cold} > 99 °C (210 °F)

LCO 3.1.1

a. SDM shall be within the limits specified in the COLR.

b. k_{N-1} shall be < 0.99.

c. With reactor trip circuit breakers (RTCBs) closed: Reactor criticality shall not be achieved with shutdown group CEA movement.

APPLICABILITY: MODES 3 and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SDM not within limits.	A.1 Initiate boration to restore SDM to within limit.	15 minutes
B. k_{N-1} not within limit. OR Reactor criticality can be achieved by shutdown group CEA movement when RTCBs are closed.	B.1 Vary CEA position to restore within limit. AND B.2 Initiate boration to restore within limit.	15 minutes 15 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.1.1	Verify SDM to be within the limits specified in the COLR.	24 hours
SR 3.1.1.2	Verify k_{N-1} < 0.99.	24 hours
SR 3.1.1.3	Verify criticality cannot be achieved with shutdown group CEA movement when RTCBs are closed.	24 hours

3.1 REACTIVITY CONTROL SYSTEMS

3.1.2 SHUTDOWN MARGIN (SDM) – T_{cold} ≤ 99 °C (210 °F)

LCO 3.1.2

a. SDM shall be within the limits specified in the COLR.

b. k_{N-1} shall be < 0.99.

c. With reactor trip circuit breakers (RTCBs) closed: Reactor criticality shall not be achieved with shutdown group CEA movement.

APPLICABILITY: MODE 5.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SDM not within limits.	A.1 Initiate boration to restore SDM to within limit.	15 minutes
B. k_{N-1} not within limit. OR Reactor criticality can be achieved by shutdown group CEA movement when RTCBs are closed.	B.1 Vary CEA position to restore within limit. AND B.2 Initiate boration to restore within limit.	15 minutes 15 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.2.1	Verify SDM to be within the limits specified in the COLR.	24 hours
SR 3.1.2.2	Verify k_{N-1} < 0.99.	24 hours
SR 3.1.2.3	Verify criticality cannot be achieved with shutdown group CEA movement when RTCBs are closed.	24 hours

3.1 REACTIVITY CONTROL SYSTEMS

3.1.3 Reactivity Balance

LCO 3.1.3 The core reactivity balance shall be within $\pm$ 1 % Δk/k of predicted values.

APPLICABILITY: MODES 1 and 2.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.3.1	----------NOTES---------- 1. 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. 2. This Surveillance is not required to be performed prior to entry into MODE 2. ---------- Verify overall core reactivity balance is within ± 1.0 % $\Delta k/k$ of predicted values.	Prior to entering MODE 1 after fuel loading AND ----------NOTE---------- Only required after 60 EFPD ---------- 31 EFPD

3.1 REACTIVITY CONTROL SYSTEMS

3.1.4 Moderator Temperature Coefficient (MTC)

LCO 3.1.4 The MTC shall be maintained within the limits specified in the COLR, and a maximum positive limit that varies linearly from 0.9×10^{-4} $\Delta k/k/^{\circ}C$ (0.5×10^{-4} $\Delta k/k/^{\circ}F$) at 0 % RTP to 0.0 $\Delta k/k/^{\circ}C$ (0.0 $\Delta k/k/^{\circ}F$) at 100 % RTP.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. MTC not within limits.	A.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.4.1	Verify MTC is within the upper limit.	Prior to entering MODE 1 after each fuel loading
SR 3.1.4.2	----------NOTE---------- If the MTC is more negative than the COLR limit when extrapolated to the end of cycle, SR 3.1.4.2 may be repeated. Shutdown must occur prior to exceeding the minimum allowable boron concentration at which MTC is projected to exceed the lower limit. ----------	
	Verify MTC is within the lower limit specified in the COLR.	Each fuel cycle within 7 effective full power days (EFPD) of reaching 40 EFPD core burnup AND Each fuel cycle within 7 EFPD of reaching 2/3 of expected core burnup

3.1 REACTIVITY CONTROL SYSTEMS

3.1.5 Control Element Assembly (CEA) Alignment

LCO 3.1.5 All full strength (regulating and shutdown) CEAs shall be OPERABLE,

AND

All full and part strength CEAs shall be aligned to within 16.8 cm (6.6 in) (indicated position) of their respective groups.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more regulating CEAs trippable and misaligned from its group by > 16.8 cm (6.6 in) and ≤ 48.3 cm (19 in). OR One regulating CEA trippable and misaligned from its group by > 48.3 cm (19 in).	A.1 Reduce THERMAL POWER in accordance with Figure 3.1.5-1. AND A.2.1 Verify SDM is within limits specified in COLR. OR A.2.2 Initiate boration to restore SDM to within limit. AND A.3.1 Restore misaligned CEA(s) to within 16.8 cm (6.6 in) (indicated position) of its group. OR A.3.2 Align remainder of CEAs in group to within 16.8 cm (6.6 in) (indicated position) of misaligned CEA(s) while maintaining insertion limit of LCO 3.1.7.	1 hour 1 hour 1 hour 2 hours 2 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more shutdown CEAs trippable and misaligned from its group by > 16.8 cm (6.6 in) and ≤ 48.3 cm (19 in). OR One shutdown CEA trippable and misaligned from its group by > 48.3 cm (19 in).	B.1 Reduce THERMAL POWER in accordance with Figure 3.1.5-1. AND B.2.1 Verify SDM is within limits specified in COLR. OR B.2.2 Initiate boration to restore SDM to within limit. AND B.3 Restore misaligned CEA(s) to within 16.8 cm (6.6 in) (indicated position) of its group.	1 hour 1 hour 1 hour 2 hours
C. One or more part strength CEAs misaligned from its group by > 16.8 cm (6.6 in) and ≤ 48.3 cm (19 in). OR One part strength CEA misaligned from its group by > 48.3 cm (19 in).	C.1 Reduce THERMAL POWER in accordance with Figure 3.1.5-1. AND C.2.1 Restore misaligned CEA(s) to within 16.8 cm (6.6 in) (indicated position) of its group. OR C.2.2 Align remainder of CEAs in group to within 16.8 cm (6.6 in) (indicated position) of misaligned CEA(s).	1 hour 2 hours 2 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A, B, or C not met. OR One or more full strength CEAs untrippable. OR Two or more CEAs misaligned by > 48.3 cm (19 in).	D.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.5.1	Verify indicated position of each full and part strength CEA is within 16.8 cm (6.6 in) of all other CEAs in its group.	12 hours
SR 3.1.5.2	Verify that, for each CEA, its OPERABLE CEA position indicator channels indicate within 13.2 cm (5.2 in) of each other.	12 hours
SR 3.1.5.3	Verify full strength CEA freedom of movement (trippability) by moving each individual full strength CEA that is not fully inserted in the core at least 12.7 cm (5 in).	92 days
SR 3.1.5.4	Perform a CHANNEL FUNCTIONAL TEST of each reed switch position transmitter (RSPT) channel.	18 months
SR 3.1.5.5	Verify each full and part strength CEA drop time at 90 % inserted position ≤ 4 seconds.	Prior to reactor criticality, after each removal of the reactor head

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

When core power is reduced to 55 % rated thermal power (RTP) per this limit curve, further reduction is not required by this Specification.

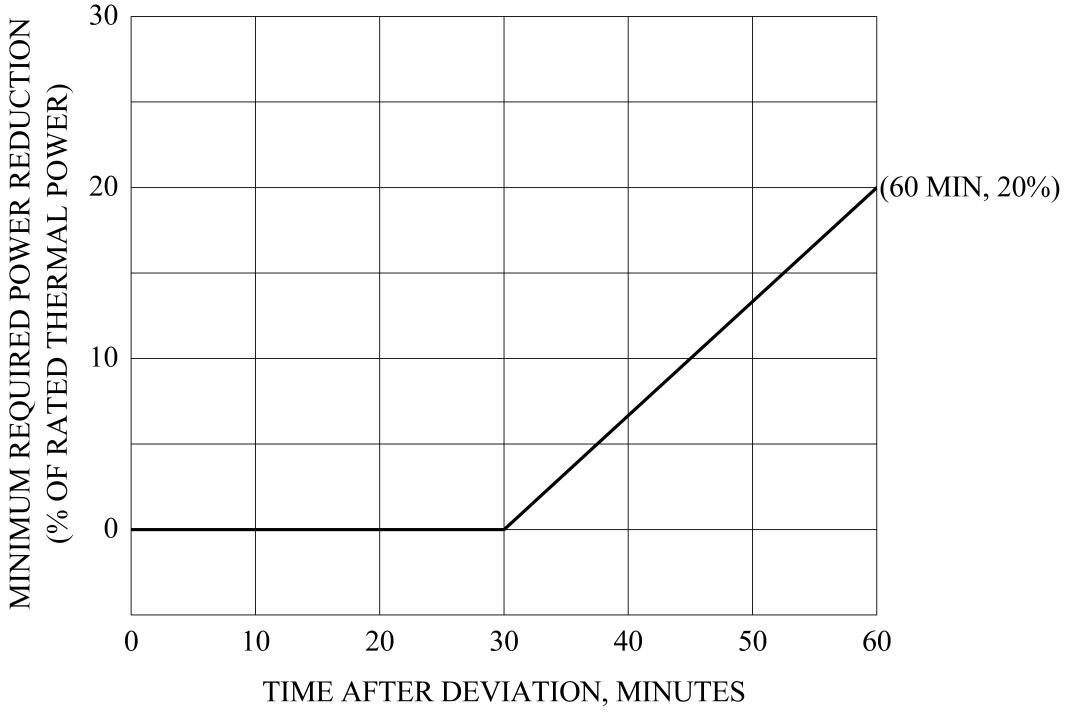

Figure 3.1.5-1

Required Power Reduction after CEA Deviation

3.1 REACTIVITY CONTROL SYSTEMS

3.1.6 Shutdown Control Element Assembly (CEA) Insertion Limits

LCO 3.1.6 All shutdown CEAs shall be withdrawn to ≥ 367.7 cm (144.75 in).

APPLICABILITY: MODE 1,
MODE 2 with any regulating CEA not fully inserted.

----------NOTE----------
This LCO is not applicable while performing SR 3.1.5.3.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.6.1	Verify each shutdown CEA is withdrawn ≥ 367.7 cm (144.75 in).	12 hours ----------NOTE---------- SR 3.1.6.1 shall be performed within 15 minutes prior to withdrawal of any CEAs in regulating groups during an approach to reactor criticality. ----------

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Regulating Control Element Assembly (CEA) Insertion Limits

LCO 3.1.7 The power dependent insertion limit (PDIL) alarm circuit shall be OPERABLE, and

a. With the core operating limit supervisory system (COLSS) in service, the regulating CEA groups shall be limited to the withdrawal sequence, insertion limits, and associated time restraints specified in the COLR.

b. With COLSS out of service, the regulating CEA groups shall be limited to the withdrawal sequence, insertion limits, and associated time restraints specified in the COLR.

APPLICABILITY: MODES 1 and 2.

----------NOTE----------
This LCO is not applicable while conducting SR 3.1.5.3 (or during reactor power cutback operation).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Regulating CEA groups inserted beyond the transient insertion limit with COLSS in service.	A.1.1 Verify SDM is within limits specified in COLR. OR	1 hour
	A.1.2 Initiate boration to restore SDM to within limit. AND	1 hour
	A.2.1 Restore regulating CEA groups to within limits. OR	2 hours
	A.2.2 Reduce THERMAL POWER to less than or equal to the fraction of RTP allowed by the CEA group position and insertion limits specified in the COLR.	2 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Regulating CEA groups inserted between the long term steady state insertion limit and the transient insertion limit for > 4 hours per 24 hour interval with COLSS in service.	B.1 Verify short term steady state insertion limits are not exceeded. OR B.2 Restrict increases in THERMAL POWER to ≤ 5 % RTP per hour.	15 minutes 15 minutes
C. Regulating CEA groups inserted between the long term steady state insertion limit and the transient insertion limit for > 5 effective full power days (EFPD) per 30 EFPD interval or > 14 EFPD per 365 EFPD interval with COLSS in service.	C.1 Restore regulating CEA groups to within long term steady state insertion limit.	2 hours
D. Regulating CEA groups inserted beyond the short term steady state insertion limit with COLSS out of service.	D.1.1 Verify SDM is within limits specified in COLR. OR D.1.2 Initiate boration to restore SDM to within limit. AND D.2.1 Restore regulating CEA groups to within limits. OR D.2.2 Reduce THERMAL POWER to less than or equal to the fraction of RTP allowed by the CEA group position and insertion limits specified in the COLR.	1 hour 1 hour 2 hours 2 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. PDIL alarm circuit inoperable.	E.1 Perform SR 3.1.7.1.	1 hour AND Once per 4 hours thereafter
F. Required Actions and associated Completion Times not met.	F.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.7.1	----------NOTE---------- This Surveillance is not required to be performed prior to entry into MODE 2. ---------- Verify each regulating CEA group position is within its insertion limits.	12 hours
SR 3.1.7.2	Verify the accumulated times during which the regulating CEA groups are inserted beyond the steady state insertion limits but within the transient insertion limits.	24 hours
SR 3.1.7.3	Verify PDIL alarm circuit is OPERABLE.	31 days

3.1 REACTIVITY CONTROL SYSTEMS

3.1.8 Part Strength Control Element Assembly (CEA) Insertion Limits

LCO 3.1.8 The part strength CEA groups shall be limited to the insertion limits specified in the COLR.

APPLICABILITY: MODE 1 with THERMAL POWER > 20 % RTP.

----------NOTE----------
This LCO is not applicable while exercising the OPERABILITY test of part strength CEAs.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Part strength CEA groups inserted between long term steady state insertion limit and transient insertion limit for ≥ 7 effective full power days (EFPD) per 30 EFPD interval or ≥ 14 EFPD per 365 EFPD interval.	A.1 Restore part strength CEA groups to within the long term steady state insertion limit.	2 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Reduce THERMAL POWER to ≤ 20 % RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.8.1	Verify part strength CEA group position.	12 hours
SR 3.1.8.2	Verify the accumulated times during which the part strength CEA groups are inserted beyond the long term steady state insertion limits.	24 hours after insertion of part strength CEA groups beyond long term steady state insertion limits AND 24 hours thereafter

3.1 REACTIVITY CONTROL SYSTEMS

3.1.9 Charging Flow

LCO 3.1.9 Charging flow shall be maintained below 567.8 L/min (150 gpm) by closing charging flow restriction orifice bypass valve and removing the power to the above valve.

APPLICABILITY: MODE 5 during MID-LOOP operation for maintenance

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Charging flow restriction orifice bypass valve is not closed.	A.1 Turn off charging pump. ----------NOTE---------- Turn on auxiliary charging pump if necessary. ---------- OR A.2 Suspend all operations involving positive reactivity changes.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.9.1	Verify that charging flow restriction orifice bypass valves are closed and power to the valves is off.	8 hours

3.1 REACTIVITY CONTROL SYSTEMS

3.1.10 Special Test Exception (STE)-SHUTDOWN MARGIN (SDM)

LCO 3.1.10 During performance of criticality test or measurement of CEA worth and SDM, the requirements of:

LCO 3.1.1, "SHUTDOWN MARGIN (SDM): T_{cold} > 99 ^{o}C (210 ^{o}F)"

LCO 3.1.6, "Shutdown Control Element Assembly (CEA) Insertion Limits"

LCO 3.1.7, "Regulating Control Element Assembly (CEA) Insertion Limits"

LCO 3.3.1, "Reactor Protection System (RPS) Instrumentation - Operating" (Only applied to Trip Functions 2, 14, and 15 in Table 3.3.1-1)

LCO 3.3.2, "Reactor Protection System (RPS) Instrumentation - Shutdown" (Only applied to Trip Function 1 in Table 3.3.2-1)

may be suspended, provided shutdown reactivity equivalent to at least the highest estimated CEA worth (of those CEAs actually withdrawn) is available for trip insertion or the reactor is subcritical by at least the reactivity equivalent of the highest CEA worth.

APPLICABILITY: MODES 2 and 3 during PHYSICS TESTS.

----------NOTE----------
Operation in MODE 3 shall be limited to 6 consecutive hours.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any full strength CEA not fully inserted and less than the required shutdown reactivity available for trip insertion. OR All full strength CEAs inserted and the reactor subcritical by less than the above required shutdown reactivity equivalent.	A.1 Initiate boration to restore required shutdown reactivity.	15 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.10.1	Verify position of each CEA not fully inserted is within the acceptance criteria for available negative reactivity addition.	2 hours
SR 3.1.10.2	Verify each full strength CEA not fully inserted is capable of full insertion when tripped from at least the 50 % withdrawn position.	Within 24 hours prior to reducing SDM to less than the limits of LCO 3.1.1
SR 3.1.10.3	----------NOTE---------- Applicable to operation in MODE 3 only. ---------- Verify that when all full strength CEAs are fully inserted, the reactor is subcritical by more than the above required shutdown reactivity equivalent.	2 hours
SR 3.1.10.4	Perform CHANNEL FUNCTIONAL TESTS of each logarithmic and variable overpower neutron flux monitoring channel.	Within 12 hours prior to initiation of reactor startup or PHYSICS TESTS

3.1 REACTIVITY CONTROL SYSTEMS

3.1.11 Special Test Exceptions (STE) – MODES 1 and 2

LCO 3.1.11 During performance of PHYSICS TESTS, the requirements of:

LCO 3.1.4, "Moderator Temperature Coefficient (MTC)"

LCO 3.1.5, "Control Element Assembly (CEA) Alignment"

LCO 3.1.6, "Shutdown Control Element Assembly (CEA) Insertion Limits"

LCO 3.1.7, "Regulating Control Element Assembly (CEA) Insertion Limits"

LCO 3.1.8, "Part Strength CEA Insertion Limits"

LCO 3.2.2, "Planar Radial Peaking Factors (F_{xy})"

LCO 3.2.3, "AZIMUTHAL POWER TILT (T_q)"

LCO 3.2.5, "AXIAL SHAPE INDEX (ASI)"

may be suspended, provided THERMAL POWER is restricted to the test power plateau, which shall not exceed 85 % RTP.

APPLICABILITY: MODES 1 and 2 during PHYSICS TESTS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Test power plateau exceeded.	A.1 Reduce THERMAL POWER to less than or equal to the test power plateau.	15 minutes
B. Required Action and associated Completion Time not met.	B.1 Suspend PHYSICS TESTS.	1 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.11.1	Verify THERMAL POWER equal to or less than the test power plateau.	1 hour

3.1 REACTIVITY CONTROL SYSTEMS

3.1.12 Special Test Exceptions (STE) – Reactivity Coefficient Testing

LCO 3.1.12 During performance of PHYSICS TESTS, the requirements of:

LCO 3.1.7, "Regulating Control Element Assembly (CEA) Insertion Limits"

LCO 3.1.8, "Part Strength CEA Insertion Limits"

LCO 3.4.1, "RCS Pressure, Temperature and Flow limits" (LCO 3.4.1.b, RCS Cold Leg Temperature only)

may be suspended, provided LHR and DNBR do not exceed the limits specified in their LCOs.

APPLICABILITY: MODE 1 with Thermal Power > 20 % RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LHR or DNBR outside the limits specified in their LCOs.	A.1 Reduce THERMAL POWER to restore LHR and DNBR to within limits.	15 minutes
B. Required Action and associated Completion Time not met.	B.1 Suspend PHYSICS TESTS.	1 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.12.1	Verify LHR and DNBR do not exceed limits by performing SR 3.2.1.1 and SR 3.2.4.1.	Continuously

3.2 POWER DISTRIBUTION LIMITS

3.2.1 Linear Heat Rate (LHR)

LCO 3.2.1 LHR shall not exceed the limit specified in the COLR.

APPLICABILITY: MODE 1 with THERMAL POWER > 20 % RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Core operating limit supervisory system (COLSS) calculated core power exceeds the COLSS calculated core power operating limit based on LHR.	A.1 Restore LHR to within limit.	1 hour
B. One OPERABLE core protection calculator (CPC) calculated LHR not within region of acceptable operation when the COLSS is out of service.	B.1 Determine trend in LHR. AND B.2.1 With an adverse trend, restore LHR to within limit. OR B.2.2 With no adverse trend, restore LHR to within limit.	Once per 15 minutes 1 hour 4 hours
C. Required Action and associated Completion Time not met.	C.1 Reduce THERMAL POWER to ≤ 20 % RTP.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.1.1	----------NOTE---------- Only required to be met when COLSS is out of service. With COLSS in service, LHR is continuously monitored. ---------- Verify LHR, as indicated on each OPERABLE local power density channel, is within its limit.	2 hours
SR 3.2.1.2	Verify COLSS margin alarm actuates at a THERMAL POWER equal to or less than the core power operating limit based on LHR.	31 days

3.2 POWER DISTRIBUTION LIMITS

3.2.2 Planar Radial Peaking Factors (F_{xy})

LCO 3.2.2 The measured planar radial peaking factors (F^M_{xy}) shall be equal to or less than the planar radial peaking factors (F^C_{xy}) used in the core operating limit supervisory system (COLSS) and in the core protection calculators (CPCs).

APPLICABILITY: MODE 1 with THERMAL POWER > 20 % RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. $F^M_{xy} > F^C_{xy}$.	A.1.1 Adjust addressable CPC constants to increase the multiplier applied to planar radial peaking by a factor ≥ F^M_{xy}/F^C_{xy}.	6 hours
	AND	
	A.1.2 Maintain a margin to the COLSS operating limits of $[(F^M_{xy}/F^C_{xy}) – 1.0] \times 100$ %.	6 hours
	OR	
	A.2 Adjust affected F^C_{xy} used in COLSS and CPCs to a value greater than or equal to the measured F^M_{xy}.	6 hours
	OR	
	A.3 Reduce THERMAL POWER to ≤ 20 % RTP.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.2.1	Verify measured F^M_{xy} obtained using Incore Detector System is equal to or less than value of calculated F^C_{xy} used in COLSS and CPCs.	Once after each fuel loading with THERMAL POWER > 40 % RTP but prior to operations above 80 % RTP AND 31 EFPD thereafter

3.2 POWER DISTRIBUTION LIMITS

3.2.3 Azimuthal Power Tilt (T_q)

LCO 3.2.3 The measured T_q shall be less than or equal to the T_q allowance used in the core protection calculators (CPCs).

