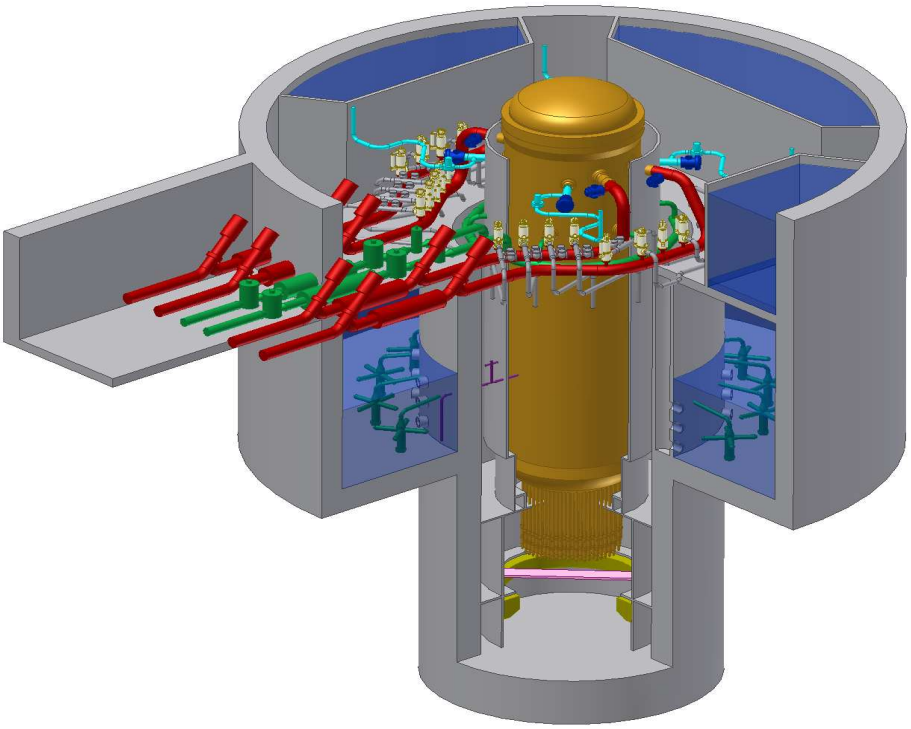
GE Nuclear Energy

26A6642BR
Revision 2
December 2006