APPLICABILITY: MODE 1 with THERMAL POWER > 20 % RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Measured T_q greater than allowance used in CPCs and ≤ 0.10.	A.1 Restore measured T_q. OR A.2 Adjust the T_q allowance in the CPCs to greater than or equal to the measured value.	2 hours 2 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Measured T_q > 0.10.	----------NOTE---------- Required Actions up to B.3 must be completed if power reduction commences prior to restoring T_q to ≤ 0.10. ----------	
	B.1 Reduce THERMAL POWER to ≤ 50 % RTP.	4 hours
	AND	
	B.2 Reduce variable overpower trip (VOPT) setpoints to ≤ 55 % RTP.	8 hours
	AND	
	B.3 Restore the measured T_q to less than the T_q allowance used in the CPCs.	Prior to increasing THERMAL POWER ----------NOTE---------- Correct the cause of the out of limit condition prior to increasing THERMAL POWER. Subsequent power operation > 50 % RTP may proceed provided that the measured T_q is verified ≤ 0.10 at least once per hour for 12 hours, or until verified at ≥ 95 % RTP. ----------
C. Required Actions and associated Completion Times not met.	C.1 Reduce THERMAL POWER to ≤ 20 % RTP.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.3.1	----------NOTE---------- Only applicable when COLSS is out of service. With COLSS in service, this parameter is continuously monitored. ---------- Calculate T_q and verify it is within the limit.	12 hours
SR 3.2.3.2	Verify COLSS azimuthal tilt alarm is actuated at a T_q value less than the T_q value used in the CPCs.	31 days
SR 3.2.3.3	Independently confirm the validity of the COLSS calculated T_q by use of the incore detectors.	31 EFPD

3.2 POWER DISTRIBUTION LIMITS

3.2.4 Departure from Nucleate Boiling Ratio (DNBR)

LCO 3.2.4 The DNBR shall be maintained by one of the following methods:

a. Maintaining core operating limit supervisory system (COLSS) calculated core power less than or equal to COLSS calculated core power operating limit based on DNBR (when COLSS is in service, and either one or both control element assembly calculators (CEACs) are OPERABLE).

b. Maintaining COLSS calculated core power less than or equal to COLSS calculated core power operating limit based on DNBR decreased by the allowance specified in Figure 3.2.4-1 of the COLR (when COLSS is in service and neither CEAC is OPERABLE).

c. Operating within the region of acceptable operation of Figure 3.2.4-2 specified in the COLR using any operable core protection calculator (CPC) channel (when COLSS is out of service and either one or both CEACs are OPERABLE), or

d. Operating within the region of acceptable operation of Figure 3.2.4-3 specified in the COLR using any operable CPC channel (when COLSS is out of service and neither CEAC is OPERABLE).

APPLICABILITY: MODE 1 with THERMAL POWER > 20 % RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. COLSS calculated core power not within limit.	A.1 Restore DNBR to within limit.	1 hour
B. DNBR outside the region of acceptable operation when COLSS is out of service.	B.1 Determine trend in DNBR. AND	Once per 15 minutes
	B.2.1 With an adverse trend, restore DNBR to within limit. OR	1 hour
	B.2.2 With no adverse trend, restore DNBR to within limit.	4 hours
C. Required Action and associated Completion Time not met.	C.1 Reduce THERMAL POWER to ≤ 20 % RTP.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.4.1	----------NOTE---------- Only applicable when COLSS is out of service. With COLSS in service, this parameter is continuously monitored. ---------- Verify DNBR, as indicated on all OPERABLE DNBR channels, is within limit of Figure 3.2.4-2 or 3.2.4-3 of COLR, as applicable.	2 hours
SR 3.2.4.2	Verify COLSS margin alarm actuates at a THERMAL POWER level equal to or less than core power operating limit based on DNBR.	31 days

3.2 POWER DISTRIBUTION LIMITS

3.2.5 AXIAL SHAPE INDEX (ASI)

LCO 3.2.5 ASI shall be within the limits specified in the COLR.

APPLICABILITY: MODE 1 with THERMAL POWER > 20 % RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Core average ASI not within limits.	A.1 Restore ASI to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to ≤ 20 % RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.5.1 Verify ASI is within limits.	12 hours

3.3 INSTRUMENTATION

3.3.1 Reactor Protection System (RPS) Instrumentation – Operating

LCO 3.3.1 Four RPS trip and associated operating bypass removal channels for each Function in Table 3.3.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1-1.

ACTIONS

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

1. Separate Condition entry is allowed for each RPS Function.

2. When one channel is bypassed and the bypassed condition exceeds 7 days, whether the operation with bypass state in one channel is allowed during Completion Times identified in Required Action A.2 or C.2.2 shall be reviewed within the next 24 hours in accordance with administrative controls.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one automatic RPS trip channel inoperable.	A.1 Place channel in bypass or trip. AND A.2 Restore trip channel to OPERABLE status.	1 hour Prior to next entry into MODE 2 following entry into MODE 5
B. One or more Functions with two trip channels inoperable.	----------NOTE---------- LCO 3.0.4 is not applicable. ---------- B.1 Place one trip channel in bypass and the other in trip.	 1 hour

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One or more Functions with one operating bypass removal channel inoperable.	C.1 Disable bypass channel. OR	1 hour
	C.2.1 Place affected automatic trip channel in bypass or trip. AND	1 hour
	C.2.2 Restore operating bypass removal channel and associated automatic trip channel to OPERABLE status.	Prior to next entry into MODE 2 following entry into MODE 5
D. One or more Functions with two operating bypass removal channels inoperable.	----------NOTE---------- LCO 3.0.4 is not applicable. ----------	
	D.1 Disable bypass channels. OR	1 hour
	D.2 Place one affected automatic trip channel in bypass and place the other in trip.	1 hour
E. Required Action and associated Completion Time not met.	E.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

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

Refer to Table 3.3.1-1 to determine which SR shall be performed for each RPS Function.

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1	Perform CHANNEL CHECK of each RPS instrument channel.	12 hours
SR 3.3.1.2	----------NOTE---------- The performance shall be completed within 12 hours after THERMAL POWER ≥ 80 % RTP. ---------- Verify total reactor coolant system (RCS) flow rate indicated by each CPC is less than or equal to the RCS total flow rate. If necessary, adjust CPC addressable constant flow coefficients such that each CPC indicated flow is less than or equal to RCS flow rate.	12 hours
SR 3.3.1.3	Check CPC system event log.	12 hours
SR 3.3.1.4	----------NOTE---------- 1. The performance shall be completed within 12 hours after THERMAL POWER ≥ 15 % RTP. 2. The daily calibration may be suspended during PHYSICS TESTS, provided calibration is performed upon reaching each major test power plateau and prior to proceeding to next major test power plateau. ---------- Perform calorimetric calculation and adjust linear power, CPC ΔT, and CPC neutron flux power to agree with calorimetric calculation if any of the linear power, CPC ΔT, and CPC neutron flux power is less than calorimetric calculation by more than 0.5 %.	24 hours

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.5	----------NOTE---------- The performance shall be completed within 12 hours after THERMAL POWER ≥ 80 % RTP. ---------- Verify total RCS flow rate indicated by each CPC is less than or equal to RCS flow rate determined by secondary calorimetric calculations.	31 days
SR 3.3.1.6	----------NOTE---------- The performance shall be completed within 12 hours after THERMAL POWER $\geq$ 15 % RTP. ---------- Verify linear power subchannel gains of excore neutron detectors are consistent with values used to establish shape annealing matrix elements in the CPCs.	31 days
SR 3.3.1.7	----------NOTE---------- 1. The CPC CHANNEL FUNCTIONAL TEST includes verification that correct values of addressable constants are installed in each OPERABLE CPC. 2. Not required to be performed for Logarithmic Power Level – High until 2 hours after reducing THERMAL POWER below 10^{-3} % RTP and only if reactor trip switchgears (RTSGs) are open. ---------- Perform CHANNEL FUNCTIONAL TEST for each RPS instrumentation channel in accordance with Setpoint Control Program.	31 days
SR 3.3.1.8	----------NOTE---------- Excore neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION of linear power of excore neutron flux channel in accordance with Setpoint Control Program.	31 days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.9	----------NOTE---------- Excore neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION on each trip channel, including operating bypass removal functions in accordance with Setpoint Control Program.	18 months
SR 3.3.1.10	Perform CHANNEL FUNCTIONAL TEST on each CPC channel in accordance with Setpoint Control Program.	18 months
SR 3.3.1.11	Using incore detectors, verify shape annealing matrix elements to be used by the CPCs in accordance with Setpoint Control Program.	Once after each refueling prior to exceeding 80 % RTP
SR 3.3.1.12	Perform CHANNEL FUNCTIONAL TEST on each automatic operating bypass removal channel.	Once within 31 days prior to each reactor startup
SR 3.3.1.13	----------NOTE---------- Excore neutron detectors are excluded. ---------- Verify RPS RESPONSE TIME is within limits.	18 months on a STAGGERED TEST BASIS

Table 3.3.1-1 (Page 1 of 3)

Reactor Protection System Instrumentation – Operating

Function	Applicable Modes or Other Specified Condition	Surveillance Requirements
1. Variable Overpower	1, 2	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.8 SR 3.3.1.9 SR 3.3.1.13
2. Logarithmic Power Level – High(1)	2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.12 SR 3.3.1.13
3. Pressurizer Pressure – High	1, 2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13
4. Pressurizer Pressure – Low(2)	1, 2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.12 SR 3.3.1.13
5. Containment Pressure – High	1, 2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13

(1) Trip may be bypassed when THERMAL POWER is ≥ 10^{-3} % RTP. Operating bypass shall be automatically removed when THERMAL POWER is < 10^{-3} % RTP. Trip may be manually bypassed during PHYSICS TESTS pursuant to LCO 3.1.10, “Special Test Exception (STE) – SHUTDOWN MARGIN (SDM).”

(2) Pressurizer Pressure – Low trip setpoint may be decreased as pressurizer pressure is reduced to 7.0 kg/cm^{2}A (100 psia). The margin between pressurizer pressure and the setpoint shall be maintained at ≤ 28.1 kg/cm^{2}A (400 psia). The operating bypass shall be removed automatically at ≥ 35.2 kg/cm^{2}A (500 psia). The setpoint shall be increased automatically to normal setpoint as pressurizer pressure is increased.

Table 3.3.1-1 (Page 2 of 3)

Reactor Protection System Instrumentation – Operating

	Function	Applicable Modes or Other Specified Condition	Surveillance Requirements
6.	Steam Generator #1 Pressure – Low	1, 2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13
7.	Steam Generator #2 Pressure – Low	1, 2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13
8.	Steam Generator #1 Level – Low	1, 2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13
9.	Steam Generator #2 Level – Low	1, 2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13
10.	Steam Generator #1 Level – High	1, 2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13
11.	Steam Generator #2 Level – High	1, 2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13
12.	Reactor Coolant Flow, Steam Generator #1 – Low	1, 2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13
13.	Reactor Coolant Flow, Steam Generator #2 – Low	1, 2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13

Table 3.3.1-1 (Page 3 of 3)

Reactor Protection System Instrumentation – Operating

Function	Applicable Modes or Other Specified Condition	Surveillance Requirements
14. Local Power Density – High(3)	1, 2	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.3 SR 3.3.1.4 SR 3.3.1.5 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.11 SR 3.3.1.12 SR 3.3.1.13
15. Departure From Nucleate Boiling Ratio (DNBR) – Low(3)	1, 2	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.3 SR 3.3.1.4 SR 3.3.1.5 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.11 SR 3.3.1.12 SR 3.3.1.13

(3) Trip may be manually bypassed when THERMAL POWER is ≤ 10^{-4} % RTP. Operating bypass shall be automatically removed when THERMAL POWER is > 10^{-4} % RTP. During testing pursuant to LCO 3.1.10, trip may be bypassed below 5 % RTP. Operating bypass shall be automatically removed when THERMAL POWER is > 5 % RTP.

3.3 INSTRUMENTATION

3.3.2 Reactor Protection System (RPS) Instrumentation – Shutdown

LCO 3.3.2 Four RPS trip and bypass removal channels for each Function in Table 3.3.2-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.2-1

ACTIONS

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

1. Separate Condition entry is allowed for each RPS Function.

2. When one channel is bypassed and the bypassed condition exceeds 7 days, whether the operation with bypass state in one channel is allowed during Completion Times identified in Required Action A.2 or C.2.2 shall be reviewed within the next 24 hours in accordance with administrative controls.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one automatic RPS trip channel inoperable.	A.1 Place channel in bypass or trip. AND A.2 Restore trip channel to OPERABLE status.	1 hour Prior to next entry into MODE 2 following entry into MODE 5
B. One or more Functions with two automatic RPS trip channels inoperable.	B.1 Place one trip channel in bypass and the other in trip.	1 hour

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One automatic bypass removal channel inoperable.	C.1 Disable bypass channel. OR	1 hour
	C.2.1 Place affected automatic trip channel in bypass or trip. AND	1 hour
	C.2.2 Restore bypass removal channel and associated automatic trip channel to OPERABLE status.	Prior to next entry into MODE 2 following entry into MODE 5
D. Two automatic bypass removal channels inoperable.	D.1 Disable bypass channels. OR	1 hour
	D.2 Place one affected automatic trip channel in bypass and place the other in trip.	1 hour
E. Required Action and associated Completion Time not met.	E.1 Open all RTSGs.	1 hour

SURVEILLANCE REQUIREMENTS

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

Refer to Table 3.3.2-1 to determine which SR shall be performed for each RPS Function.

SURVEILLANCE		FREQUENCY
SR 3.3.2.1	Perform CHANNEL CHECK of each logarithmic power channel.	12 hours
SR 3.3.2.2	Perform CHANNEL FUNCTIONAL TEST on each logarithmic power channel in accordance with Setpoint Control Program.	31 days
SR 3.3.2.3	Perform CHANNEL FUNCTIONAL TEST on each automatic bypass removal function.	Once within 31 days prior to each reactor startup
SR 3.3.2.4	----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION on each logarithmic power channel, including bypass removal function in accordance with Setpoint Control Program.	18 months
SR 3.3.2.5	Verify RPS RESPONSE TIME is within limits.	18 months on a STAGGERED TEST BASIS

Table 3.3.2-1

Reactor Protection System Instrumentation – Shutdown

	Function	Applicable Modes or Other Specified Condition	Surveillance Requirements
1.	Logarithmic Power Level – High(1)	3(2), 4(2), 5(2)	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.4 SR 3.3.2.5
2.	Steam Generator Pressure #1 – Low(3)	3(2), 4(2)	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.5
3.	Steam Generator Pressure #2 – Low(3)	3(2), 4(2)	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.5

(1) Trip may be bypassed when THERMAL POWER is ≥ 10^{-3} % RTP. Operating bypass shall be automatically removed when THERMAL POWER is < 10^{-3} % RTP.

(2) With any reactor trip switchgears (RTSGs) closed, any control element assembly (CEA) capable of being withdrawn, and fuel loaded in reactor.

(3) Steam Generator Pressure – Low trip setpoint may be manually decreased as steam generator pressure is reduced in MODE 3 and 4, provided the margin between steam generator pressure and the setpoint is maintained at 14.1 kg/cm^{2}A (200 psia). The setpoint shall be increased automatically as steam generator pressure is increased.

3.3 INSTRUMENTATION

3.3.3 Control Element Assembly Calculators (CEACs)

LCO 3.3.3 Two CEACs shall be OPERABLE in each Core Protection Calculator System (CPCS) channel.

APPLICABILITY: MODES 1 and 2.

ACTIONS

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

Separate Condition entry is allowed for each CPCS channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CEAC inoperable in one or more CPCS channels.	A.1 Declare affected CPCS channel(s) inoperable.	1 hour
	OR	
	A.2.1 Verify indicated position of each full and part strength CEA is within 16.8 cm (6.6 in) of all other CEAs in its group.	Once per 4 hours
	AND	
	A.2.2 Restore CEAC to OPERABLE status.	7 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met. OR Both CEACs inoperable in one or more CPCS channels.	B.1 Declare affected channel(s) inoperable. OR	1 hour
	B.2.1 Verify departure from nucleate boiling ratio requirement of LCO 3.2.4 is met and Reactor Power Cutback System (RPCS) is disabled. AND	4 hours
	B.2.2 Verify all full strength and part strength CEA groups are fully withdrawn and maintained fully withdrawn, except during Surveillance testing pursuant to SR 3.1.5.3, or for power control, when CEA group #5 may be inserted to a maximum of 323.9 cm (127.5 in). AND	4 hours
	B.2.3 Verify addressable constant in each affected CPC is set to indicate that all two CEACs are inoperable and “RSPT/CEAC inoperable” status is indicated. AND	4 hours
	B.2.4 Verify Digital Rod Control System (DRCS) is placed in “standby” and maintained in “standby,” except during CEA motion permitted by Required Action B.2.2. AND	4 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	B.2.5 Verify indicated position of each full and part strength CEA is within 16.8 cm (6.6 in) of all other CEAs in its group.	Once per 4 hours
C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.3.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.3.2	Check CPC system event log.	12 hours
SR 3.3.3.3	Perform CHANNEL FUNCTIONAL TEST.	31 days
SR 3.3.3.4	Perform CHANNEL CALIBRATION in accordance with the Setpoint Control Program	18 months
SR 3.3.3.5	Perform CHANNEL FUNCTIONAL TEST in accordance with the Setpoint Control Program (including annunciation and trip function test).	18 months

3.3 INSTRUMENTATION

3.3.4 Reactor Protection System (RPS) Logic and Trip Initiation

LCO 3.3.4 Four RPS logic channels (Coincidence, Initiation Logic), four channels of Reactor Trip Switchgears (RTSGs), and four manual trip channels shall be OPERABLE.

APPLICABILITY: MODES 1 and 2,
MODES 3, 4, and 5, with any RTSGs closed and any control element assemblies capable of being withdrawn.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ----------NOTE---------- RTSGs associated with one inoperable channel may be closed for up to 1 hour for the performance of an RPS CHANNEL FUNCTIONAL TEST. ---------- One channel of Manual Trip, RTSG, or RPS logic inoperable in MODE 1 or 2.	A.1 Open affected RTSGs.	1 hour
B. ----------NOTE---------- RTSGs associated with one inoperable channel may be closed for up to 1 hour for the performance of an RPS CHANNEL FUNCTIONAL TEST. ---------- One channel of Manual Trip, RTSG, or RPS logic inoperable in MODE 3, 4, or 5.	B.1 Open affected RTSGs.	48 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Two channels of Manual Trip, RTSG, or RPS logic affecting the same trip leg inoperable.	C.1 Open affected RTSGs.	Immediately
D. Required Action and associated Completion Time of Condition A or C not met. OR One or more Functions with more than two channels of Manual Trip, RTSG, or RPS logic inoperable for reasons other than Condition C.	D.1 Be in MODE 3. AND D.2 Open all RTSGs.	6 hours 6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.4.1	Perform CHANNEL FUNCTIONAL TEST on each RPS logic channel and RTSG channel.	31 days
SR 3.3.4.2	Perform CHANNEL FUNCTIONAL TEST, including separate verification of undervoltage and shunt trips, on each RTSG.	18 months
SR 3.3.4.3	Perform CHANNEL FUNCTIONAL TEST on each RPS manual trip channel.	31 days

3.3 INSTRUMENTATION

3.3.5 Engineered Safety Features Actuation System (ESFAS) Instrumentation

LCO 3.3.5 Four ESFAS trip channels and associated operating bypass removal channels for each Function in Table 3.3.5-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.5-1.

ACTIONS

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

1. Separate Condition entry is allowed for each ESFAS Function.
2. When one channel is bypassed and the bypassed condition exceeds 7 days duration, it shall be reviewed in 24 hours whether to maintain the operation in bypassed condition within the specified Completion Time of the Required Action 1.2 or administrative controls.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one automatic ESFAS trip channel inoperable.	A.1 Place trip channel in bypass or trip. AND A.2 Restore trip channel to OPERABLE status.	1 hour Prior to next entry into MODE 2 following entry into MODE 5
B. One or more Functions with two trip channels inoperable.	----------NOTE---------- LCO 3.0.4 is not applicable. ---------- B.1 Place one trip channel in bypass and the other in trip.	 1 hour

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One or more Functions with one automatic operating bypass removal channel inoperable.	C.1 Disable bypass channel. OR	1 hour
	C.2.1 Place affected automatic trip channel in bypass or trip. AND	1 hour
	C.2.2 Restore operating bypass removal channel and associated automatic trip channel to OPERABLE status.	Prior to next entry into MODE 2 following entry into MODE 5
D. One or more Functions with two automatic operating bypass removal channels inoperable.	----------NOTE---------- LCO 3.0.4 is not applicable. ----------	
	D.1 Disable bypass channels. OR	1 hour
	D.2 Place one affected automatic trip channel in bypass and place the other in trip.	1 hour
E. Required Action and associated Completion Time not met.	E.1 ----------NOTE---------- Only applicable to functions 3, 5, and 6 of Table 3.3.5-1. ---------- Be in MODE 3. AND	6 hours
	E.2 Be in MODE 4.	12 hours
F. Required Action and associated Completion Time not met.	F.1 ----------NOTE---------- Only applicable to functions 1, 2, and 4 of Table 3.3.5-1. ---------- Be in MODE 3. AND	6 hours
	F.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.5.1	Perform CHANNEL CHECK of each ESFAS channel.	12 hours
SR 3.3.5.2	Perform CHANNEL FUNCTIONAL TEST of each ESFAS channel in accordance with Setpoint Control Program.	31 days
SR 3.3.5.3	Perform CHANNEL CALIBRATION of each ESFAS channel, including bypass removal function in accordance with Setpoint Control Program.	18 months
SR 3.3.5.4	Verify ESFAS RESPONSE TIME is within limits.	18 months on a STAGGERED TEST BASIS
SR 3.3.5.5	Perform CHANNEL FUNCTIONAL TEST on each automatic operating bypass removal channel.	Once within 31 days prior to each reactor startup

Table 3.3.5-1

Engineered Safety Features Actuation System Instrumentation

Function	Applicable Modes or Other Specified Conditions
1. Safety Injection Actuation Signal	1, 2, 3, 4
a. Containment Pressure – High	
b. Pressurizer Pressure – Low(1)	
2. Containment Spray Actuation Signal	1, 2, 3, 4
a. Containment Pressure – High High	
3. Containment Isolation Actuation Signal	1, 2, 3
a. Containment Pressure – High	
b. Pressurizer Pressure – Low(1)	
4. Main Steam Isolation Signal	1, 2(2), 3(2), 4
a. Steam Generator Pressure – Low(3)	
b. Containment Pressure – High	
c. Steam Generator Level – High	
5. Auxiliary Feedwater Actuation Signal SG #1 (AFAS-1)	1, 2, 3
a. Steam Generator Level – Low	
6. Auxiliary Feedwater Actuation Signal SG #2 (AFAS-2)	1, 2, 3
a. Steam Generator Level – Low	

(1) The setpoint may be manually decreased to a minimum value of 7.0 kg/cm^2A (100 psia), as pressurizer pressure is reduced, provided the margin between pressurizer pressure and the setpoint is maintained ≤ 28.1 kg/cm^2 (400 psi). Trips may be bypassed when pressurizer pressure is < 28.1 kg/cm^2A (400 psia). Bypass shall be automatically removed when pressurizer pressure is ≥ 35.2 kg/cm^2A (500 psia). The setpoint shall be automatically increased to the normal setpoint as pressurizer pressure is increased.

(2) Main Steam Isolation Signal (MSIS) Function (Steam Generator Pressure – Low, Containment Pressure – High, and Steam Generator Level – High signals) is not required to be OPERABLE when all associated valves isolated by the MSIS Function are closed and deactivated.

(3) The setpoint may be decreased as steam pressure is reduced, provided the margin between steam pressure and the setpoint is maintained ≤ 14.1 kg/cm^2 (200 psi). The setpoint shall be automatically increased to the normal setpoint as steam pressure is increased.

3.3 INSTRUMENTATION

3.3.6 Engineered Safety Features Actuation System (ESFAS) Logic and Manual Trip

LCO 3.3.6 Four channels of ESFAS Coincidence Logic, four channels of ESFAS Initiation Logic, four channels of Actuation Logic, and four channels of Manual Trip shall be OPERABLE for each Function in Table 3.3.6-1.

APPLICABILITY: According to Table 3.3.6-1.

ACTIONS

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

Separate Condition entry is allowed for each ESFAS Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one Coincidence Logic channel, Initiation Logic channel, or Manual Trip channel inoperable.	A.1 Restore channel to OPERABLE status.	48 hours
B. One or more Functions with two Initiation Logic channels affecting the same trip leg inoperable.	B.1 Open at least one contact in affected trip leg of both ESFAS Actuation Logic channels. AND B.2 Restore channels to OPERABLE status.	Immediately 48 hours
C. One or more Functions with one Actuation Logic channel inoperable.	C.1 ----------NOTE---------- One channel of Actuation Logic may be bypassed for up to 1 hour for Surveillances, provided the other channel is OPERABLE. ---------- Restore inoperable channel to OPERABLE status.	 48 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One or more Functions with one Diverse Manual ESF Actuation Channels inoperable	D.1 Restore channels to OPERABLE Status	72 hours
E. Required Action and associated Completion Time not met.	E.1 ----------NOTE---------- Applies only to Functions 3, 5 and 6 of Table 3.3.6-1. ---------- Be in MODE 3.	6 hours
	AND	
	E.2 Be in MODE 4.	12 hours
F. Required Action and associated Completion Time not met.	F.1 ----------NOTE---------- Applies only to Functions 1 and 4 of Table 3.3.6-1. ---------- Be in MODE 3.	6 hours
	AND	
	F.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.6.1	----------NOTE---------- Testing of Actuation Logic shall include the verification of proper operation of each actuation signal. ---------- Perform CHANNEL FUNCTIONAL TEST on each ESFAS logic channel and Manual ESF Actuation channel.	31 days
SR 3.3.6.2	----------NOTE---------- Components exempt from testing during operation shall be tested once every 18 month(MODE 6) or in MODE 5 if not tested until the previous 62 days. Subgroup of Actuation Logic channel A, C and B, D shall be tested on a staggered basis. ---------- Perform a verification of the OPERABILITY of subgroup for Actuation signal of each Actuation Logic channel	31 days on a STAGGERED TEST BASIS
SR 3.3.6.3	Perform CHANNEL FUNCTIONAL TEST on each Diverse Manual ESF Actuation channel	18 months

Table 3.3.6-1 (1 of 2)

Engineered Safety Features Actuation System Logic and Manual Trip Applicability

Function	Applicable Modes
1. Safety Injection Actuation Signal	
a. Coincidence Logic	1, 2, 3, 4
b. Initiation Logic	1, 2, 3, 4
c. Actuation Logic	1, 2, 3, 4
d. Manual Trip	1, 2, 3, 4
2. Containment Spray Actuation Signal	
a. Coincidence Logic	1, 2, 3, 4
b. Initiation Logic	1, 2, 3, 4
c. Actuation Logic	1, 2, 3, 4
d. Manual Trip	1, 2, 3, 4
3. Containment Isolation Actuation Signal	
a. Coincidence Logic	1, 2, 3
b. Initiation Logic	1, 2, 3
c. Actuation Logic	1, 2, 3, 4
d. Manual Trip	1, 2, 3, 4
4. Main Steam Isolation Signal	
a. Coincidence Logic	1, 2, 3, 4
b. Initiation Logic	1, 2, 3, 4
c. Actuation Logic	1, 2, 3, 4
d. Manual Trip	1, 2, 3, 4
5. Auxiliary Feedwater Actuation Signal SG #1 (AFAS-1)	
a. Coincidence Logic	1, 2, 3
b. Initiation Logic	1, 2, 3
c. Actuation Logic	1, 2, 3, 4
d. Manual Trip	1, 2, 3, 4

Table 3.3.6-1 (2 of 2)

Function	Applicable Modes
6. Auxiliary Feedwater Actuation Signal SG #2 (AFAS-2)	
a. Coincidence Logic	1, 2, 3
b. Initiation Logic	1, 2, 3
c. Actuation Logic	1, 2, 3, 4
d. Manual Trip	1, 2, 3, 4
7. Diverse Manual ESF Actuation Signal	
a. Safety Injection	1, 2, 3, 4
b. Containment Spray	1, 2, 3, 4
c. Auxiliary Feedwater (SG #1)	1, 2, 3, 4
d. Auxiliary Feedwater (SG #2)	1, 2, 3, 4
e. Main Steam Isolation per MSIV	1, 2, 3, 4
f. Containment Isolation	1, 2, 3, 4

3.3 INSTRUMENTATION

3.3.7 Emergency Diesel Generator (EDG) – Loss of Voltage Start (LOVS)

LCO 3.3.7 Four channels of Loss of Voltage Function and four channels of Degraded Voltage Function auto-initiation instrumentation per EDG shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4,
When associated EDG 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 EDG inoperable.	A.1 Place channel in bypass or trip. AND A.2 Restore channel to OPERABLE status.	1 hour Prior to entering MODE 2 following next MODE 5 entry
B. One or more Functions with two channels per EDG inoperable.	B.1 Enter applicable Conditions and Required Actions for associated EDG made inoperable by EDG – LOVS instrumentation. OR B.2 Place one channel in bypass and the other channel in trip.	1 hour 1 hour
C. One or more Functions with more than two channels inoperable.	C.1 Restore all but two channels to OPERABLE status.	1 hour
D. Required Action and associated Completion Time not met.	D.1 Enter applicable Conditions and Required Actions for the associated EDG made inoperable by EDG – LOVS instrumentation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.7.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.7.2	Perform CHANNEL FUNCTIONAL TEST in accordance with Setpoint Control Program.	92 days
SR 3.3.7.3	Perform CHANNEL CALIBRATION in accordance with Setpoint Control Program.	18 months

3.3 INSTRUMENTATION

3.3.8 Containment Purge Isolation Actuation Signal (CPIAS)

LCO 3.3.8 One CPIAS channel shall be OPERABLE.

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

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

Only required when the penetration is not isolated by at least one closed and deactivated automatic valve, closed manual valve, or blind flange.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CPIAS Manual Actuation, Actuation Logic, or one or more required channels of radiation monitors inoperable in MODES 1, 2, 3, and 4.	A.1 Enter applicable Conditions and Required Actions for affected valves of LCO 3.6.3, “Containment Isolation Valves,” made inoperable by CPIAS instrumentation.	Immediately
B. Required Action and associated Completion Time not met in MODE 1, 2, 3, or 4.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours
C. CPIAS Manual Actuation, Actuation Logic, or one or more required channels of radiation monitors inoperable during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment.	C.1 Place and maintain containment purge and exhaust valves in closed position. OR C.2.1 Suspend CORE ALTERATIONS. AND C.2.2 Suspend movement of irradiated fuel assemblies in containment.	Immediately Immediately Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.8.1	Perform CHANNEL CHECK on required containment upper operating area radiation monitor channel.	12 hours
SR 3.3.8.2	Perform CHANNEL CHECK on required containment operating area radiation monitor channel.	7 days
SR 3.3.8.3	----------NOTE---------- This SR is applicable in MODES 1, 2, 3, and 4 only. ---------- Perform CHANNEL FUNCTIONAL TEST on each required containment radiation monitor channel in accordance with Setpoint Control Program.	92 days
SR 3.3.8.4	----------NOTE---------- This SR is only applicable during CORE ALTERATIONS or during movement of irradiated fuel assemblies within containment. ---------- Perform CHANNEL FUNCTIONAL TEST on required containment radiation monitor channel in accordance with Setpoint Control Program.	92 days
SR 3.3.8.5	----------NOTE---------- Surveillance Requirement of Actuation Logic shall include actuation of each initiation circuit and verification of proper operation of each initiation circuit. ---------- Perform CHANNEL FUNCTIONAL TEST on required CPIAS Actuation Logic channel.	18 months
SR 3.3.8.6	Perform CHANNEL CALIBRATION on required containment radiation monitor channel in accordance with Setpoint Control Program.	18 months
SR 3.3.8.7	Verify that the response time of required CPIAS channel is within limits.	18 months
SR 3.3.8.8	Perform CHANNEL FUNCTIONAL TEST on required CPIAS Manual Actuation channel.	18 months

3.3 INSTRUMENTATION

3.3.9 Control Room Emergency Ventilation Actuation Signal (CREVAS)

LCO 3.3.9 One CREVAS channel shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CREVAS Manual Actuation, Actuation Logic, or required channels of radiation monitors inoperable in MODES 1, 2, 3, or 4.	A.1 Place one control room area HVAC system train in emergency operation mode.	1 hour
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours
C. CREVAS Manual Actuation, Actuation Logic, or radiation monitors channels inoperable during CORE ALTERATIONS or movement of irradiated fuel assemblies.	C.1 Place one control room area HVAC system train in emergency operation mode. OR C.2.1 Suspend movement of irradiated fuel assemblies. AND C.2.2 Suspend positive reactivity additions. AND C.2.3 Suspend CORE ALTERATIONS.	Immediately Immediately Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.9.1	Perform CHANNEL CHECK on required CREVAS radiation monitor channel.	12 hours
SR 3.3.9.2	Perform CHANNEL FUNCTIONAL TEST on required CREVAS radiation monitor channel in accordance with Setpoint Control Program.	92 days
SR 3.3.9.3	----------NOTE---------- Surveillance Requirement of Actuation Logic shall include verification of proper operation of each initiation circuit. ---------- Perform CHANNEL FUNCTIONAL TEST on required CREVAS Logic channel.	18 months
SR 3.3.9.4	Perform CHANNEL CALIBRATION on required CREVAS radiation monitor channel in accordance with Setpoint Control Program.	18 months
SR 3.3.9.5	Perform CHANNEL FUNCTIONAL TEST on required CREVAS Manual Actuation channel.	18 months
SR 3.3.9.6	Verify that the response time of required CREVAS channel is within limits.	18 months

3.3 INSTRUMENTATION

3.3.10 Fuel Handling Area Emergency Ventilation Actuation Signal (FHEVAS)

LCO 3.3.10 One FHEVAS channel shall be OPERABLE.

APPLICABILITY: During movement of irradiated fuel in the fuel handling area.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Actuation Logic, Manual Actuation, radiation monitors channels inoperable.	A.1 Place one fuel handling area HVAC system train in emergency operation mode. OR A.2 Suspend movement of irradiated fuel assemblies in fuel handling area.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.10.1	Perform CHANNEL CHECK on required FHEVAS radiation monitor channel.	12 hours
SR 3.3.10.2	Perform CHANNEL FUNCTIONAL TEST on required FHEVAS radiation monitor channel in accordance with Setpoint Control Program.	92 days
SR 3.3.10.3	----------NOTE---------- Testing of Actuation Logic shall include actuation of each initiation circuit and verification of proper operation of each initiation circuit. ---------- Perform CHANNEL FUNCTIONAL TEST on required FHEVAS Logic channel.	18 months
SR 3.3.10.4	Perform CHANNEL FUNCTIONAL TEST on required FHEVAS Manual Actuation logic.	18 months
SR 3.3.10.5	Perform CHANNEL CALIBRATION on required FHEVAS radiation monitor channel in accordance with Setpoint Control Program.	18 months
SR 3.3.10.6	Verify that the response time of required FHEVAS channel is within limits.	18 months

3.3 INSTRUMENTATION

3.3.11 Accident Monitoring Instrumentation (AMI)

LCO 3.3.11 The AMI measurement channel for each Function in Table 3.3.11-1 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 measurement channel inoperable.	A.1 Restore required measurement channel to OPERABLE status.	31 days
B. Required Action and associated Completion Time of Condition A not met.	B.1 Initiate action in accordance with Specification 5.6.5.	Immediately
C. One or more Functions with two required measurement channels inoperable.	C.1 Restore one measurement channel to OPERABLE status.	7 days
D. Required Action and associated Completion Time of Condition C not met.	D.1 Enter Condition referenced in Table 3.3.11-1 for the channel.	Immediately
E. As required by Required Action D.1 and referenced in Table 3.3.11-1.	E.1 Be in MODE 3. AND E.2 Be in MODE 4.	6 hours 12 hours
F. As required by Required Action D.1 and referenced in Table 3.3.11-1.	F.1 Initiate action in accordance with Specification 5.6.5.	Immediately

SURVEILLANCE REQUIREMENTS

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

These SRs apply to each AMI Function in Table 3.3.11-1.

SURVEILLANCE		FREQUENCY
SR 3.3.11.1	Perform CHANNEL CHECK for each required measurement CHANNEL that is normally energized.	31 days
SR 3.3.11.2	----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION.	18 months

Table 3.3.11-1 (1 of 2)

Accident Monitoring Instrumentation

Function	Required Measurement Channels	Conditions Referenced from Required Action D.1
1. Logarithmic Reactor Power	2	E
2. Reactor Coolant Hot Leg Temperature (Wide Range)	2 per loop	E
3. Reactor Coolant Cold Leg Temperature (Wide Range)	2 per loop	E
4. Reactor Coolant System Pressure (Wide Range)	2	E
5. Reactor Vessel Coolant Level	2	F
6. Reactor Cavity Level	4	E
7. Containment Pressure (Wide Range)	2	E
8. Containment Pressure (Extended Wide Range)	2	E
9. Containment Isolation Valve Position	1 per valve (1,2)	E
10. Containment Upper Operating Area Radiation	2	F
11. Pressurizer Level	2	E
12. Steam Generator Level (Wide Range)	2 per Steam Generator	E
13. Holdup Volume Tank Level	5	E
14. Core Exit Temperature – Quadrant 1	2(3)	E
15. Core Exit Temperature – Quadrant 2	2(3)	E
16. Core Exit Temperature – Quadrant 3	2(3)	E
17. Core Exit Temperature – Quadrant 4	2(3)	E
18. Steam Generator Pressure	2 per Steam Generator	E
19. Degree of Subcooling	2(4)	E
20. Pressurizer Pressure (Wide Range)	2	E

Table 3.3.11-1 (2 of 2)

Function	Required Measurement Channels	Conditions Referenced from Required Action D.1
21. IRWST Level	4	E
22. IRWST Temperature	4	E
23. Containment Level	2	E
24. Control Rod Position	1/rod	E
25. Containment Operating Area Radiation	2	E
26. Spent Fuel Pool Radiation	2	E

(1) 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.

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

(3) A measurement CHANNEL consists of four or more core exit thermocouples.

(4) A measurement CHANNEL consists of one or more Core Exit Temperature, Reactor Vessel Upper Head Temperature, Reactor Coolant Inlet Temperature (T-Cold) Wide Range, Reactor Coolant Outlet Temperature (T-Hot) Wide Range, and Pressurizer Pressure (Wide Range).

3.3 INSTRUMENTATION

3.3.12 Remote Shutdown Display and Control

LCO 3.3.12 The Remote Shutdown Display and Control Functions in Table 3.3.12-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

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 required Functions inoperable.	A.1 Restore required Functions to OPERABLE status.	31 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.12.1	Perform CHANNEL CHECK for each required measurement channel that is normally energized.	31 days
SR 3.3.12.2	Verify that the required indication, control circuit, and transfer switch is capable of performing the intended function.	18 months
SR 3.3.12.3	----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION for each required measurement channel.	 18 months
SR 3.3.12.4	Perform CHANNEL FUNCTIONAL TEST of reactor trip switch gear open/closed indication.	18 months

Table 3.3.12-1 (1 of 3)

Remote Shutdown Display and Control

	Function (Display or Control)	Required Number of Channels
1.	Neutron Logarithmic Power	2
2.	Hot Leg Temperature	1 per loop
3.	Cold Leg Temperature	1 per loop
4.	Pressurizer Pressure	2
5.	Pressurizer Level	2
6.	Pressurizer Reactor Coolant Gas Vent (RCGV) Position	1 per valve
7.	Steam Generator (SG) #1 Pressure	2
8.	Steam Generator (SG) #2 Pressure	2
9.	SG #1, #2 Level	2
10.	In-containment Refueling Water Storage Tank (IRWST) Level	2
11.	Safety Injection (SI) Pump Discharge Pressure	4 (1 per tank)
12.	Safety Injection Tank (SIT) Pressure (Wide Range)	4 (1 per tank)
13.	Shutdown Cooling (SC) Inlet and Outlet Temperature	4 per tank loop
14.	SC Pump Flow Rate	1
15.	SI Pump Flow Rate	1
16.	Auxiliary Feedwater (AFW) Pump Discharge Pressure (SG#1)	2(2)
17.	AFW Pump Discharge Pressure (SG #2)	2(2)
18.	AFW Pump Suction Pressure and Low Pressure Alarm (SG #1, #2)	4(2)
19.	AFW Steam Motive Power Instrumentation (SG #1, #2)	2(2), (3)
20.	AFW Pump Flow Rate (SG #1, #2)	2(2), (3)
21.	AFW Pump Recirculation Flow Rate (SG #1, #2)	4(2)
22.	AFW Storage Tank Level and Low Alarm BOP	1 per tank
23.	Component Cooling Water (CCW) Pump and Essential Service Water (ESW) Pump Status Indication	1

Table 3.3.12-1 (2 of 3)

	Function (Display or Control)	Required Number of Channels
24.	Emergency Diesel Generator (EDG) Status Indication	1
25.	Reactor Coolant Pump (RCP) Trip Pushbutton	1 per tank
26.	Pressurizer Backup Heater Control (Group 1 & 2)	2
27.	Main Steam Atmospheric Steam Dump Valve (MSADV) Controls (SG #1, #2)	4(7)
28.	MSADV Block Valve Controls (SG #1, #2)	4(7)
29.	Pressurizer RCGV Valve Controls	1 per valve
30.	Shutdown Cooling System (SCS) Warmup Line Isolation Valve Controls	1
31.	SCS Suction Line Isolation Valve Controls (3 valves per train)	1
32.	IRWST Isolation Valve Control	1
33.	SCS Test Return Line Isolation Valve Control (Throttle)	1
34.	SCS Test Return Line Isolation Valve Control	1
35.	Containment Spray (CS) Pump/SC Pump Suction Cross Connect Valve Control	1
36.	IRWST Return Line Isolation Valve Control	1
37.	SC Heat Exchanger Bypass Flow Control Valve Control	1
38.	SC Heat Exchanger Discharge Isolation and Throttle Valve Control	1
39.	SI Low Flow Control Bypass Valve Control	1
40.	SIT Atmospheric Vent Valve Control	4 (1 per tank)
41.	SIT Isolation Valve Control	4 (1 per tank)
42.	SCS Direct Vessel Injection (DVI) Isolation Valve Control	1
43.	SI Line Isolation Valve Control	1
44.	SI Pump/SC Pump Suction Cross Connect Valve Control	1
45.	SI Pump Control	1 per loop
46.	SC Pump Control	1 per loop

Table 3.3.12-1 (3 of 3)

Function (Display or Control)	Required Number of Channels
47. Manual Reactor Trip Switch	2(4)
48. MSIS Actuation Switch	2
49. AFW Pump Controls (SG #1, #2)	4(2)
50. AFW Isolation Valves (SG #1, #2)	4(2)
51. AFW Flow Control Valves (SG #1, #2)	4(2), (7)
52. AFW Steam Motive Power Controls (SG #1, #2)	4(2), (5)
53. Charging Pump Controls	2
54. AF Turbine Trip and Throttle Valve 1&2 Trip and Reset	2
55. EDG Power Circuit Breaker (PCB) Controls	2
56. Reactor Containment Building Fan Cooler Controls	1
57. Area Cooling Fan Controls	1
58. Digital Control Transfer Switch	2(6)
59. CCW Pump and ESW Pump Controls	1

(1) A division can have one or more channels (per IEEE 603).

(2) Turbine Driven Pump Display and Control for Division I, Motor Driven Pump Display and Control for Division II.

(3) Includes Turbine-Driven Pump Turbine Inlet Pressure, Turbine-Driven Pump Turbine Speed, Turbine Trip and Throttle (Stop) Valves Open/Close Position and Close Position Alarm, to Division I Steam Motive Power, No Display for Division II Motive Power.

(4) A division consists of two Manual Reactor Trip Switches in opposite trip legs to meet the selective two-out-of-four logic for a reactor trip.

(5) AFW Pump Turbine Steam Supply Valves, AFW Pump Turbine Steam Isolation and Isolation Bypass Valves, AFW Turbine, and AFW Turbine Speed Control for Division I, No Steam Motive Power Controls for Division II.

(6) Includes non-safety Channel N1 and N2.

(7) Includes ON/OFF switch and M/A station.

3.3 INSTRUMENTATION

3.3.13 Logarithmic Power Monitoring Channels

LCO 3.3.13 Two logarithmic power level monitoring instrumentation shall be OPERABLE.

APPLICABILITY: MODES 3, 4, and 5 with the reactor trip switchgears (RTSGs) open or control element assembly (CEA) drive system not capable of CEA withdrawal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channel(s) inoperable.	A.1 ----------NOTE---------- Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM. ---------- Suspend all operations involving positive reactivity additions.	Immediately
	AND	
	A.2 Perform SDM verification in accordance with SR 3.1.1.1 if T_{cold} > 99 °C (210 °F) or SR 3.1.2.1 if T_{cold} ≤ 99 °C (210 °F).	4 hours AND Once per 12 hours thereafter

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.13.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.13.2	Perform CHANNEL FUNCTIONAL TEST in accordance with Setpoint Control Program.	31 days
SR 3.3.13.3	----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ----------	
	Perform CHANNEL CALIBRATION in accordance with Setpoint Control Program.	18 months

3.3 INSTRUMENTATION

3.3.14 Boron Dilution Alarms

LCO 3.3.14 Two startup channel high neutron flux alarms shall be OPERABLE.

APPLICABILITY: MODES 3, 4, and 5.

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

MODE 3, within 1 hour after the neutron flux is within the startup range following a reactor shutdown.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One startup channel high neutron flux alarm inoperable.	A.1 Turn off charging pump and determine the RCS boron concentration. ----------NOTE---------- Turn on auxiliary charging pump if necessary. ---------- AND	Immediately AND At the monitoring Frequency specified in the COLR
	A.2 Suspend all operations involving positive reactivity additions.	Immediately
B. Two startup channel high neutron flux alarms inoperable.	B.1 Turn off charging pump and determine the RCS boron concentration by redundant methods. ----------NOTE---------- Turn on auxiliary charging pump if necessary. ---------- AND	Immediately AND At the monitoring Frequency specified in the COLR
	B.2 Suspend all operations involving positive reactivity additions.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.14.1	----------NOTE---------- This SR is applicable within 1 hour after the neutron flux is within the startup range. --- Perform CHANNEL CHECK.	12 hours
SR 3.3.14.2	----------NOTE---------- Neutron flux detector is excluded from CHANNEL FUNCTIONAL TEST. --- Perform CHANNEL FUNCTIONAL TEST.	Total shutdown period 31 days
SR 3.3.14.3	----------NOTE---------- Neutron flux detector is excluded from CHANNEL CALIBRATION. --- Perform CHANNEL CALIBRATION.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.1 RCS Pressure, Temperature, and Flow Limits

LCO 3.4.1 RCS departure from nucleate boiling (DNB) parameters for pressurizer pressure, cold leg temperature, and RCS total flow rate shall be within the limits specified below:

a. Pressurizer pressure ≥ 154.7 kg/cm^{2}A (2,201 psia) and ≤ 161.6 kg/cm^{2}A (2,299 psia)

b. RCS cold leg temperature (T_{cold})

≥ 286.7 °C (548 °F) and ≤ 293.3 °C (560 °F) for < 90 % RTP

≥ 289.4 °C (553 °F) and ≤ 293.3 °C (560 °F) for ≥ 90 % RTP

c. RCS total flow rate ≥ 75.6 × 10^6 kg/hr (166.6 × 10^6 lb/hr)

APPLICABILITY: MODES 1 and 2 for pressurizer pressure,
MODE 1 for RCS cold leg temperature (T_{cold}),
MODE 2 (k_{eff} ≥ 1) for RCS cold leg temperature (T_{cold}),
MODE 1 for RCS total flow rate.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RCS total flow rate not within limits.	A.1 Restore RCS total flow rate to within limits.	2 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 2.	6 hours
C. Pressurizer pressure or RCS cold leg temperature not within limit.	C.1 Restore parameter(s) to within limits.	2 hours
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.1.1	Verify pressurizer pressure ≥ 154.7 kg/cm^{2}A (2,201 psia) and ≤ 161.6 kg/cm^{2}A (2,299 psia).	12 hours
SR 3.4.1.2	Verify RCS cold leg temperature ≥ 286.7 °C (548 °F) and ≤ 293.3 °C (560 °F) for < 90 % RTP or ≥ 289.4 °C (553 °F) and ≤ 293.3 °C (560 °F) for ≥ 90 % RTP.	12 hours
SR 3.4.1.3	Verify RCS total flow rate ≥ 75.6 × 10^6 kg/hr (166.6 × 10^6 lb/hr).	12 hours
SR 3.4.1.4	----------NOTE---------- Not required to be performed until 24 hours after ≥ 95 % RTP. ---------- Verify by precision heat balance that RCS total flow rate ≥ 75.6 × 10^6 kg/hr (166.6 × 10^6 lb/hr) and ≤ 86.9 × 10^6 kg/hr (191.6 × 10^6 lb/hr).	31 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.2 RCS Minimum Temperature for Criticality

LCO 3.4.2 Each RCS cold leg temperature (T_{cold}) shall be ≥ 286.7 °C (548 °F).

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RCS T_{cold} in one or more RCS loops not within limit.	A.1 Be in MODE 3.	30 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.2.1	Verify RCS T_{cold} in each loop ≥ 286.7 °C (548 °F).	Once within 15 minutes prior to achieving criticality AND ----------NOTE---------- Required if reactor is critical and RCS T_{cold} < 289.4 °C (553 °F). ---------- 30 minutes

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 PTLR.

APPLICABILITY: At all times (except when reactor vessel closure head is fully de-tensioned such that the RCS cannot be pressurized).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ----------NOTE---------- Required Action A.2 shall be completed whenever Condition A is entered. ---------- Requirements of LCO not met in MODE 1, 2, 3, or 4.	A.1 Restore parameter(s) to within limits. <u>AND</u> A.2 Determine RCS is acceptable for continued operation.	30 minutes 72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 5 with RCS pressure < 33.7 kg/cm^{2}A (479 psia).	6 hours 36 hours
C. ----------NOTE---------- Required Action C.2 shall be completed whenever this Condition is entered. ---------- Requirements of LCO not met any time in other than MODE 1, 2, 3, or 4.	C.1 Initiate action to restore parameter(s) to within limits. <u>AND</u> C.2 Determine RCS is acceptable for continued operation.	Immediately Prior to entering MODE 4.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.3.1	----------NOTE---------- Only required to be performed during RCS heatup and cooldown operations and RCS inservice leak and hydrostatic testing. ---------- Verify RCS pressure, RCS temperature, and RCS heatup and cooldown rates within limits specified in PTLR.	30 minutes

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 with two reactor coolant pumps operating in each loop.

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 with steam generators and at least one reactor coolant pump per loop and at least one RCS loop shall be in operation.

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

All reactor coolant pumps may be de-energized for up to ≤ 1 hour per 8-hour period, provided:

a. No operations are permitted that would cause reduction of the RCS boron concentration required to meet the SDM of LCO 3.1.1; and

b. Core outlet temperature is maintained at least 5.6 °C (10 °F) below saturation temperature.

APPLICABILITY: MODE 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RCS loop inoperable.	A.1 Restore 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
C. No RCS loop OPERABLE. OR Required RCS loop not in operation.	C.1 Suspend all operations involving a reduction of RCS boron concentration. AND C.2 Initiate action to restore one RCS loop to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.5.1	Verify required RCS loop is in operation.	12 hours
SR 3.4.5.2	Verify secondary side water level in each steam generator is ≥ 25 % wide range indications.	12 hours
SR 3.4.5.3	Verify correct breaker alignment and indicated power available to 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 or trains consisting of any combination of RCS loops and shutdown cooling (SC) trains shall be OPERABLE and at least one loop or train shall be in operation.

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

1. All reactor coolant pumps (RCPs) and SC pumps may be de-energized ≤ 1 hour per 8-hour period, provided:
   a. No operations are permitted that would cause reduction of the RCS boron concentration required to meet the SDM of LCO 3.1.1; and
   b. Core outlet temperature is maintained at least 5.6 °C (10 °F) below saturation temperature.
2. No RCP shall be started with any RCS cold leg temperatures less than or equal to the LTOP enable temperature specified in the PTLR, unless secondary side water temperature in each steam generator (SG) is < 55.6 °C (100 °F) above each of the RCS cold leg temperatures.

APPLICABILITY: MODE 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required RCS loop inoperable. AND Two SC trains inoperable.	A.1 Initiate action to restore a second loop or train to OPERABLE status.	Immediately
B. One required SC train inoperable. AND Two required RCS loops inoperable.	B.1 Be in MODE 5.	24 hours
C. Two required RCS loops or SC trains inoperable. OR Required RCS loop or SC train not in operation.	C.1 Suspend all operations involving reduction in RCS boron concentration. AND C.2 Initiate action to restore one loop or train to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.6.1	Verify one RCS loop or SC train is in operation.	12 hours
SR 3.4.6.2	Verify secondary side water level in required SG(s) is ≥ 25 % wide range indication.	12 hours
SR 3.4.6.3	Verify correct breaker alignment and indicated power available to required RCPs and SC 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 shutdown cooling (SC) train shall be OPERABLE and in operation, and either:

a. One additional SC train shall be OPERABLE, or

b. The secondary side water level of each steam generator (SG) shall be ≥ 25 % wide range indication.

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

1. The SC pump of the train in operation may be de-energized for ≤ 1 hour per 8-hour period provided:
   a. No operations are permitted that would cause reduction of the RCS boron concentration required to meet the SDM of LCO 3.1.1; and
   b. Core outlet temperature is maintained at least 5.6 °C (10 °F) below saturation temperature.
2. One required SC train may be inoperable for up to 2 hours for surveillance testing provided that the other SC train is OPERABLE and in operation.
3. No RCP shall be started with one or more of the RCS cold leg temperatures less than or equal to the LTOP enable temperature specified in the PTLR, unless secondary water temperature of each SG is < 55.6 °C (100 °F) above each of the RCS cold leg temperatures.
4. All SC trains may be removed from operation during planned heatup to MODE 4 when at least one RCS loop is in operation.
5. A containment spray pump can be manually realigned to meet the requirement of a SC pump.

APPLICABILITY: MODE 5 with RCS loops filled.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Required SC train inoperable. AND One SC train OPERABLE.	A.1 Initiate action to restore a second SC train to OPERABLE status. OR A.2 Initiate action to restore SG secondary side water level to within limits.	Immediately Immediately
B. One or more required SGs with secondary side water level not within limit. AND One SC train OPERABLE.	B.1 Initiate action to restore a second SC train to OPERABLE status. OR B.2 Initiate action to restore SG secondary side water level to within limits.	Immediately Immediately
C. No Required SC train OPERABLE. OR SC train not in operation.	C.1 Suspend all operations involving reduction in RCS boron concentration. AND C.2 Initiate action to restore one SC train to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	Verify one SC train is in operation.	12 hours
SR 3.4.7.2	Verify required SG secondary side water level is ≥ 25 % wide range indication.	12 hours
SR 3.4.7.3	Verify correct breaker alignment and indicated power available to required SC 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 shutdown cooling (SC) trains shall be OPERABLE and one SC train shall be in operation.

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

1. All SC pumps may be de-energized for ≤ 15 minutes when switching from one train to another provided:
   a. Core outlet temperature is maintained at least 5.6 °C (10 °F) below saturation temperature.
   b. No operations are permitted that would cause a reduction of RCS boron concentration required to meet the SDM of LCO 3.1.1; and
   c. No draining operations to further reduce RCS water volume are permitted.
2. One SC train may be inoperable for ≤ 2 hours for surveillance testing provided the other SC train is OPERABLE and in operation.
3. A containment spray pump can be manually realigned to meet the requirement of a SC pump.

APPLICABILITY: MODE 5 with RCS loops not filled.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SC train inoperable.	A.1 Initiate action to restore SC train to OPERABLE status.	Immediately
B. Required SC trains inoperable. OR No SC train in operation.	B.1 Suspend all operations involving reduction of RCS boron concentration. AND B.2 Initiate action to restore one SC train to OPERABLE status and operation. AND B.3 Initiate action to raise RCS level to > EL. 38.72 m (127 ft-1/4 in).	Immediately Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify one SC train is in operation.	12 hours
SR 3.4.8.2	Verify correct breaker alignment and indicated power available to required SC pump that is not in operation.	7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 Pressurizer

LCO 3.4.9 The pressurizer shall be OPERABLE with:

a. Pressurizer water level ≥ 25 % and ≤ 56 %, and

b. Two groups of pressurizer backup heaters OPERABLE with the capacity of each group ≥ 300 kW and capable of being powered from an emergency power supply.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	Verify pressurizer water level ≥ 25 % and ≤ 56 %.	12 hours
SR 3.4.9.2	Verify capacity of each required group of pressurizer backup heaters ≥ 300 kW.	92 days
SR 3.4.9.3	Verify that on an engineered safety features actuation test signal concurrent with a loss of offsite power: a. Pressurizer backup heaters are automatically shed from emergency power sources. b. Pressurizer backup heaters can be reconnected to their respective buses manually from the control room.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.10 Pressurizer Pilot Operated Safety Relief Valves (POSRVs)

LCO 3.4.10 Four pressurizer POSRVs shall be OPERABLE such that:

a. Two spring-loaded pilot valves shall be OPERABLE with lift settings ≥ 171.1 kg/cm^{2}A (2,433 psia) and ≤ 176.3 kg/cm^{2}A (2,507 psia).

b. The opening time of pressurizer POSRV shall be OPERABLE within 0.5 seconds, including dead time.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 with all RCS cold leg temperature greater than the LTOP enable temperature specified in the PTLR.

----------NOTES----------
The opening time measurement and lift pressure setting of POSRV are not required to be within LCO limits during MODES 3 and 4 for the purpose of setting the POSRVs under ambient (hot) conditions. This exception is allowed for 72 hours following entry into MODE 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One pressurizer POSRV inoperable.	A.1 Restore pressurizer POSRV to OPERABLE status.	15 minutes
B. Required Action and associated Completion Time of Condition A not met. OR Two or more pressurizer POSRVs inoperable.	B.1 Be in MODE 3. AND B.2.1 Be in MODE 4 with all RCS cold leg temperatures less than or equal to LTOP enable temperature specified in PTLR. OR B.2.2 Be in MODE 4 on shutdown cooling with requirements of LCO 3.4.11 met.	6 hours 12 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.10.1	Verify open and close positions for the following valves in the main control room (MCR): a. Main valves – close b. Motor-operated isolation valves and manual isolation valves – open c. Spring-loaded pilot valves – close d. Motor-operated pilot valves – close	12 hours
SR 3.4.10.2	Verify electric power disconnections of the following motor-operated valves: a. Motor-operated isolation valves b. Upstream valve of double motor-operated pilot valves	7 days
SR 3.4.10.3	Verify each pressurizer POSRV meets the following: a. The lift settings of two spring-loaded pilot valves are set within limit (≥ 171.1 kg/cm^{2}A (2,433 psia) and ≤ 176.3 kg/cm^{2}A (2,507 psia)). Adjust lift settings within limit if lift setting pressure exceeds ≥ 172.4 kg/cm^{2}A (2,451.4 psia) and ≤ 175.0 kg/cm^{2}A (2,488.5 psia). b. Opening time of pressurizer POSRV shall be within 0.5 seconds, including dead time.	18 months
SR 3.4.10.4	Verify alarm devices for valve positions and electric power connections of the following valves: a. Motor-operated isolation valves – power connection alarm b. Upstream valve of double motor-operated pilot valves – power connection alarm c. Manual isolation valves – not fully open alarm	18 months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.10.5	Verify position indicators of the following valves are operated normally: a. Main valves b. Spring-loaded pilot valves c. Double motor-operated pilot valves d. Motor-operated isolation valves and manual isolation valves	18 months
SR 3.4.10.6	Verify downstream manual valves of spring-loaded pilot valves are locked in open position.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.11 Low Temperature Overpressure Protection (LTOP) System

LCO 3.4.11 LTOP System shall be OPERABLE as follows:

a. Two OPERABLE shutdown cooling system (SCS) suction line relief valves with lift settings ≤ 37.3 kg/cm^{2}G (530 psig), or

b. RCS depressurized and an RCS vent of ≥ 180.6 cm^2 (28 in^2) established.

APPLICABILITY: MODE 4 when any RCS cold leg temperature is less than or equal to the LTOP enable temperature specified in the PTLR,
MODE 5,
MODE 6 when the reactor vessel closure head is on.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required SCS suction line relief valve inoperable in MODE 4.	A.1 Restore required SCS suction line relief valve to OPERABLE status.	7 days
B. One required SCS suction line relief valve inoperable in MODE 5 or 6.	B.1 Restore required SCS suction line relief valves to OPERABLE status.	24 hours
C. Required Action and associated Completion Time not met.	C.1 Depressurize RCS and establish an RCS vent of ≥ 180.6 cm^2 (28 in^2).	8 hours
D. Two required SCS suction line relief valves inoperable.	D.1 Initiate action to establish an RCS vent of ≥ 180.6 cm^2 (28 in^2).	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.11.1	----------NOTE---------- Not required to be met if SR 3.4.11.2 is satisfied for LCO 3.4.11 b requirement. ---------- Verify RCS vent of ≥ 180.6 cm^2 (28 in^2) is established.	12 hours
SR 3.4.11.2	----------NOTE---------- Not required to be met if SR 3.4.11.1 is satisfied for LCO 3.4.11 a requirement. ---------- Verify setpoint setting for each required SCS suction line relief valve is within limits.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.12 RCS Operational LEAKAGE

LCO 3.4.12 RCS operational LEAKAGE shall be limited to the following:

a. No pressure boundary LEAKAGE

b. 1.89 L/min (0.5 gpm) unidentified LEAKAGE

c. 37.8 L/min (10 gpm) identified LEAKAGE

d. 0.39 L/min (150 gpd) primary-to-secondary LEAKAGE through any one SG

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.12.1	----------NOTE---------- 1. Not required to be performed until 12 hours after establishment of steady state operation. 2. Not applicable to primary-to-secondary LEAKAGE. --- Verify RCS operational LEAKAGE is within limit by performing RCS water inventory balance.	72 hours
SR 3.4.12.2	----------NOTE---------- Not required to be performed until 12 hours after establishment of steady state operation. --- Verify primary-to-secondary LEAKAGE is ≤ 0.39 L/min (150 gpd) through any one SG.	72 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 RCS Pressure Isolation Valve (PIV) Leakage

LCO 3.4.13 Leakage from each RCS PIV shall be within limits.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4, except valves in the shutdown cooling (SC) flow paths when in SC operation or during the transition to or from SC operation.

ACTIONS

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

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more flow paths with leakage from one or more RCS PIVs not within limit.	----------NOTE---------- Each valve used to satisfy Required Actions A.1 and A.2 must have been verified to meet the Surveillance and Frequency of SR 3.4.13.1 and be on the reactor coolant pressure boundary. ---------- A.1 Isolate high pressure portion of affected system from low pressure portion by use of one closed manual, deactivated automatic, or check valve. AND A.2 Restore RCS PIV leakage to within limit.	 4 hours 72 hours
B. Required Actions and associated Completion Time for Condition not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours
C. SC System open permissive interlock function inoperable.	C.1 Depressurize RCS pressure below open permissive interlock setpoint.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.13.1	----------NOTE---------- 1. Not required to be performed in MODES 3 and 4. 2. Not required to be performed on RCS PIVs located in SC flow path when in SC mode of operation. 3. RCS PIVs actuated during performance of this Surveillance are not required to be tested more than once if a repetitive testing loop cannot be avoided. --- Verify leakage from each RCS PIV is equivalent to ≤ 1.89 L/min (0.5 gpm) per nominal 2.54 cm (1 in) of valve size up to a maximum of 18.9 L/min (5 gpm) at an RCS pressure ≥ 156.8 kg/cm^{2}A (2,230 psia) and ≤ 159.6 kg/cm^{2}A (2,270 psia).	18 months AND Prior to entering MODE 2 whenever unit has been in MODE 5 for 72 hours or more, if leakage testing has not been performed in previous 9 months AND Prior to returning valve to service following maintenance, repair, or replacement work on valve AND Within 24 hours following valve actuation due to automatic or manual action or flow through the valve

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.13.2	----------NOTE---------- The performance of this Surveillance Requirement is not required if SC suction line isolation valves are open for LTOP by LCO 3.4.11 a. ---------- Verify SC system open permissive interlock prevents the SC system suction line isolation valve from being opened with a simulated or actual RCS pressure signal ≥ 31.6 kg/cm^{2}A (450 psia).	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.14 RCS Leakage Detection Instrumentation

LCO 3.4.14 The following RCS leakage detection instrumentation shall be OPERABLE:

a. One containment sump (level) monitor

b. One containment atmosphere radioactivity (particulate) monitor

c. One containment atmosphere humidity monitor

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required containment sump monitor inoperable.	A.1 ----------NOTE---------- Not required until 12 hours after establishment of steady state operation. ----------	
	Perform SR 3.4.12.1.	Once per 24 hours
	AND	
	A.2 Restore required containment sump monitor to OPERABLE status.	31 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required containment atmosphere radioactivity monitor inoperable.	B.1.1 Analyze grab samples of the containment atmosphere. OR B.1.2 ----------NOTE---------- Not required until 12 hours after establishment of steady state operation. ---------- Perform SR 3.4.12.1. AND B.2.1 Restore required containment atmosphere radioactivity monitor to OPERABLE status. OR B.2.2 Verify that the containment atmosphere humidity monitor is operable.	Once per 24 hours Once per 24 hours 31 days 31 days
C. Containment atmosphere humidity monitor inoperable.	C.1. Perform SR 3.4.14.1. OR C.2 ----------NOTE---------- Not required until 12 hours after establishment of steady state operation. ---------- Perform SR 3.4.12.1.	Once per 8 hours Once per 24 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
---------- NOTE---------- Only applicable when the containment atmosphere gaseous radiation monitor is the only OPERABLE monitor. ---------- D. Required containment sump monitor inoperable. <u>AND</u> Containment atmosphere humidity monitor inoperable.	D.1 Analyze grab samples of containment atmosphere. <u>AND</u> D.2.1 Restore required containment sump monitor to OPERABLE status. <u>OR</u> D.2.2 Restore containment atmosphere humidity monitor to OPERABLE status.	Once per 12 hours 7 days 7 days
E. Required containment atmosphere radioactivity monitor inoperable. <u>AND</u> Containment atmosphere humidity monitor inoperable.	E.1 Restore required containment atmosphere radioactivity monitor to OPERABLE status. <u>OR</u> E.2 Restore containment atmosphere humidity monitor to OPERABLE status.	31 days 31 days
F. Required Action and associated Completion Time not met.	F.1 Be in MODE 3. <u>AND</u> F.2 Be in MODE 5.	6 hours 36 hours
G. All required monitors inoperable.	G.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.14.1	Perform CHANNEL CHECK of required containment atmosphere radioactivity monitor.	12 hours
SR 3.4.14.2	Perform CHANNEL FUNCTIONAL TEST on required containment atmosphere radioactivity monitor.	31 days
SR 3.4.14.3	Perform CHANNEL CALIBRATION of containment sump monitor.	18 months
SR 3.4.14.4	Perform CHANNEL CALIBRATION of required containment atmosphere radioactivity monitor.	18 months
SR 3.4.14.5	Perform CHANNEL CALIBRATION of required containment atmosphere humidity monitor.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.15 RCS Specific Activity

LCO 3.4.15 RCS DOSE EQUIVALENT I-131 and DOSE EQUIVALENT XE-133 specific activity shall be within limits.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. DOSE EQUIVALENT I-131 not within limit.	----------NOTE---------- LCO 3.0.4 is not applicable. ---------- A.1 Verify DOSE EQUIVALENT I-131 ≤ 2.22×10^6 Bq/g. AND A.2 Restore DOSE EQUIVALENT I-131 to within limit.	 Once per 4 hours 48 hours
B. DOSE EQUIVALENT XE-133 not within limit.	----------NOTE---------- LCO 3.0.4 is not applicable. ---------- B.1 Restore DOSE EQUIVALENT XE-133 to within limit.	 48 hours
C. Required Action and associated Completion Time of Condition A or B not met. OR DOSE EQUIVALENT I-131 > 2.22×10^6 Bq/g.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.15.1	----------NOTE---------- Only required to be performed in MODE 1. ---------- Verify reactor coolant DOSE EQUIVALENT XE-133 specific activity ≤ 1.11 x 10^7 Bq/g.	7 days
SR 3.4.15.2	----------NOTE---------- Only required to be performed in MODE 1. ---------- Verify reactor coolant DOSE EQUIVALENT I-131 specific activity ≤ 3.70 x 10^4 Bq/g.	14 days AND Between 2 and 6 hours after a THERMAL POWER change of ≥ 15 % RTP within a 1-hour period

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.16 Reactor Coolant Gas Vent (RCGV) Function

LCO 3.4.16 The following RCGV path shall be OPERABLE:

a. Two paths from the reactor vessel closure head to in-containment refueling water storage tank (IRWST), and

b. Two paths from the pressurizer steam space to the IRWST

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 with RCS pressure ≥ 31.6 kg/cm^{2}A (450 psia).

ACTIONS

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

Separate Condition entry is allowed for each RCGV path.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required RCGV path inoperable.	A.1 Restore RCGV path to OPERABLE status.	72 hours
B. Two required RCGV paths from the same location inoperable.	B.1 Restore one RCGV path to OPERABLE status.	6 hours
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4 with RCS pressure < 31.6 kg/cm^{2}A (450 psia).	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.16.1	Cycle each RCGV valve to the fully closed and fully open position.	18 months
SR 3.4.16.2	Verify flow through the vent paths during venting.	18 months
SR 3.4.16.3	Verify each of the locally operated manual isolation valves in the two required paths from the reactor vessel closure head to the RDT or IRWST is locked in the open position.	18 months
SR 3.4.16.4	Verify correct breaker alignment and position indication power available.	7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.17 Steam Generator (SG) Tube Integrity

LCO 3.4.17 SG tube integrity shall be maintained.

AND

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

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

ACTIONS

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

Separate Condition entry is allowed for each SG tube.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more SG tubes satisfying the tube repair criteria and not plugged in accordance with the Steam Generator Program.	A.1 Verify tube integrity of affected tube(s) is maintained until next refueling outage or SG tube inspection. AND A.2 Plug affected tube(s) in accordance with Steam Generator Program.	7 days Prior to entering MODE 4 following the next refueling outage or SG tube inspection
B. Required Action and associated Completion Time of Condition A or B not met. OR SG tube integrity not maintained.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.17.1	Verify SG tube integrity in accordance with Steam Generator Program.	In accordance with Steam Generator Program
SR 3.4.17.2	Verify each inspected SG tube that satisfies tube repair criteria is plugged in accordance with Steam Generator Tube Surveillance Program.	Prior to entering MODE 4 following a SG tube inspection

3.5 EMERGENCY CORE COOLING SYSTEM (ECCS)

3.5.1 Safety Injection Tanks (SITs)

LCO 3.5.1 Four SITs shall be OPERABLE.

APPLICABILITY: MODES 1 and 2,
MODES 3 and 4 with pressurizer pressure $\geq$ 50.3 kg/cm^2 A (715 psia).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SIT inoperable due to boron concentration not within limits.	A.1 Restore boron concentration to within limits.	72 hours
B. One SIT inoperable due to inability to verify water level or pressure.	B.1 Restore SIT to OPERABLE status.	72 hours
C. One SIT inoperable for reasons other than Condition A or B.	C.1 Restore SIT to OPERABLE status.	1 hour
D. Required Actions and associated Completion Times of Condition A, B, or C not met.	D.1 Be in MODE 3. AND D.2 Reduce pressurizer pressure to < 50.3 kg/cm^2 A (715 psia).	6 hours 12 hours
E. Two or more SITs inoperable.	E.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify each SIT isolation valve is fully open.	12 hours
SR 3.5.1.2	Verify borated water volume in each SIT is ≥ 29 % and ≤ 69 % (% narrow range).	12 hours
SR 3.5.1.3	Verify nitrogen cover-pressure in each SIT is ≥ 40.6 kg/cm^{2}G (578 psig) and ≤ 43.9 kg/cm^{2}G (624 psig).	12 hours
SR 3.5.1.4	Verify boron concentration in each SIT is ≥ 2,300 ppm and ≤ 4,400 ppm.	31 days AND ----------NOTE---------- Only required to be performed for affected SIT. ---------- Whenever a SIT volume change not from the IRWST exceeds the limits of SR 3.5.1.2, immediately after a boron concentration measurement is ready
SR 3.5.1.5	Verify power is removed from each SIT isolation valve operator when pressurizer pressure is ≥ 50.3 kg/cm^{2}A (715 psia).	31 days

3.5 EMERGENCY CORE COOLING SYSTEM (ECCS)

3.5.2 Safety Injection System (SIS) – Operating

LCO 3.5.2 Four trains of SIS shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Two[1] or one SIS train(s) 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. AND B.2 Be in MODE 4.	6 hours 12 hours
C. Two[2] or more SIS trains inoperable.	C.1 Enter LCO 3.0.3.	Immediately

(1) The two injection lines corresponding to the two inoperable trains are diagonal to the reactor vessel (i.e., SI train # 1/3 or 2/4).

(2) The two injection lines corresponding to the two inoperable trains are not diagonal to the reactor vessel (i.e., SI train # 1/2, 1/4, 2/3, or 3/4).

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.2.1	Verify the following valves are locked in the listed position: Valve Number / Position / Function SI-321 CLOSED Hot Leg Injection SI-331 CLOSED Hot Leg Injection SI-604 CLOSED Hot Leg Injection SI-609 CLOSED Hot Leg Injection	12 hours
SR 3.5.2.2	Verify each SIS manual, power-operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in correct position.	31 days
SR 3.5.2.3	Verify SIS piping is full of water.	31 days
SR 3.5.2.4	Verify each safety injection pump develops required differential pressure on minimum flow of 123.8 kg/cm^2 D (1,761 psid).	In accordance with Inservice Testing Program
SR 3.5.2.5	Verify each SIS pump develops a flow of 3,407 lpm (900 gpm) at a differential pressure greater than or equal to 86.9 kg/cm^{2}D (1,236 psid).	In accordance with Inservice Testing Program
SR 3.5.2.6	Verify each SIS train automatic valve in the flow path actuates to correct position on an actual or simulated actuation signal.	18 months
SR 3.5.2.7	Verify each safety injection pump starts automatically on an actual or simulated actuation signal.	18 months
SR 3.5.2.8	Verify, by visual inspection, that the IRWST, holdup volume tank (HVT), IRWST strainers, HVT trash racks, and IRWST spillway are not restricted by debris and the strainers show no evidence of structural distress or abnormal corrosion.	18 months

3.5 EMERGENCY CORE COOLING SYSTEM (ECCS)

3.5.3 Safety Injection System (SIS) – Shutdown

LCO 3.5.3 Two trains of SIS shall be OPERABLE.

APPLICABILITY: MODES 4 and 5,
MODE 6 with RCS level < 39.7 m (130 ft 0 in)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required SIS train inoperable.	A.1 Restore required SIS train to OPERABLE status.	1 hour
B. Required Action and associated Completion Time of Condition A not met.	B.1.1 Verify RCS level ≥ 39.7 m (130 ft 0 in). OR B.1.2 Initiate actions to restore RCS level to ≥ 39.7 m (130 ft 0 in). AND B.2 Reduce RCS cold leg temperature to < 57.2 °C (135 °F).	Immediately Immediately 24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.3.1	The following SRs are applicable: SR 3.5.2.1 SR 3.5.2.2 SR 3.5.2.3 SR 3.5.2.4 SR 3.5.2.5 SR 3.5.2.6 SR 3.5.2.7 SR 3.5.2.8	In accordance with applicable SRs

3.5 EMERGENCY CORE COOLING SYSTEM (ECCS)

3.5.4 In-Containment Refueling Water Storage Tank (IRWST)

LCO 3.5.4 The IRWST shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, 4, and 5,
MODE 6 with RCS level < 39.7 m (130 ft 0 in)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. IRWST boron concentration not within limits. OR IRWST borated water temperature not within limits.	A.1 Restore IRWST to OPERABLE status.	8 hours
B. IRWST borated water volume not within limits.	B.1 Restore IRWST to OPERABLE status.	1 hour
C. Required Action and associated Completion Time of Condition A or B not met in MODES 1, 2, 3, or 4.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours
D. Required Action and associated Completion Time of Condition A or B not met in MODE 5 or MODE 6 with RCS level < 39.7 m (130 ft 0 in).	D.1 Initiate action to restore RCS level to ≥ 39.7 m (130 ft 0 in). AND D.2 Reduce RCS cold leg temperature to < 57.2 °C (135 °F).	Immediately 24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.4.1	Verify IRWST borated water temperature is ≥ 10 °C (50 °F) and ≤ 49 °C (120 °F).	24 hours
SR 3.5.4.2	Verify IRWST borated water volume is ≥ [2,373 m^3 (627,000 gal)] and ≤ [2,541 m^3 (671,162 gal)] (i.e., ≥ 74.43 % and ≤ 79.67 %).	7 days
SR 3.5.4.3	Verify IRWST boron concentration is ≥ 4,000 ppm and ≤ 4,400 ppm.	7 days

3.5 EMERGENCY CORE COOLING SYSTEM (ECCS)

3.5.5 Trisodium Phosphate (TSP)

LCO 3.5.5 The TSP baskets shall contain ≥ 29.5 m^3 (1,042 ft^3) of active TSP.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. TSP not within limit.	A.1 Restore TSP to within limits.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.5.1	Verify the TSP baskets contain ≥ 29.5 m^3 (1,042 ft^3) of TSP.	18 months
SR 3.5.5.2	Verify that a sample from the TSP baskets provides adequate pH adjustment of IRWST water.	18 months

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. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.1	Perform required visual examinations and leakage rate testing, except for containment air lock testing, in accordance with Containment Leakage Rate Testing Program.	In accordance with Containment Leakage Rate Testing Program
SR 3.6.1.2	Verify containment structural integrity in accordance with Containment Tendon Surveillance Program.	In accordance with 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 affected personnel 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 leakage results in exceeding the overall containment leakage rate acceptance criteria.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more containment air locks with one containment air lock door inoperable.	----------NOTE---------- 1. Required Actions A.1, A.2, and A.3 are not applicable if both doors in the same air lock are inoperable and Condition C is entered. 2. Entry and exit is permissible for 7 days under administrative controls if both air locks are inoperable. --- A.1 Verify OPERABLE door is closed in affected air lock. <u>AND</u> A.2 Lock OPERABLE door closed in affected air lock. <u>AND</u> A.3 ----------NOTE---------- Air lock doors in high radiation areas may be verified locked closed by administrative means. --- Verify OPERABLE door is locked closed in affected air lock.	1 hour 24 hours Once per 31 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more containment air locks with containment air lock interlock mechanism inoperable.	----------NOTE---------- 1. Required Actions B.1, B.2, and B.3 are not applicable if both doors in the same air lock are inoperable and Condition C is entered. 2. Entry and exit of containment is permissible under control of a dedicated individual. ----------	
	B.1 Verify an OPERABLE door is closed in affected air lock.	1 hour
	AND	
	B.2 Lock an OPERABLE door closed in affected air lock.	24 hours
	AND	
	----------NOTE---------- B.3 Air lock doors in high radiation areas may be verified locked closed by administrative means. ---------- Verify an OPERABLE door is locked closed in the affected air lock.	Once per 31 days
C. One or more containment air locks inoperable for reasons other than Condition A or B.	C.1 Initiate action to evaluate overall containment leakage rate per LCO 3.6.1.	Immediately
	AND	
	C.2 Verify a door is closed in affected air lock.	1 hour
	AND	
	C.3 Restore air lock to OPERABLE status.	24 hours
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3.	6 hours
	AND	
	D.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.1	----------NOTE---------- 1. An inoperable air lock door does not invalidate previous successful performance of an overall air lock leakage test. 2. Results shall be evaluated against acceptance criteria of SR 3.6.1.1. ---------- Perform required air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program. The acceptance criteria for air lock testing are: a. Overall air lock leakage rate is ≤ 0.05 L_a when tested at ≥ P_a [3.640 kg/cm^{2}G (51.77 psig)]. b. For each door seal, leak rate is ≤ 0.01 L_a when tested at ≥ P_a [3.640 kg/cm^{2}G (51.77 psig)].	In accordance with Containment Leakage Rate Testing Program
SR 3.6.2.2	Verify only one door in the air lock can be opened at a time.	24 months

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 paths (except for 1219.2 mm (48 in) purge valve penetration 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 system(s) made inoperable by containment isolation valves.
4. Enter applicable Conditions and Required Actions of LCO 3.6.1, “Containment,” when leakage results in exceeding the overall containment leakage rate acceptance criteria.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ----------NOTE---------- Only applicable to penetration flow paths with two containment isolation valves. ---------- One or more penetration flow paths with one containment isolation valve inoperable (except for purge valve leakage not within limit).	A.1 Isolate affected penetration flow path by use of at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.	4 hours
	AND	
	A.2 ----------NOTE---------- 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. ----------	

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	Verify affected penetration flow path is isolated.	Once per 31 days for isolation device outside containment
B. ----------NOTE---------- Only applicable to those penetration flow paths with two containment isolation valves. ----------	B.1 Isolate affected penetration flow path by use of at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.	1 hour
C. One or more penetration flow paths with two containment isolation valves inoperable (except for purge valve leakage not within limit).	C.1 Isolate affected penetration flow path by use of at least one closed and deactivated automatic valve, closed manual valve, or blind flange. AND C.2 ----------NOTE---------- Isolation devices in high radiation areas may be verified by use of administrative means. ---------- Verify affected penetration flow path is isolated.	4 hours Once per 31 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One or more penetration flow paths with one or more containment purge valves not within purge valve leakage limits.	D.1 Isolate affected penetration flow path by use of at least one closed and deactivated automatic valve with resilient seals, closed manual valve with resilient seals, or blind flange. AND	24 hours
	D.2 ----------NOTE---------- 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 affected penetration flow path is isolated.	Once per 31 days for isolation devices outside containment AND Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment
	AND	
	D.3 Perform SR 3.6.3.6 for resilient seal purge valves closed to comply with Required Action D.1.	Once per 92 days
E. Required Action and associated Completion Time not met.	E.1 Be in MODE 3. AND	6 hours
	E.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.3.1	Verify each 1219.2 mm (48 in) purge valve is sealed closed except for one purge valve in a penetration flow path while in Condition D of this LCO.	31 days
SR 3.6.3.2	Verify each 203.2 mm (8 in) purge valve is closed, except when the purge valves are open for pressure control, ALARA, or air quality considerations for personnel entry, or for Surveillances that require the valves to be open.	31 days
SR 3.6.3.3	----------NOTE---------- Valves and blind flanges in high radiation areas may be verified by use of administrative means. ---------- Verify each containment isolation manual valve and blind flange that is located outside containment and not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	31 days
SR 3.6.3.4	----------NOTE---------- Valves and blind flanges in high radiation areas may be verified by use of administrative means. ---------- Verify each containment isolation manual valve and blind flange that is located inside containment and not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days
SR 3.6.3.5	Verify isolation time of each automatic power-operated containment isolation valve is within limits.	In accordance with Inservice Testing Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.3.6	Perform leakage rate testing for containment purge valves with resilient seals.	184 days AND Within 92 days after opening the valve
SR 3.6.3.7	Verify each automatic containment isolation valve that is not locked, sealed, or otherwise secured in position, actuates to isolation position on an actual or simulated actuation signal.	18 months

3.6 CONTAINMENT SYSTEMS

3.6.4 Containment Pressure

LCO 3.6.4 Containment pressure shall be ≥ -0.007 kg/cm^{2}G (−0.1 psig) and ≤ +0.07 kg/cm^{2}G (+1.0 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 within limits.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

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

3.6 CONTAINMENT SYSTEMS

3.6.5 Containment Air Temperature

LCO 3.6.5 Containment average air temperature shall be ≤ 49 °C (120 °F).

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.5.1	Verify containment average air temperature is within limit.	24 hours

3.6 CONTAINMENT SYSTEMS

3.6.6 Containment Spray System

LCO 3.6.6 Two Containment Spray divisions shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One containment spray division inoperable.	A.1 Restore containment spray division to OPERABLE status.	72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 84 hours
C. Two containment spray divisions inoperable.	C.1 Enter LCO 3.0.3.	Immediately

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 correct position.	31 days
SR 3.6.6.2	Verify each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with Inservice Testing Program
SR 3.6.6.3	Verify each automatic containment spray valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 months
SR 3.6.6.4	Verify each containment spray pump starts automatically on an actual or simulated actuation signal.	18 months
SR 3.6.6.5	Verify each spray nozzle is unobstructed.	At first fuel loading AND 10 years
SR 3.6.6.6	Verify the containment spray piping is full of water to the 26.213 m (86 ft) level in the containment spray header.	31 days

3.7 PLANT SYSTEMS

3.7.1 Main Steam Safety Valves (MSSVs)

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

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

Separate Condition entry is allowed for each MSSV.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required MSSVs inoperable.	A.1 Reduce power to less than or equal to applicable % RTP listed in Table 3.7.1-1. AND A.2 Reduce maximum variable overpower trip setpoint in accordance with Table 3.7.1-1.	4 hours 36 hours
B. Required Action and associated Completion Time not met. OR One or more steam generators with less than five MSSVs OPERABLE.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours 24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.1.1	----------NOTE---------- Only required to be performed in MODE 3. In case of entering MODES 3 and 4 for lift setting and test of MSSV, SR 3.0.4 would not apply. ---------- Verify each required MSSV lift setpoint per Table 3.7.1-2 in accordance with Inservice Testing Program. Following testing, lift settings shall be within ± 1 %.	In accordance with Inservice Testing Program.

Table 3.7.1-1

Variable Overpower Trip Setpoint versus OPERABLE Main Steam Safety Valves

MINIMUM NUMBER OF MSSVs PER STEAM GENERATOR REQUIRED OPERABLE	Maximum Power (% RTP)	MAXIMUM ALLOWABLE VARIABLE OVERPOWER TRIP SETPOINT (% RTP)
10	100.0	109.4
9	96.8	106.2
8	86.0	95.4
7	75.3	84.7
6	64.5	73.9
5	53.8	63.2

Table 3.7.1-2

Main Steam Safety Valve Lift Settings

Valve Number		Lift Setting (psig ±1 %)
Steam Generator #1	Steam Generator #2	
V1301	V1311	1,174
V1303	V1313	1,205
V1305	V1315	1,230
V1307	V1317	1,230
V1309	V1319	1,230
V1302	V1312	1,174
V1304	V1314	1,205
V1306	V1316	1,230
V1308	V1318	1,230
V1310	V1320	1,230

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

Table 3.7.1-2 allows a ± 3 % setpoint tolerance for OPERABILITY ; however, the valves are reset to ± 1 % during the Surveillance to allow for drift.

3.7 PLANT SYSTEMS

3.7.2 Main Steam Isolation Valves (MSIVs)

LCO 3.7.2 Four MSIVs shall be OPERABLE.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.2.1	----------NOTE---------- Only required to be performed in MODE 3. ---------- Verify isolation time of each MSIV is within limits.	In accordance with Inservice Testing Program.
SR 3.7.2.2	----------NOTE---------- Only required to be performed in MODE 3. ---------- Verify each MSIV actuates to isolation position on an actual or simulated actuation signal.	18 months

3.7 PLANT SYSTEMS

3.7.3 Main Feedwater Isolation Valves (MFIVs)

LCO 3.7.3 Two MFIVs shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3 except when MFIV is closed.

ACTIONS

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

Separate Condition entry is allowed on each valve.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more MFIVs inoperable.	A.1 Close or isolate inoperable MFIV. AND A.2 Verify inoperable MFIV is closed or isolated.	72 hours Once per 7 days
B. Two valves in the same flow path inoperable.	B.1 Isolate affected flow path. AND B.2 Verify inoperable MFIV is closed or isolated.	8 hours Once per 7 days
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.3.1	Verify isolation time of each MFIV is within limits.	In accordance with Inservice Testing Program
SR 3.7.3.2	Verify each MFIV actuates to isolation position on an actual or simulated actuation signal.	18 months

3.7 PLANT SYSTEMS

3.7.4 Main Steam Atmospheric Dump Valves (MSADVs)

LCO 3.7.4 Two MSADV lines shall be OPERABLE.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

3.7 PLANT SYSTEMS

3.7.5 Auxiliary Feedwater System (AFWS)

LCO 3.7.5 Four independent auxiliary feedwater (AFW) trains shall be OPERABLE.

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

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

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

ACTIONS

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

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One turbine driven AFW train inoperable due to associated inoperable steam supply. AND One motor driven AFW train inoperable.	C.1 Restore steam supply to turbine driven train to OPERABLE status. OR C.2 Restore motor driven AFW train to OPERABLE status.	48 hours 48 hours
D. Required Action and associated Completion Time of Conditions A, B, or C not met. OR Three AFW trains inoperable in MODE 1, 2, or 3.	D.1 Be in MODE 3. AND D.2 Be in MODE 4.	6 hours 18 hours
E. Four AFW trains inoperable in MODE 1, 2, or 3.	----------NOTE---------- LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. ---------- E.1 Initiate action to restore one AFW train to OPERABLE status.	 Immediately
F. Required AFW train inoperable in MODE 4.	----------NOTE---------- LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. ---------- F.1 Initiate action to restore one AFW train to OPERABLE status.	 Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.5.1	Verify each AFW manual, power-operated, and automatic valve in the flow path and in each steam supply flow path to the turbine-driven pumps, that is not locked, sealed, or otherwise secured in position, is in correct position.	31 days
SR 3.7.5.2	----------NOTE---------- Not required to be performed for the turbine driven AFW pump until 24 hours after reaching 985 psig in steam generators. ---------- Verify developed head of each AFW pump at flow test point is greater than or equal to required developed head.	In accordance with Inservice Testing Program
SR 3.7.5.3	----------NOTE---------- 1. Not required to be performed for turbine driven AFW pump until 24 hours after reaching 69.25 kg/cm^{2}G (985 psig) in steam generators. 2. Not required to be met in MODE 4 when steam generator is relied upon for heat removal. ---------- Verify each AFW automatic valve that is not locked, sealed, or otherwise secured in position, actuates to correct position on an actual or simulated actuation signal.	18 months
SR 3.7.5.4	----------NOTE---------- 1. Not required to be performed for turbine driven AFW pump until 24 hours after reaching 69.25 kg/cm^{2}G (985 psig) in steam generators. 2. Not required to be met in MODE 4 when steam generator is relied upon for heat removal. ---------- Verify each AFW pump starts automatically on an actual or simulated actuation signal when in MODE 1, 2, or 3.	18 months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.7.5.5	Verify proper alignment of required AFW flow paths by verifying flow from auxiliary feedwater storage tank to each steam generator.	Prior to entering MODE 2 whenever unit has been in MODES 5, 6, or defueled for a cumulative period of > 30 days.

3.7 PLANT SYSTEMS

3.7.6 Auxiliary Feedwater Storage Tank (AFWST)

LCO 3.7.6 One AFWST shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One AFWST inoperable.	A.1 Verify OPERABILITY of other AFWST. AND A.2 Restore AFWST to OPERABLE status.	4 hours AND Once per 12 hours thereafter 7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4 without reliance on steam generator for heat removal.	6 hours 24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.6.1	Verify each AFWST level is ≥ 1,524,165 L (400,000 gal).	12 hours

3.7 PLANT SYSTEMS

3.7.7 Component Cooling Water System (CCWS)

LCO 3.7.7 Two CCW divisions shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CCW division inoperable.	----------NOTES---------- 1. Enter applicable Conditions and Required Actions of LCO 3.8.1, “AC Sources – Operating,” for emergency diesel generator made inoperable by CCW. 2. Enter applicable Conditions and Required Actions of LCO 3.4.6, “RCS Loops – MODE 4,” for shutdown cooling made inoperable by CCW. ---------- A.1 Restore CCW division to OPERABLE status.	72 hours
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 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.7.1	----------NOTE---------- Isolation of CCW flow to individual components does not render the CCWS inoperable. ---------- Verify each CCW manual, power-operated, and automatic valve in the flow path servicing safety-related equipment that is not locked, sealed, or otherwise secured in position, is in correct position.	31 days
SR 3.7.7.2	Verify each CCW automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to correct position on actual or simulated actuation signal.	18 months
SR 3.7.7.3	Verify each CCW pump starts automatically on an actual or simulated actuation signal.	18 months

3.7 PLANT SYSTEMS

3.7.8 Essential Service Water System (ESWS)

LCO 3.7.8 Two ESWS divisions shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ESWS division inoperable.	----------NOTES---------- 1. Enter applicable Conditions and Required Actions of LCO 3.8.1, “AC Sources – Operating,” for emergency diesel generator made inoperable by ESWS. 2. Enter applicable Conditions and Required Actions of LCO 3.4.6, “RCS Loops – MODE 4” for shutdown cooling made inoperable by ESWS. ---------- A.1 Restore ESWS division to OPERABLE status.	72 hours
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 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.8.1	----------NOTE---------- Isolation of ESWS flow to individual components does not render the ESWS inoperable. ---------- Verify each ESWS 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 correct position.	31 days
SR 3.7.8.2	Verify each ESWS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to correct position on an actual or simulated actuation signal.	18 months
SR 3.7.8.3	Verify each ESWS pump starts automatically on an actual or simulated actuation signal.	18 months

3.7 PLANT SYSTEMS

3.7.9 Ultimate Heat Sink (UHS)

LCO 3.7.9 [[Two]] UHS [[divisions]] shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. [[One UHS cooling tower inoperable.]]	A.1 [[Restore UHS cooling tower to OPERABLE status.]]	[[72 hours]]
B. [[Required Action and associated Completion Time of Condition A not met. <u>OR]]</u> UHS inoperable [[for reasons other than condition A.]]	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.9.1	Verify water level of UHS is ≥ [[3 m (10 ft) from the bottom of the basin]].	24 hours
SR 3.7.9.2	Verify water temperature of UHS [[basin]] is ≤ [[33.2 °C (91.8 °F)]].	24 hours
SR 3.7.9.3	[[Operate each UHS cooling tower fan for ≥ 15 minutes.]]	[[31 days]]
SR 3.7.9.4	[[Verify each UHS 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 correct position.]]	[[31 days]]
SR 3.7.9.5	[[Verify each UHS automatic valve and each control valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to correct position on an actual or simulated actuation signal.]]	[[18 months]]
SR 3.7.9.6	[[Verify each cooling tower fan starts automatically on an actual or simulated actuation signal.]]	[[18 months]]
SR 3.7.9.7	[[Verify ability to supply seismic Category I UHS makeup water to each UHS cooling tower basin at ≥ 2,362 L/min (624 gpm).]]	[[In accordance with Inservice Testing Program]]

3.7 PLANT SYSTEMS

3.7.10 Essential Chilled Water System (ECWS)

LCO 3.7.10 Two ECWS divisions shall be OPERABLE.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.10.1	----------NOTE---------- Isolation of ECW flow to individual components does not render the ECWS inoperable. ---------- Verify each ECWS manual, power-operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, is in correct position.	31 days
SR 3.7.10.2	Verify proper actuation of each ECWS component on an actual or simulated actuation signal.	18 months

3.7 PLANT SYSTEMS

3.7.11 Control Room HVAC System (CRHS)

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

The CRHS consists of two divisions of control room emergency makeup air cleaning system (CREACS) and control room supply and return system (CRSRS).

LCO 3.7.11 Two CRHS divisions shall be OPERABLE.

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

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

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required CRHS division inoperable.	A.1 Restore CRHS division to OPERABLE status.	7 days
B. One or two CREACS inoperable due to inoperable CRE boundary in MODE 1, 2, 3, or 4.	B.1 Initiate action to implement mitigating actions. AND B.2 Verify mitigating actions to ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits. AND B.3 Restore CRE boundary to OPERABLE status.	Immediately 24 hours 92 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3 or 4.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours
D. Required Action and associated Completion Time of Condition A not met in MODE 5 and 6, or during movement of irradiated fuel assemblies.	D.1 Place OPERABLE CRHS division in emergency mode. OR D.2 Suspend movement of irradiated fuel assemblies.	Immediately Immediately
E. Two CRHS divisions inoperable in Mode 5 or 6, or during movement of irradiated fuel assemblies. OR One or two CREACS inoperable due to inoperable CRE boundary in Mode 5 or 6, or during movement of irradiated fuel assemblies.	E.1 Suspend movement of irradiated fuel assemblies.	Immediately
F. Two CRHS divisions inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.	F.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.11.1	Operate each CREACS division for ≥ 10 continuous hours with heaters operating.	31 days
SR 3.7.11.2	Perform required CREACS filter testing in accordance with Ventilation Filter Testing Program (VFTP).	In accordance with VFTP
SR 3.7.11.3	Verify each CRHS division actuates on an actual or simulated actuation signal.	18 months
SR 3.7.11.4	Perform required CRE unfiltered air inleakage testing in accordance with Control Room Envelope Habitability Program.	In accordance with Control Room Envelope Habitability Program
SR 3.7.11.5	Verify each CRSRS division has the capacity to remove design heat load.	18 months

3.7 PLANT SYSTEMS

3.7.12 Auxiliary Building Controlled Area Emergency Exhaust System (ABCAEES)

LCO 3.7.12 Two ABCAEES divisions shall be OPERABLE.

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

The ECCS equipment room boundary may be opened intermittently under administrative control.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.12.1	Operate each ABCAEES division for ≥ 10 continuous hours with heaters operating.	31 days
SR 3.7.12.2	Perform required ABCAEES filter testing in accordance with Ventilation Filter Testing Program (VFTP).	In accordance with VFTP
SR 3.7.12.3	Verify each ABCAEES division actuates on an actual or simulated actuation signal.	18 months
SR 3.7.12.4	Verify one division of ABCAEES can maintain a slightly negative pressure relative to atmospheric pressure during post-accident mode of operation at a flow rate of ≤ 5,097 cmh (3,000 cfm).	18 months on a STAGGERED TEST BASIS

3.7 PLANT SYSTEMS

3.7.13 Fuel Handling Area Emergency Exhaust System (FHAEES)

LCO 3.7.13 Two FHAEES divisions shall be OPERABLE.

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

The fuel handling area boundary may be opened intermittently under administrative control.

APPLICABILITY: During movement of irradiated fuel assemblies in the fuel handling area.

ACTIONS

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

LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One FHAEES division inoperable.	A.1 Restore FHAEES division to OPERABLE status.	7 days
B. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies in fuel handling area.	B.1 Place OPERABLE FHAEES division in operation. OR B.2 Suspend movement of irradiated fuel assemblies in fuel handling area.	Immediately Immediately
C. Two FHAEES divisions inoperable during movement of irradiated fuel assemblies in fuel handling area.	C.1 Suspend movement of irradiated fuel assemblies in fuel handling area.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.13.1	Operate each FHAEES division for ≥ 10 continuous hours with heaters operating.	31 days
SR 3.7.13.2	Perform required FHAEES filter testing in accordance with Ventilation Filter Testing Program (VFTP).	In accordance with VFTP
SR 3.7.13.3	Verify each FHAEES division actuates on an actual or simulated actuation signal.	18 months
SR 3.7.13.4	Verify one train of FHAEES can maintain a slightly negative pressure with respect to atmospheric pressure during post-accident mode of operation at a flow rate of 8,495 cmh (5,000 cfm).	18 months on a STAGGERED TEST BASIS

3.7 PLANT SYSTEMS

3.7.14 Spent Fuel Pool Water Level (SFPWL)

LCO 3.7.14 The spent fuel pool water level shall be ≥ 7 m (23 ft) over the top of irradiated fuel assemblies seated in the storage racks.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.14.1	Verify spent fuel pool water level is ≥ 7 m (23 ft) above the top of irradiated fuel assemblies seated in the storage racks.	7 days

3.7 PLANT SYSTEMS

3.7.15 Spent Fuel Pool Boron Concentration

LCO 3.7.15 The spent fuel pool boron concentration shall be ≥ 2,150 ppm.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.15.1	Verify spent fuel pool boron concentration is within limit.	7 days

3.7 PLANT SYSTEMS

3.7.16 Spent Fuel Assembly Storage

LCO 3.7.16 The combination of initial enrichment and burnup of each spent fuel assembly stored in Region II shall be within the acceptable burnup domain of Figure 3.7.16-1 or in accordance with Specification 4.3.1.1.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met.	----------NOTES---------- LCO 3.0.3 is not applicable. ---------- A.1 Initiate action to move the noncomplying fuel from Region II to Region I.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.16.1	Verify by administrative means that initial enrichment and burnup of the fuel assembly is in accordance with Figure 3.7.16-1 or Specification 4.3.1.1.	Prior to storing fuel assembly in Region II.

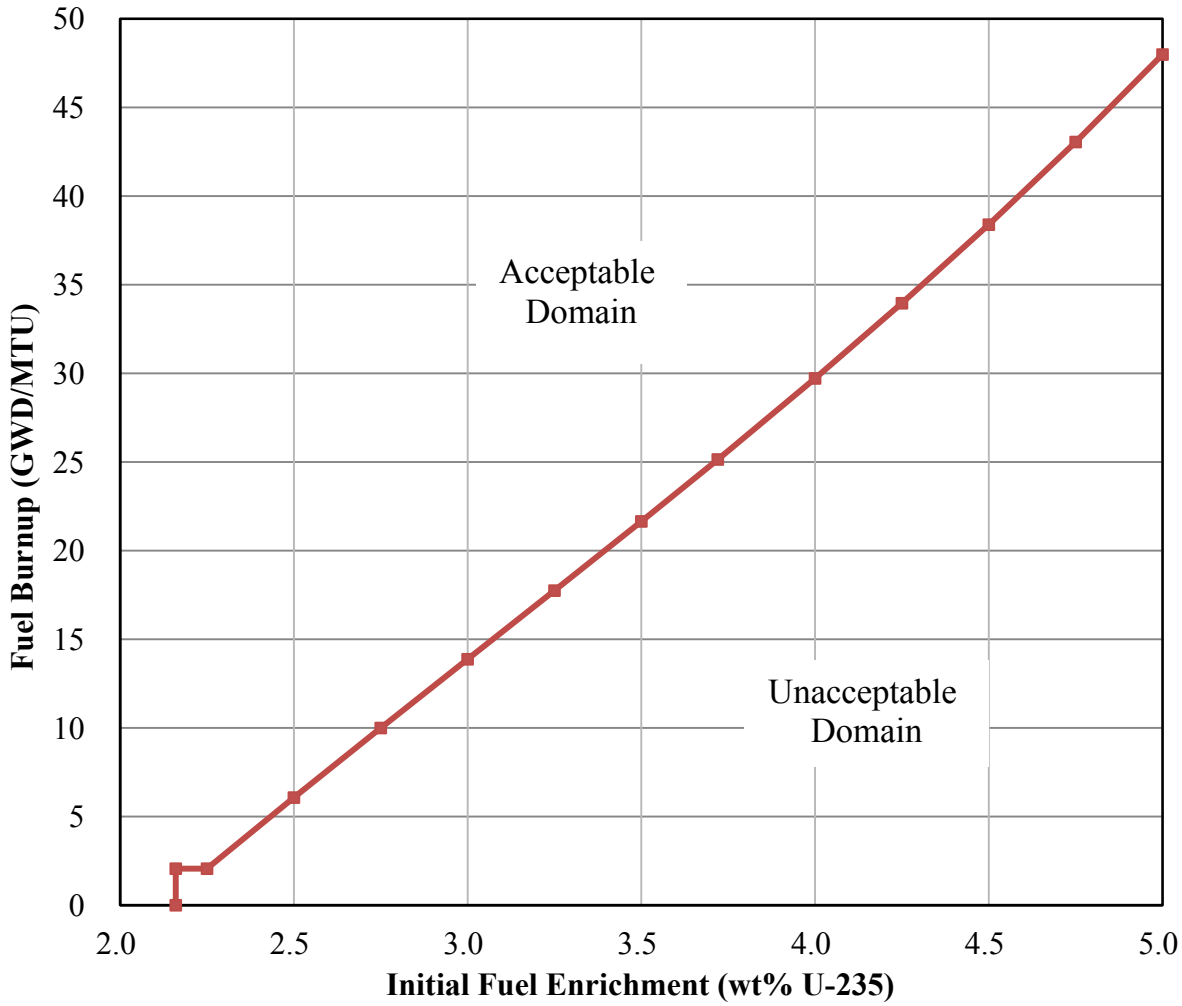

Figure 3.7.16-1

Discharge Burnup vs. Initial Enrichment for Region II Racks

3.7 PLANT SYSTEMS

3.7.17 Secondary Specific Activity

LCO 3.7.17 The specific activity of the secondary coolant shall be ≤ 3.7×10^3 Bq/g DOSE EQUIVALENT I-131.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.17.1	Verify specific activity of secondary coolant is within limit.	31 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources – Operating

LCO 3.8.1 The following AC electrical sources shall be OPERABLE:

a. Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System,

b. Division I and division II emergency diesel generators (EDGs), each division capable of supplying one division of the onsite Class 1E AC Electrical Power Distribution System and consisting of two EDGs (EDG A and EDG C for division I, and EDG B and EDG D for division II), and

c. Four automatic load sequencers for EDG A, EDG B, EDG C, and EDG D.

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

ACTIONS

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

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or two EDGs on one division inoperable.	B.1 Perform SR 3.8.1.1 for the OPERABLE offsite circuit(s).	1 hour AND Once per 8 hours thereafter
	AND	
	B.2 Declare required feature(s) supported by the inoperable EDG(s) inoperable when its redundant required feature(s) is inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)
	AND	
	B.3.1 Determine OPERABLE EDG(s) is not inoperable due to common cause failure.	24 hours
	OR	
	B.3.2 Perform SR 3.8.1.2 for OPERABLE EDG(s).	24 hours
	AND	
	B.4 Restore EDG(s) to OPERABLE status.	72 hours
C. Two offsite circuits inoperable.	C.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable.	12 hours from discovery of Condition C concurrent with inoperability of redundant required features
	AND	
	C.2 Restore one offsite circuit to OPERABLE status.	24 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One offsite circuit inoperable. AND One or two EDGs on one division inoperable.	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems – Operating," when Condition D is entered with no AC power source to one division. ---------- D.1 Restore offsite circuits to OPERABLE status. OR D.2 Restore EDG(s) to OPERABLE status.	 12 hours 12 hours
E. One or two EDGs on each division inoperable.	E.1 Restore one EDG(s) to OPERABLE status.	2 hours
F. One automatic load sequencer inoperable.	F.1 Restore automatic load sequencer to OPERABLE status.	12 hours
G. Required Actions and associated Completion Times of Conditions A, B, C, D, E, or F not met.	G.1 Be in MODE 3. AND G.2 Be in MODE 5.	6 hours 36 hours
H. Two offsite circuits and one or more EDGs inoperable. OR One offsite circuit and one or two EDGs on each division inoperable	H.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each offsite circuit.	7 days
SR 3.8.1.2	----------NOTE---------- 1. All EDG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 2. A modified EDG start, involving idling and gradual acceleration to synchronous speed, may be used for this SR as recommended by the manufacturer. When modified start procedures are not used, the time, voltage, and frequency tolerances of SR 3.8.1.7 must be met. ---------- Verify each EDG starts from standby conditions and achieves steady state voltage ≥ 3,744 V and ≤ 4,576 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	31 days
SR 3.8.1.3	----------NOTE---------- 1. EDG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one EDG at a time. 4. This SR shall be preceded by and immediately follow without shutdown a successful performance of SR 3.8.1.2 or SR 3.8.1.7. ---------- Verify each EDG is synchronized and loaded, and operates for ≥ 60 minutes at a load ≥ 90 % rating and ≤ 100 % rating.	31 days
SR 3.8.1.4	Verify each day tank contains ≥ 2,404 L (635 gal) of fuel oil.	31 days
SR 3.8.1.5	Check for and remove accumulated water from each day tank and engine mounted tank.	31 days
SR 3.8.1.6	Verify fuel oil transfer system operates to automatically transfer fuel oil from storage tank to the day tank.	92 days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.7	----------NOTE---------- All EDG starts may be preceded by an engine prelube period. ---------- Verify each EDG starts from standby condition and achieves: a. In ≤ 17 seconds, voltage ≥ 3,744 V and frequency ≥ 58.8 Hz and b. Steady stage voltage ≥ 3,744 V and ≤ 4,576 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	184 days
SR 3.8.1.8	----------NOTE---------- [This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events which satisfy this SR.] ---------- Verify automatic and manual transfer of AC power sources from the normal offsite circuit to each alternate offsite circuit.	18 months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.9	----------NOTE---------- 1. [This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.] 2. [If performed with the EDG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable.] ---------- Verify each EDG rejects a load greater than or equal to its associated single largest post-accident load and: a. Following load rejection, the frequency is ≤ 63 Hz, b. Within 3 seconds following load rejection, the voltage is ≥ 3,744 V and ≤ 4,576 V, and c. Within 3 seconds following load rejection, the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz.	18 months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.10	----------NOTES---------- [1. This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.] 2. If performed with EDG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. ---------- Verify each EDG does not trip, and voltage is maintained ≤ 4,576 V during and following a load rejection of ≥ 90 % rating and ≤ 100 % rating.	18 months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.11	----------NOTE---------- 1. All EDG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---------- Verify on an actual or simulated loss of offsite power signal: a. De-energization of emergency buses, b. Load shedding from emergency buses, c. EDG auto-starts from standby condition, and: 1. Energizes permanently-connected loads in $\leq$ 19 seconds, 2. Energizes auto-connected shutdown loads through automatic load sequencer, 3. Maintains steady state voltage $\geq$ 3,744 V and $\leq$ 4,576 V, 4. Maintains steady state frequency $\geq$ 58.8 Hz and $\leq$ 61.2 Hz, and 5. Supplies permanently connected and auto-connected shutdown connected loads for $\geq$ 5 minutes.	18 months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.12	----------NOTE---------- 1. [All EDG starts may be preceded by an engine prelube period.] 2. [This Surveillance shall not be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.] ---------- Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each EDG auto-starts from standby condition and: a. In ≤ 17 seconds after auto-start and during tests, achieves voltage ≥ 3,744 V and frequency ≥ 58.8 Hz, b. Achieves steady state voltage ≥ 3,744 V and ≤ 4,576 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz, c. Operates for ≥ 5 minutes d. Permanently connected loads remain energized from the offsite power system, and e. Emergency loads are energized or auto-connected through the automatic load sequencer from the offsite power system.	18 months
SR 3.8.1.13	----------NOTE---------- [This Surveillance shall not be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.] ---------- Verify each EDG's noncritical automatic trips are bypassed on an actual or simulated loss of voltage signal on the emergency bus concurrent with an actual or simulated ESF actuation signal.	18 months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.14	----------NOTE---------- 1. Momentary transients outside the load and power factor ranges do not invalidate this test. 2. This Surveillance shall not be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. 3. If performed with EDG synchronized with offsite power, it shall be performed at a power factor ≤ [0.9]. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable. ---------- Verify each EDG operates for ≥ 24 hours: a. For ≥ 2 hours loaded ≥ 105 % rating and ≤ 110 % rating and; b. For the remaining hours of the test loaded ≥ 90 % rating and ≤ 100 % rating.	18 months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.15	----------NOTE---------- 1. This Surveillance shall be performed within 5 minutes of shutting down the EDG after the EDG has operated in ≥ 2 hours loaded ≥ 90 % rating and ≤ 100 % rating. Momentary transients outside of load range do not invalidate this test. 2. All EDG starts may be preceded by an engine prelube period. ---------- Verify each EDG starts and achieves: a. In ≤ 17 seconds, voltage ≥ 3,744 V and frequency ≥ 58.8 Hz b. Steady state voltage ≥ 3,744 V and ≤ 4,576 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz	18 months
SR 3.8.1.16	----------NOTE---------- This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---------- Verify each EDG: a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power. b. Transfers loads to offsite power source, and c. Returns to ready to load operation.	18 months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.17	----------NOTE---------- This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---------- Verify, with an EDG operating in test mode and connected to its bus, an actual or simulated ESF actuation signal overrides the test mode by: a. Returning EDG to ready-to-load operation and b. Automatically energizing emergency loads from offsite power.	18 months
SR 3.8.1.18	----------NOTE---------- This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---------- Verify interval between each sequenced load block is within ± 10 % of design interval for each emergency and shutdown load sequencer.	18 months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.19	----------NOTE---------- 1. All EDG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---------- Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal: a. De-energization of emergency buses, b. Load shedding from emergency buses, c. EDG auto-starts from standby condition and: 1. Energizes permanently connected loads in ≤ 19 seconds, 2. Energizes auto-connected emergency loads through load sequencer, 3. Achieves steady state voltage ≥ 3,744 V and ≤ 4,576 V, 4. Achieves steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. Supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes.	18 months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.20	----------NOTE---------- All EDG starts may be preceded by an engine prelube period. ---------- Verify, when started simultaneously from standby condition, each EDG achieves: a. In ≤ 17 seconds, voltage ≥ 3,744 V and frequency ≥ 58.8 Hz b. Steady state voltage ≥ 3,744 V and ≤ 4,576 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz	10 years

3.8 ELECTRICAL POWER SYSTEMS

3.8.2 AC Sources – Shutdown

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

a. One qualified circuit between the offsite transmission network and the onsite Class 1E AC electrical power distribution system required by LCO 3.8.10, “Distribution Systems – Shutdown” and

b. One division of emergency diesel generators (EDGs) capable of supplying one division of the onsite Class 1E AC Electrical Power Distribution System required by LCO 3.8.10.

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

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required offsite circuit inoperable.	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.8.10, with one required division de-energized as a result of Condition A. ----------	
	A.1 Declare affected required feature(s) with no offsite power available inoperable.	Immediately
	OR	
	A.2.1 Suspend movement of irradiated fuel assemblies.	Immediately
	AND	
	A.2.2 Suspend operations involving positive reactivity additions that could result in a loss of required SDM or boron concentration	Immediately
	AND	
	A.2.3 Initiate action to restore required offsite power circuit to OPERABLE status.	Immediately

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or two required EDGs on one division inoperable.	B.1 Suspend movement of irradiated fuel assemblies AND	Immediately
	B.2 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration AND	Immediately
	B.3 Initiate action to restore required EDG(s) to OPERABLE status	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.2.1	----------NOTE---------- The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.9 through SR 3.8.1.11, SR 3.8.1.13 through SR 3.8.1.16, and SR 3.8.1.18. ----------	
	For AC sources required to be OPERABLE, the SRs of Specification 3.8.1, “AC Sources – Operating,” except SR 3.8.1.8, SR 3.8.1.12, SR 3.8.1.17, SR 3.8.1.19, and SR 3.8.1.20 are applicable.	In accordance with applicable SRs

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

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

APPLICABILITY: When associated EDG is required to be OPERABLE.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more EDGs with fuel level less than a 7-day supply and greater than a 6-day supply in storage tank.	A.1 Restore fuel oil level to within limits.	48 hours
B. One or more EDGs with lube oil inventory less than a 7-day supply and greater than a 6-day supply.	B.1 Restore lube oil inventory to within limits.	48 hours
C. One or more EDGs with stored fuel oil total particulates not within limits.	C.1 Restore fuel oil total particulates to within limits.	7 days
D. One or more EDGs with new fuel oil properties not within limits.	D.1 Restore stored fuel oil properties to within limits.	30 days
E. One or more EDGs with starting air receiver pressure < [580] psig and ≥ [125] psig.	E.1 Restore starting air receiver pressure to ≥ [580] psig.	48 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Required Action and associated Completion Time not met. OR One or more DGs with diesel fuel oil, lube oil, or starting air subsystem not within limits for reasons other than Condition A, B, C, D, or E.	F.1 Declare associated EDG inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	Verify each fuel oil storage tank contains ≥ a 7-day supply of fuel.	31 days
SR 3.8.3.2	Verify lubricating oil inventory is ≥ a 7-day supply.	31 days
SR 3.8.3.3	Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.4	Verify each DG air start receiver pressure is ≥ [580] psig.	31 days
SR 3.8.3.5	Check for and remove accumulated water from each fuel oil storage tank.	31 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources – Operating

LCO 3.8.4 The Division I and Division II DC electrical power systems shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two battery charger(s) on one division inoperable.	A.1 Restore battery terminal voltage to greater than or equal to the minimum established float voltage. AND A.2 Verify battery float current ≤ 2 amps. AND A.3 Restore battery charger(s) to OPERABLE status.	2 hours Once per 12 hours 72 hours
B. One or two batteries on one division inoperable.	B.1 Restore batter(y)(ies) to OPERABLE status.	2 hours
C. One DC electrical power system division inoperable for reasons other than Condition A or B.	C.1 Restore DC electrical power subsystem to OPERABLE status.	2 hours
D. Required Action and Associated Completion Time not met.	D.1 Be in MODE 3. OR D.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.4.1	Verify battery terminal voltage is greater than or equal to minimum established float voltage.	7 days
SR 3.8.4.2	Verify each battery charger supplies 400 amps at greater than or equal to the minimum established float voltage for ≥ 8 hours. OR Verify each battery charger can recharge the battery to the fully charged state within 24 hours while supplying the largest combined demands of the various continuous steady state loads, after a battery discharge to the bounding design basis event discharge state.	18 months
SR 3.8.4.3	----------NOTE---------- 1. The modified performance discharge test in SR 3.8.6.6 may be performed in lieu of SR 3.8.4.3. 2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---------- Verify 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.	18 months

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources – Shutdown

LCO 3.8.5 DC electrical power system division shall be OPERABLE to support the DC electrical power distribution system division(s) required by LCO 3.8.10, “Distribution Systems – Shutdown.”

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

ACTIONS

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

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

3.8 ELECTRICAL POWER SYSTEMS

3.8.6 Battery Cell Parameters

LCO 3.8.6 Battery cell parameters for the Division I and Division II batteries shall be within limits.

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

ACTIONS

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

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

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. ----------NOTE---------- Required Action C.2 shall be completed if electrolyte level was below the top of plates. ---------- One or two batteries on one division with one or more cells electrolyte level less than minimum established design limits.	----------NOTE---------- Required Actions C.1 and C.2 are only applicable if electrolyte level was below the top of plates. ---------- C.1 Restore electrolyte level to above the top of plates. OR C.2 Verify no evidence of leakage. AND C.3 Restore electrolyte level to greater than or equal to minimum established design limits.	8 hours 12 hours 31 days
D. One or two batteries on one division with pilot cell electrolyte temperature less than minimum established design limits.	D.1 Restore battery pilot cell temperature to greater than or equal to minimum established design limits.	12 hours
E. One or more batteries in redundant division with battery parameters not within limits.	E.1 Restore battery parameters for batteries in one division to within limits.	2 hours
F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met. OR One or two batteries on one division with one or more battery cells float voltage < 2.07 V and float current > 2 amps.	F.1 Declare associated battery inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.6.1	----------NOTE---------- Not required to be met when battery terminal voltage is less than the minimum established float voltage of SR 3.8.4.1. ---------- Verify each battery float current is ≤ 2 amps.	7 days
SR 3.8.6.2	Verify each battery pilot cell float voltage is ≥ 2.07 V.	31 days
SR 3.8.6.3	Verify each battery connected cell electrolyte level is greater than or equal to minimum established design limits.	31 days
SR 3.8.6.4	Verify each battery pilot cell temperature is greater than or equal to minimum established design limits.	31 days
SR 3.8.6.5	Verify each battery connected cell float voltage is ≥ 2.07 V.	92 days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.6.6	----------NOTE---------- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, portions of this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ----------	
	Verify battery capacity is ≥ 80 % of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	60 months AND 12 months when battery shows degradation, or has reached 85 % of the expected life with capacity < 100 % of manufacturer's rating AND 24 months when battery has reached 85 % of the expected life with capacity ≥ 100 % of manufacturer's rating

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Inverters – Operating

LCO 3.8.7 The required Division I and Division II inverters shall be OPERABLE.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.7.1	Verify correct inverter voltage, frequency, and alignment to required AC vital 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 bus electrical power distribution system division(s) required by LCO 3.8.10, “Distribution Systems – Shutdown.”

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

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more inverters inoperable.	A.1 Declare affected required feature(s) with no offsite power available inoperable.	Immediately
	OR	
	A.2.1 Suspend movement of irradiated fuel assemblies.	Immediately
	AND	
	A.2.2 Suspend operations involving positive reactivity additions that could result in a loss of required SDM or boron concentration.	Immediately
	AND	
	A.2.3 Initiate action to restore inverters to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.8.1	Verify correct inverter voltage, frequency, and alignment to required AC vital buses.	7 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems – Operating

LCO 3.8.9 Division I and Division II AC, DC, and AC vital bus, electrical power distribution subsystems shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more AC electrical power distribution subsystems inoperable.	----------NOTES---------- Enter applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources – Operating," for DC trains made inoperable by inoperable power distribution subsystems. ---------- A.1 Restore AC electrical power distribution subsystem to OPERABLE status.	8 hours
B. One or more AC vital buses inoperable.	B.1 Restore AC vital bus subsystem(s) to OPERABLE status.	2 hours
C. One or more DC electrical power distribution subsystems inoperable.	C.1 Restore DC electrical power distribution subsystem(s) to OPERABLE status.	2 hours
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 5.	6 hours 36 hours
E. Two or more electrical power distribution subsystems inoperable that result in a loss of safety function.	E.1 Enter LCO 3.0.3	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.9.1	Verify correct breaker alignments and voltage to required AC, DC, and AC vital bus electrical power distribution subsystems.	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 bus electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE.

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

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required AC, DC, or AC vital bus electrical power distribution subsystems inoperable.	A.1 Declare associated supported required feature(s) inoperable.	Immediately
	OR	
	A.2.1 Suspend movement of irradiated fuel assemblies.	Immediately
	AND	
	A.2.2 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.	Immediately
	AND	
	A.2.3 Initiate actions to restore required AC, DC, and AC vital electrical power distribution subsystem(s) to OPERABLE status.	
	AND	
	A.2.4 Declare associated required shutdown cooling subsystem(s) inoperable and not in operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.10.1	Verify correct breaker alignments and voltage to required AC, DC, and AC vital bus electrical power distribution subsystems.	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.

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

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Boron concentration not within limit.	A.1 Suspend positive reactivity additions. AND A.2 Initiate actions to restore boron concentration to within limit.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

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

3.9 REFUELING OPERATIONS

3.9.2 Nuclear Instrumentation

LCO 3.9.2 Two startup range monitors (SRMs) shall be OPERABLE.

APPLICABILITY: MODE 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SRM inoperable.	A.1 Suspend positive reactivity additions. AND A.2 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately Immediately
B. Two SRMs inoperable.	B.1 Initiate action to restore one SRM to OPERABLE status. AND B.2 Perform SR 3.9.1.1.	Immediately Once per 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.2.1	Perform CHANNEL CHECK.	12 hours
SR 3.9.2.2	----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION.	 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 by four bolts;

b. One door in each airlock closed; and

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

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

2. Is capable of being closed by an OPERABLE Containment Purge 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. AND A.2 Suspend movement of irradiated fuel assemblies within containment	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.3.1	Verify each required containment penetration is in the required status.	Within 72 hour prior to the start of movement of irradiated fuel in the containment building AND Once per 7 days during CORE ALTERATIONS or movement of irradiated fuel in the containment building
SR 3.9.3.2	Verify each required containment purge and exhaust valve actuates to the isolation position on an actual or simulated actuation signal.	18 months

3.9 REFUELING OPERATIONS

3.9.4 Shutdown Cooling System (SCS) and Coolant Circulation – High Water Level

LCO 3.9.4 One SCS train shall be OPERABLE and in operation.

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

The required SCS train may be removed from operation for ≤ 1 hour per 8-hour period, provided no operations are permitted that would cause dilution of the reactor coolant system boron concentration.

APPLICABILITY: MODE 6 with the water level ≥ 7.0 m (23 ft) above the top of the reactor vessel flange.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required SCS train inoperable or not in operation.	A.1 Suspend operations involving a reduction in reactor coolant boron concentration.	Immediately
	AND	
	A.2 Suspend loading irradiated fuel assemblies in the core.	Immediately
	AND	
	A.3 Initiate action to satisfy one SCS train to OPERABLE status and operation.	Immediately
	AND	
	A.4 Close equipment hatch and secure with [four] bolts.	4 hours
	AND	
	A.5 Close one door in each air lock.	4 hours
	AND	
	A.6.1 Close each penetration providing direct access from the containment atmosphere to the outside atmosphere with a manual or automatic isolation valve, blind flange, or equivalent.	4 hours
	OR	
	A.6.2 Verify each penetration is capable of being closed by an OPERABLE containment purge system.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.4.1	Verify one SCS train is in operation and circulating reactor coolant at a flow rate of ≥ 18,170 L/min (4,800 gpm).	12 hours

3.9 REFUELING OPERATIONS

3.9.5 Shutdown Cooling System (SCS) and Coolant Circulation – Low Water Level

LCO 3.9.5 The heat removal system shall be in the following status:

a. Two SCS trains shall be OPERABLE and one SCS train shall be in operation.

b. With REDUCED RCS INVENTORY, the containment spray pump in the same train as an operating SCS train shall be OPERABLE.

APPLICABILITY: MODE 6 with the water level <7.0 m (23 ft) above the top of reactor vessel flange.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SCS train inoperable.	A.1 Initiate action to restore SCS train to OPERABLE status.	Immediately
	AND	
	A.2 Initiate actions to establish ≥ 7.0 m (23 ft) of water above the top of reactor vessel flange.	Immediately
B. No SCS train OPERABLE or in operation.	B.1 Suspend operations involving a reduction in reactor coolant boron concentration.	Immediately
	AND	
	B.2 Initiate action to restore one SCS train to OPERABLE status and to operation	Immediately
	AND	
	B.3 Initiate action to raise RCS level to > EL 38.7 m (127 ft) when in REDUCED RCS INVENTORY.	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Containment spray pump in the same train as an operating SCS train inoperable.	C.1 If the containment spray pump in the alternate SCS train is OPERABLE, initiate action to place that SCS train in operation. AND C.2 Monitor SCS performance. AND C.3 Restore containment spray pump to OPERABLE status.	Immediately Every 30 minutes 48 hours
D. Required Action and Completion time of Item C.3 not met.	D.1 Raise RCS level > 38.7 m (127 ft 0 in).	6 hours
E. Required Actions and associated Completion Tmes of Condition A, B, and C not met.	E.1 Close equipment hatch and secure with [four] bolts. AND E.2 Close one door in each air lock. AND E.3.1 Close each penetration providing direct access from the containment atmosphere to the outside atmosphere with a manual or automatic isolation valve, blind flange, or equivalent. OR E.3.2 Verify each penetration is capable of being closed by an OPERABLE containment purge system.	4 hours 4 hours 4 hours 4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.5.1	Verify required SCS trains are OPERABLE and one SCS train is in operation.	12 hours
SR 3.9.5.2	Verify correct breaker alignment and indicated power available to the required SCS pump that is not in operation.	7 days
SR 3.9.5.3	Verify correct breaker alignment and indicated power available to the required CS pump.	24 hours when in REDUCED RCS INVENTORY

3.9 REFUELING OPERATIONS

3.9.6 Refueling Water Level

LCO 3.9.6 Refueling water level shall be maintained ≥ 7 m (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 water level not within limit.	A.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2 Suspend movement of irradiated fuel assemblies within containment.	Immediately
	AND	
	A.3 Initiate actions to restore refueling water level to within limits.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.6.1	Verify refueling water level is ≥ 7 m (23 ft) above the top of reactor vessel flange.	24 hours

4.0 DESIGN FEATURES

4.1 Site Location

[Text description of site location.]

4.0 DESIGN FEATURES

4.2 Reactor Core

4.2.1 Fuel Assemblies

The reactor shall contain 241 fuel assemblies. Each assembly shall consist of a matrix of zirconium alloy clad fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO_2) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in non-limiting core regions.

4.2.2 Control Rod Assemblies

The reactor core shall contain 81 full strength and 12 part strength control element assemblies (CEAs). The control material of full strength and part strength CEA shall be boron carbide and Inconel Alloy 625, respectively.

4.0 DESIGN FEATURES

4.3 Fuel Storage

4.3.1 Criticality

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

a. Fuel assemblies having a maximum U-235 enrichment of 5 weight percent;

b. $K_{eff} \leq 1.0$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1, “Fuel Storage and Handling.”;

c. A nominal (27.5 cm (10.83 in)) center-to-center distance between fuel assemblies placed in the Region I of spent fuel storage racks;

d. A nominal (22.5 cm (8.86 in)) center-to-center distance between fuel assemblies placed in the Region II of spent fuel storage racks;

e. New or partially spent fuel assemblies with a discharge burnup in the "acceptable range" of Figure 3.7.16-1 may be allowed unrestricted storage in Region I or Region II of spent fuel storage rack(s); and

f. New or partially spent fuel assemblies with a discharge burnup in the "unacceptable range" of Figure 3.7.16-1 will be stored in compliance with the NRC-approved specific document containing the analytical methods, title, date, or specific configuration or figure.

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

a. Fuel assemblies having a maximum U-235 enrichment of 5 weight percent;

b. $K_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1 “Fuel Storage and Handling.”;

c. $K_{eff} \leq 0.98$ if moderated by aqueous foam, which includes an allowance for uncertainties as described in Section 9.1 “Fuel Storage and Handling.”; and

d. A nominal center-to-center distance between fuel assemblies placed in the new fuel storage racks is 35.5 cm (14 in).

4.3.2 Drainage

The spent fuel pool is designed and shall be maintained above 7m (23 ft) from the top of the spent fuel storage rack to prevent inadvertent draining.

4.3.3 Capacity

The spent fuel pool is designed and shall be maintained with a storage capacity limited to no more than 1,792 fuel assemblies.

5.0 ADMINISTRATIVE CONTROLS

5.1 Responsibility

5.1.1 The plant manager shall be responsible for overall unit operation and shall delegate in writing the succession to this responsibility during his absence. The plant manager or his designee shall approve, prior to implementation, each proposed test, experiment, or modification to systems or equipment that affect nuclear safety.

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

5.0 ADMINISTRATIVE CONTROLS

5.2 Organization

5.2.1 Onsite and Offsite Organizations

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

a. Lines of authority, responsibility, and communication shall be defined and established throughout highest management levels, intermediate levels, and all operating organization positions. These relationships shall be documented and updated, as appropriate, in organization charts, functional descriptions of departmental responsibilities and relationships, and job descriptions for key personnel positions, or in equivalent forms of documentation. These requirements including the plant-specific titles of those personnel fulfilling the responsibilities of the positions delineated in these Technical Specifications shall be documented in the [DCD Tier 2/QA Plan],

b. The plant manager shall be responsible for overall safe operation of the plant and shall have control over those onsite activities necessary for safe operation and maintenance of the plant,

c. A specified corporate officer shall have corporate responsibility for overall plant nuclear safety and shall take any measures needed to ensure acceptable performance of the staff in operating, maintaining, and providing technical support to the plant to ensure nuclear safety, and

d. The individuals who train the operating staff, carry out health physics, or perform quality assurance functions may report to the appropriate onsite manager; however, these individuals shall have sufficient organizational freedom to ensure their independence from operating pressures.

5.2.2 Unit Staff

The unit staff organization shall include the following:

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

b. Shift crew composition may be less than the minimum requirement of 10 CFR 50.54(m)(2)(i) and 5.2.2.a and 5.2.2 e for a period of time not to exceed 2 hours in order to accommodate unexpected absence of on-duty shift crew members provided immediate action is taken to restore the shift crew composition to within the minimum requirements.

c. A radiation protection technician shall be on site when fuel is in the reactor. The position may be vacant for not more than 2 hours, in order to provide for unexpected absence, provided immediate action is taken to fill the required position.

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

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

5.0 ADMINISTRATIVE CONTROLS

5.3 Unit Staff Qualifications

5.3.1 Each member of the unit staff shall meet or exceed the minimum qualifications of [NRC RG 1.8, Revision 2, 1987, or more recent revisions, or ANSI Standard acceptable to the NRC staff]. [The staff not covered by NRC RG 1.8 shall meet or exceed the minimum qualifications of Regulations, NRC RGs, or ANSI Standards acceptable to NRC staff].

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

5.0 ADMINISTRATIVE CONTROLS

5.4 Procedures

5.4.1 Written procedures shall be established, implemented, and maintained covering the following activities:

a. The applicable procedures recommended in NRC RG 1.33, Revision 2, Appendix A, February 1978,

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

c. Quality assurance for effluent and environmental monitoring,

d. Fire Protection Program implementation, and

e. All programs specified in Specification 5.5.

[f. Modification of core protection calculator (CPC) addressable constants. These procedures shall include provisions to ensure that sufficient margin is maintained in CPC type I addressable constants to avoid excessive operator interaction with CPCs during reactor operation.

Modifications to the CPC software (including changes of algorithms and fuel cycle specific data) shall be performed in accordance with the most recent version of “CPC Protection Algorithm Software Change Procedure,” CEN-39(A)-P, which has been determined to be applicable to the facility. Additions or deletions to CPC addressable constants or changes to addressable constant software limit values shall not be implemented without prior NRC approval.]

5.0 ADMINISTRATIVE CONTROLS

5.5 Programs and Manuals

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

5.5.1 Offsite Dose Calculation Manual (ODCM)

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

b. The ODCM shall also contain the radioactive effluent controls and radiological environmental monitoring activities, and descriptions of the information that should be included in the Annual Radiological Environmental Operating, and Radioactive Effluent Release Reports required by Specification 5.6.1 and Specification 5.6.2.

Licensee initiated changes to the ODCM:

a. Shall be documented and records of reviews performed shall be retained. This documentation shall contain:

1. Sufficient information to support the change(s) together with the appropriate analyses or evaluations justifying the change(s) and

2. A determination that the change(s) maintain the levels of radioactive effluent control required by 10 CFR 20.1302, 40 CFR 190, 10 CFR 50.36a, and 10 CFR 50, Appendix I, and not adversely impact the accuracy or reliability of effluent, dose, or setpoint calculations,

b. Shall become effective after the approval of the plant manager, and

c. Shall be submitted to the NRC in the form of a complete, legible copy of the entire ODCM as a part of or concurrent with the Radioactive Effluent Release Report for the period of the report in which any change in the ODCM was made. Each change shall be identified by markings in the margin of the affected pages, clearly indicating the area of the page that was changed, and shall indicate the date (i.e., month and year) the change was implemented.

5.5.2 Primary Coolant Sources Outside Containment

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

a. Preventive maintenance and periodic visual inspection requirements and

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

The provisions of SR 3.0.2 are applicable.

5.5.3 Post-Accident Sampling

This program provides controls that ensure the capability to obtain and analyze reactor coolant, radioactive gases, and particulates in plant gaseous effluents and containment atmosphere samples under accident conditions. This program shall include the following:

a. Training of personnel,

b. Procedures for sampling and analysis, and

c. Provisions for maintenance of sampling and analysis equipment.

5.5.4 Radioactive Effluents Controls Program

This program conforms to 10 CFR 50.36a for the control of radioactive effluents and for maintaining the doses to members of the public from radioactive effluents as low as reasonably achievable. The program shall be contained in the ODCM, shall be implemented by procedures, and shall include remedial actions to be taken whenever the program limits are exceeded. The program shall include the following elements:

a. Limitations on the functional capability of radioactive liquid and gaseous monitoring instrumentation including surveillance tests and setpoint determination in accordance with the methodology in the ODCM,

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

c. Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM,

d. Limitations on the annual and quarterly doses or dose commitment to a member of the public from radioactive materials in liquid effluents released from each unit to unrestricted areas, conforming to 10 CFR 50, Appendix I,

e. Determination of cumulative dose contributions from radioactive effluents for the current calendar quarter and current calendar year in accordance with the methodology and parameters in the ODCM at least every 31 days. Determination of projected dose contributions from radioactive effluents in accordance with the methodology in the ODCM at least every 31 days,

f. Limitations on the functional capability and use of the liquid and gaseous effluent treatment systems to ensure that appropriate portions of these systems are used to reduce releases of radioactivity when the projected doses in a period of 31 days would exceed 2 % of the guidelines for the vannual dose or dose commitment, conforming to 10 CFR 50, Appendix I,

5.5.4 Radioactive Effluents Controls Program (continued)

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

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

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

h. Limitations on the annual and quarterly air doses resulting from noble gases released in gaseous effluents from each unit to areas beyond the site boundary, conforming to 10 CFR 50, Appendix I,

i. Limitations on the annual and quarterly doses to a member of the public from iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half lives > 8 days in gaseous effluents released from each unit to areas beyond the site boundary, conforming to 10 CFR 50, Appendix I, and

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

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

5.5.5 Component Cyclic or Transient Limit

This program provides controls to track the Chapter 3, cyclic and transient occurrences to ensure that components are maintained within the design limits.

5.5.6 Pre-Stressed Concrete Containment Tendon Surveillance Program

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

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

5.5.7 Reactor Coolant Pump Flywheel Inspection Program

This program shall provide for the inspection of each reactor coolant pump flywheel per the recommendation of regulatory position c.4.b of NRC RG 1.14, Revision 1, August 1975.

5.5.8 Inservice Testing Program

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

a. Testing frequencies applicable to the ASME Code for Operations and Maintenance of Nuclear Power Plants (ASME OM Code) and applicable Addenda as follows:

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

b. The provisions of SR 3.0.2 are applicable to the above required Frequencies and to other normal and accelerated Frequencies specified as 2 years or less in the Inservice Testing Program for performing inservice testing activities,

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

d. Nothing in the ASME OM Code shall be construed to supersede the requirements of any TS.

5.5.9 Steam Generator (SG) Program

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

a. Provisions for condition monitoring assessments. Condition monitoring assessment means an evaluation of the "as found" condition of the tubing with respect to the performance criteria for structural integrity and accident induced leakage. The "as found" condition refers to the condition of the tubing during an SG inspection outage, as determined from the inservice inspection results or by other means, prior to the plugging of tubes. Condition monitoring assessments shall be conducted during each outage during which the SG tubes are inspected, plugged to confirm that the performance criteria are being met.

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

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

2. Accident induced leakage performance criterion: The primary-to-secondary accident-induced leakage rate for any design basis accident, other than a SG tube rupture, shall not exceed the leakage rate assumed in the accident analysis in terms of total leakage rate for all SGs and leakage rate for an individual SG. Leakage is not to exceed 1.14 L/min (0.3 gpm) per SG.

5.5.9 Steam Generator (SG) Program (continued)

3. The operational LEAKAGE performance criterion is specified in LCO 3.4.12, “RCS Operational LEAKAGE.”

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

d. Provisions for SG tube inspections. Periodic SG tube inspections shall be performed. The number and portions of the tubes inspected and methods of inspection shall be performed with the objective of detecting flaws of any type (e.g., volumetric flaws, axial and circumferential cracks) that may be present along the length of the tube, from the tube-to-tubesheet weld at the tube inlet to the tube-to-tubesheet weld at the tube outlet, and that may satisfy the applicable tube repair criteria. The tube-to-tubesheet weld is not part of the tube. In addition to meeting the requirements of d.1, d.2, and d.3 below, the inspection scope, inspection methods, and inspection intervals shall be such as to ensure that SG tube integrity is maintained until the next SG inspection. An assessment of degradation shall be performed to determine the type and location of flaws to which the tubes may be susceptible and, based on this assessment, to determine which inspection methods need to be employed and at what locations.

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

2. Inspect 100 % of the tubes at sequential periods of 144, 108, 72, and, thereafter, 60 effective full power months. The first sequential period shall be considered to begin after the first inservice inspection of the SGs. In addition, inspect 50 % of the tubes by the refueling outage nearest the midpoint of the period and the remaining 50 % by the refueling outage nearest the end of the period. No SG shall operate for more than 72 effective full power months or three refueling outages (whichever is less) without being inspected.

3. If crack indications are found in any SG tube, then the next inspection for each SG for the degradation mechanism that caused the crack indication shall not exceed 24 effective full power months or one refueling outage (whichever is less). If definitive information, such as from examination of a pulled tube, diagnostic non-destructive testing, or engineering evaluation indicates that a crack-like indication is not associated with a crack(s), then the indication need not be treated as a crack.

e. Provisions for monitoring operational primary-to-secondary LEAKAGE.

5.5.10 Secondary Water Chemistry Program

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

a. Identification of a sampling schedule for the critical variables and control points for these variables,

b. Identification of the procedures used to measure the values of the critical variables,

c. Identification of process sampling points, which shall include monitoring the discharge of the condensate pumps for evidence of condenser in leakage,

d. Procedures for the recording and management of data,

e. Procedures defining corrective actions for all off control point chemistry conditions, and

f. A procedure identifying the authority responsible for the interpretation of the data and the sequence and timing of administrative events, which is required to initiate corrective action.

5.5.11 Ventilation Filter Testing Program (VFTP)

A program shall be established to implement the following required testing of Engineered Safety Feature (ESF) filter ventilation systems in accordance with NRC RG 1.52, Revision 4, ASME N510-2007, and AG-1-2009 at the system flow rate specified below ± 10 %.

a. Demonstrate for each of the ESF systems that an in-place test of the high efficiency particulate air (HEPA) filters shows a penetration and system bypass < 0.05 % when tested in accordance with NRC RG 1.52, Revision 4, and ASME N510-2007 at the system flow rate specified below ± 10 %:

ESF Ventilation System	Flowrate
Control Room Emergency Makeup Air Cleaning System (CREACS)	13,592 cmh (8,000 cfm)
Fuel Handling Area Emergency Exhaust System (FHAEES)	8,495 cmh (5,000 cfm)
Auxiliary Building Controlled Area Emergency Exhaust System (ABCAEES)	5,097 cmh (3,000 cfm)

b. Demonstrate for each of the ESF systems that an in-place test of the charcoal adsorber shows a penetration and system bypass < 0.05 % when tested in accordance with NRC RG 1.52, Revision 4, and ASME N510-2007 at the system flow rate specified below ± 10 %:

ESF Ventilation System	Flowrate
CREACS	13,592 cmh (8,000 cfm)
FHAEES	8,495 cmh (5,000 cfm)
ABCAEES	5,097 cmh (3,000 cfm)

c. Demonstrate for each of the ESF systems that a laboratory test of a sample of the charcoal adsorber, when obtained as described in NRC RG 1.52, Revision 4, shows the methyl iodide penetration less than the value specified below when tested in accordance with ASTM D3803-1989 at a temperature of 30 °C (86 °F) and the relative humidity specified below:

ESF Ventilation System	Penetration	RH
CREACS	0.5 %	70 %
FHAEES	0.5 %	70 %
ABCAEES	0.5 %	70 %

5.5.11 Ventilation Filter Testing Program (VFTP) (continued)

d. Demonstrate for each of the ESF systems that the pressure drop across the combined HEPA filters, the prefilters, and the charcoal adsorbers is less than the value specified below when tested in accordance with NRC RG 1.52, Revision 4, and ASME N510-2007 at the system flowrate specified below ± 10 %:

ESF Ventilation System	Delta P	Flowrate
CREACS	203.2 mm wg (8 in. wg)	13,592 cmh (8,000 cfm)
FHAEES	203.2 mm wg (8 in. wg)	8,495 cmh (5,000 cfm)
ABCAEES	203.2 mm wg (8 in. wg)	5,097 cmh (3,000 cfm)

e. Demonstrate that the heaters for the each of the ESF systems dissipate the following specified value ± 10 % when tested in accordance with ASME N510-2007 :

ESF Ventilation System	Wattage
CREACS	26,000 W
FHAEES	22,000 W
ABCAEES	9,000 W

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

5.5.12 Explosive Gas and Storage Tank Radioactivity Monitoring Program

This program provides controls for potentially explosive gas mixtures contained in the Gaseous Waste Management System, the quantity of radioactivity released from a charcoal guard bed of Gaseous Waste Management System, and the quantity of radioactivity contained in unprotected outdoor liquid storage tanks.

The gaseous radioactivity quantities shall be determined following the methodology in [Branch Technical Position (BTP) ETSB 11-5, "Postulated Radioactive Release due to Waste Gas System Leak or Failure"]. The liquid radwaste quantities shall be determined in accordance with [Standard Review Plan, Section 15.7.3, "Postulated Radioactive Release due to Tank Failures"].

The program shall include:

a. The limits for concentrations of hydrogen and oxygen in the Gaseous Waste Management System and a surveillance program to ensure the limits are maintained. Such limits shall be appropriate to the system's design criteria (i.e., whether or not the system is designed to withstand a hydrogen explosion),

b. A surveillance program to ensure that the quantity of radioactivity released from a charcoal guard bed of Gaseous Waste Management System is less than the amount that would result in a whole body exposure of 0.1 rem to any individual in an unrestricted area, in the event of an uncontrolled release of the tanks' contents, and

c. A surveillance program to ensure that the quantity of radioactivity contained in all outdoor liquid radwaste tanks that are not surrounded by liners, dikes, or walls, capable of holding the tanks' contents and that do not have tank overflows and surrounding area drains connected to the Liquid Waste Management System is less than the amount that would result in concentrations less than the limits of 10 CFR 20, Appendix B, Table 2, Column 2, at the nearest potable water supply and the nearest surface water supply in an unrestricted area, in the event of an uncontrolled release of the tanks' contents.

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

5.5.13 Diesel Fuel Oil Testing Program

A diesel fuel oil testing program to implement required testing of both new fuel oil and stored fuel oil shall be established. The program shall include sampling and testing requirements, and acceptance criteria, all in accordance with applicable ASTM Standards. The purpose of the program is to establish the following:

a. Acceptability of new fuel oil for use prior to addition to storage tanks by determining that the fuel oil has:

   1. An API gravity or an absolute specific gravity within limits,

   2. A flash point and kinematic viscosity within limits for ASTM 2D fuel oil, and

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

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

c. Total particulate concentration of the fuel oil is <10 mg/l when tested every 31 days.

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

5.5.14 Technical Specifications (TS) Bases Control Program

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

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

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

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

   2. A change to the updated DCD TIER 2 or Bases that requires NRC approval pursuant to 10 CFR 50.59.

c. The Bases Control Program shall contain provisions to ensure that the Bases are maintained consistent with the DCD TIER 2.

d. Proposed changes that meet the criteria of 5.5.14b above shall be reviewed and approved by the NRC prior to implementation. Changes to the Bases implemented without prior NRC approval shall be provided to the NRC on a frequency consistent with 10 CFR 50.71(e).

5.5.15 Safety Function Determination Program (SFDP)

This program ensures loss of safety function is detected and appropriate action taken. Upon entering LCO 3.0.6, an evaluation shall be made to determine if loss of safety function exists. Additionally, other appropriate limitations and remedial or compensatory actions may be identified to be taken as a result of the support system inoperability and corresponding exception to entering supported system Condition and Required Actions. This program implements the requirements of LCO 3.0.6. The SFDP shall contain the following:

a. Provisions for cross train checks to ensure a loss of the capability to perform the safety function assumed in the accident analysis does not go undetected,

b. Provisions for ensuring the plant is maintained in a safe condition if a loss of function condition exists,

c. Provisions to ensure that an inoperable supported system's Completion Time is not inappropriately extended as a result of multiple support system inoperabilities, and

d. Other appropriate limitations and remedial or compensatory actions.

A loss of safety function exists when, assuming no concurrent single failure, no concurrent loss of offsite power, or no concurrent loss of onsite diesel generator(s), a safety function assumed in the accident analysis cannot be performed. For the purpose of this program, a loss of safety function may exist when a support system is inoperable, and

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

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

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

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

5.5.16 Containment Leakage Rate Testing Program

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

1. The visual examination of containment concrete surfaces intended to fulfill the requirements of 10 CFR 50, Appendix J, Option B testing, will be performed in accordance with the requirements of and frequency specified by the ASME Section XI Code, Subsection IWL, except where relief has been authorized by the NRC.

2. The visual examination of the steel liner plate inside containment intended to fulfill the requirements of 10 CFR50, Appendix J, Option B, will be performed in accordance with the requirements of and frequency specified by the ASME Section XI Code, Subsection IWE, except where relief has been authorized by the NRC.

b. The calculated peak containment internal pressure for the design basis loss of coolant accident, P_a is 51.77 psig. The containment design pressure is 60 psig.

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

d. Leakage rate acceptance criteria are:

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

2. Air lock testing acceptance criteria are:

a) Overall air lock leakage rate is $\leq 0.05\ L_a$ when tested at $\geq P_a$.

b) For each door, leakage rate is $\leq 0.01\ L_a$ when pressurized to ≥ 10 psig.

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

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

5.5.17 Battery Monitoring and Maintenance Program

This Program provides controls for battery restoration and maintenance. The program shall be in accordance with IEEE Standard (Std) 450-2002, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," as endorsed by NRC RG 1.129, Revision 2 (RG), with RG exceptions and program provisions as identified below:

a. The program allows the following RG 1.129, Revision 2 exceptions:

1. Battery temperature correction may be performed before or after conducting discharge tests.

2. RG 1.129, Regulatory Position 1, Subsection 2, "References," is not applicable to this program.

3. In lieu of RG 1.129, Regulatory Position 2, Subsection 5.2, "Inspections," the following shall be used: "Where reference is made to the pilot cell, pilot cell selection shall be based on the lowest voltage cell in the battery."

4. In NRC RG 1.129, Regulatory Position 3, Subsection 5.4.1, "State of Charge Indicator," the following statements in paragraph (d) may be omitted: "When it has been recorded that the charging current has stabilized at the charging voltage for three consecutive hourly measurements, the battery is near full charge. These measurements shall be made after the initially high charging current decreases sharply and the battery voltage rises to approach the charger output voltage."

5. In lieu of RG 1.129, Regulatory Position 7, Subsection 7.6, "Restoration," the following may be used: "Following the test, record the float voltage of each cell of the string."

b. The program shall include the following provisions:

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

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

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

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

5. A requirement to obtain specific gravity readings of all cells at each discharge test, consistent with manufacturer recommendations.

5.5.18 Control Room Envelope (CRE) Habitability Program

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

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

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

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

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

e. The quantitative limits on unfiltered air inleakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air inleakage measured by the testing described in paragraph c. The unfiltered air inleakage limit for radiological challenges is the inleakage flow rate assumed in the licensing basis analyses of DBA consequences. Unfiltered air inleakage limits for hazardous chemicals must ensure that exposure of CRE occupants to these hazards will be within the assumptions in the licensing basis.

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

5.5.19 Setpoint Control Program

This program shall establish the requirements for ensuring that setpoints for automatic protective devices are initially within and remain within the assumptions of the applicable safety analyses, provides a means for processing changes to instrumentation setpoints, and identifies setpoint methodologies to ensure instrumentation will function as required. The program shall ensure that testing of automatic protective devices related to variables having significant safety functions as delineated by 10 CFR 50.36(c)(1)(ii)(A) verifies that instrumentation will function as required.

a. The program shall list the Functions in the following specifications to which it applies:

1. LCO 3.3.1, “Reactor Protection System (RPS) Instrumentation – Operating”
2. LCO 3.3.2, “Reactor Protection System (RPS) Instrumentation – Shutdown”
3. LCO [3.3.3, “Control Element Assembly Calculators (CEACs)”]
4. LCO 3.3.5, “Engineered Safety Features Actuation System (ESFAS) Instrumentation”
5. LCO 3.3.7, “Emergency Diesel Generator (EDG) – Loss of Voltage Start (LOVS)”
6. LCO 3.3.8, “Containment Purge Isolation Actuation Signal (CPIAS)”
7. LCO 3.3.9, “Control Room Emergency Ventilation Actuation Signal (CREVAS)”
8. LCO 3.3.10, “Fuel Handling Area Emergency Ventilation Actuation Signal (FHEVAS)”
9. LCO 3.3.13, “Logarithmic Power Monitoring Channels”

b. The program shall require the Nominal Trip Setpoint (NTSP), Allowable Value (AV), As-Found Tolerance (AFT), and As-Left Tolerance (ALT) (as applicable) of the Functions described in paragraph a. are calculated using the NRC approved setpoint methodology, as listed below. In addition, the program shall contain the value of the NTSP, AV, AFT, and ALT (as applicable) for each Function described in paragraph a. and shall identify the setpoint methodology used to calculate these values.

5.5.19 Setpoint Control Program (continued)

c. The program shall establish methods to ensure that Functions described in paragraph a. will function as required by verifying the as-left and as-found settings are consistent with those established by the setpoint methodology.

d. The program shall identify the Functions described in paragraph a. that are automatic protective devices related to variables having significant safety functions as delineated by 10 CFR 50.36(c)(1)(ii)(A). These Functions shall be demonstrated to be functioning as required by applying the following requirements during CHANNEL CALIBRATIONS and CHANNEL FUNCTIONAL TESTS that verify the NTSP.

1. The as-found value of the instrument channel trip setting shall be compared with the previous as-left value or the specified NTSP.

2. If the as-found value of the instrument channel trip setting differs from the previous as-left value or the specified NTSP by more than the pre-defined test acceptance criteria band (i.e., the specified AFT), then the instrument channel shall be evaluated before declaring the SR met and returning the instrument channel to service. This condition shall be entered in the plant corrective action program.

3. If the as-found value of the instrument channel trip setting is less conservative than the specified AV, then the SR is not met and the instrument channel shall be immediately declared inoperable.

4. The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the NTSP at the completion of the surveillance test; otherwise, the channel is inoperable (setpoints may be more conservative than the NTSP provided that the as-found and as-left tolerances apply to the actual setpoint used to confirm channel performance).

5.0 ADMINISTRATIVE CONTROLS

5.6 Reporting Requirements

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

5.6.1 Annual Radiological Environmental Operating Report

The Annual Radiological Environmental Operating Report covering the operation of the unit during the previous calendar year shall be submitted by May 15 of each year. The report shall include summaries, interpretations, and analyses of trends of the results of the Radiological Environmental Monitoring Program for the reporting period. The material provided shall be consistent with the objectives outlined in the Offsite Dose Calculation Manual (ODCM), and in 10 CFR 50, Appendix I, Sections IV.B.2, IV.B.3, and IV.C.

The Annual Radiological Environmental Operating Report shall include the results of analyses of all radiological environmental samples and of all environmental radiation measurements taken during the period pursuant to the locations specified in the table and figures in the ODCM, as well as summarized and tabulated results of these analyses and measurements [in the format of the table in the Radiological Assessment Branch Technical Position, Revision 1, November 1979]. In the event that some individual results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. The missing data shall be submitted in a supplementary report as soon as possible.

5.6.2 Radiological Effluent Release Report

The Radioactive Effluent Release Report covering the operation of the unit in the previous year shall be submitted prior to May 1 of each year in accordance with 10 CFR 50.36a. The report shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit. The material provided shall be consistent with the objectives outlined in the ODCM and Process Control Program and in conformance with 10 CFR 50.36a and 10 CFR Part 50, Appendix I, Section IV.B.1.

5.6.3 CORE OPERATING LIMITS REPORT (COLR)

a. Core operating limits shall be established prior to each reload cycle, or prior to any remaining portion of a reload cycle, and shall be documented in the COLR for the following:

3.1.1, SHUTDOWN MARGIN (SDM) – T_{cold} >99 °C (210 °F)

3.1.2, SHUTDOWN MARGIN (SDM) – T_{cold} ≤ 99 °C (210 °F)

3.1.4, Moderator Temperature Coefficient (MTC)

3.1.5, Control Element Assembly (CEA) Alignment

3.1.6, Shutdown Control Element Assemblyu (CEA) Insertion Limits

3.1.7, Regulating Control Element Assembly (CEA) Insertion Limits

3.1.8, Part Strength Control Element Assembly (CEA) Insertion Limits

3.2.1, Linear Heat Rate (LHR)

3.2.4, Departure From Nucleate Boiling Ratio (DNBR)

3.2.5, AXIAL SHAPE INDEX (ASI)

3.9.1, Boron Concentration

b. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:

1. “CE Method for Control Element Assembly Ejection Analysis,” CENPD-0190-A, (Methodology for Specification 3.1.7, Regulating CEA Insertion Limits).
2. “The ROCS and DIT Computer Codes for Nuclear Design,” CENPD-266-P-A, (Methodology for Specifications 3.1.1, Shutdown Margin(SDM); 3.1.2, Shutdown Margin(SDM); 3.1.4, Moderator Temperature Coefficient(MTC); 3.1.7, Regulating CEA Insertion Limits and 3.9.1, Boron Concentration (Mode 6)).
3. “Modified Statistical Combination of Uncertainties,” CEN-356(V)-P-A (Methodology for Specification 3.2.4, DNBR and 3.2.5, Axial Shape Index)

5.6.3 CORE OPERATING LIMITS REPORT (COLR) (continued)

4. "Realistic Evaluation Methodology for Large-Break LOCA of the APR1400," APR1400-F-A-TR-12004-P Rev.0, December 2012, (Methodology for Specification 3.2.1, Linear Heat Rate).

5. "Calculative Methods for the CE Small Break LOCA Evaluation Model," CENPD-137-P, (Methodology for Specification 3.2.1, Linear Heat Rate).

6. "CESEC Digital Simulation of a Combustion Engineering Nuclear Steam Supply System," CENPD-107, (Methodology for Specifications 3.1.2, Shutdown Margin(SDM); 3.1.4, Moderator Temperature Coefficient; 3.1.5, Regulating CEA Insertion Limits; 3.1.8, Part Strength CEA Insertion Limits).

c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling System (ECCS) limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.

d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

5.6.4 Reactor Coolant System (RCS) PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)

a. RCS pressure and temperature limits for heat up, cooldown, low temperature operation, criticality, and hydrostatic testing as well as heatup and cooldown rates shall be established and documented in the PTLR for the following:

3.4.3, “RCS Pressure and Temperature (P/T) Limits”

3.4.6, “RCS Loops – MODE 4”

3.4.7, “RCS Loops – MODE5 (Loops Filled)”

3.4.10, “Pressurizer Pilot Operated Safety Relief Valves (POSRVs)”

3.4.11, “Low Temperature Overpressure Protection (LTOP) System”

b. The analytical methods used to determine the RCS pressure and temperature limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:

APR1400-Z-M-NR-13010-P, “Pressure-Temperature Limits Methodology for RCS Heatup and Cooldown Technical Report.”

c. The PTLR shall be provided to the NRC upon issuance for each reactor vessel fluence period and for any revision or supplement thereto.

5.6.5 Accident Monitoring Report

When a report is required by Condition B or F LCO 3.3.11, "Accident Monitoring Instrumentation (AMI)," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

5.6.6 Tendon Surveillance Report

Any abnormal degradation of the containment structure detected during the tests required by the Pre-stressed Concrete Containment Tendon Surveillance Program shall be reported to the NRC within 30 days. The report shall include a description of the tendon condition, the condition of the concrete (especially at tendon anchorages), the inspection procedures, the tolerances on cracking, and the corrective action taken.

5.6.7 Steam Generator Tube Inspection Report

A report shall be submitted within 180 days after the initial entry into MODE 4 following completion of an inspection performed in accordance with Specification 5.5.9, "Steam Generator (SG) Program." The report shall include:

a. The scope of inspections performed on each SG,

b. Active degradation mechanisms found,

c. Nondestructive examination techniques utilized for each degradation mechanism,

d. Location, orientation (if linear), and measured sizes (if available) of service induced indications,

e. Number of tubes plugged during the inspection outage for each active degradation mechanism,

f. Total number and percentage of tubes plugged to date,

g. The results of condition monitoring, including the results of tube pulls and in-situ testing, and

h. The effective plugging percentage for all plugging in each SG

5.0 ADMINISTRATIVE CONTROLS

5.7 High Radiation Area

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

f. Such individual areas that are within a larger area where no enclosure exists for the purpose of locking and where no enclosure can reasonably be constructed around the individual area need not be controlled by a locked door or gate, nor continuously guarded, but shall be barricaded, conspicuously posted, and a clearly visible flashing light shall be activated at the area as a warning device.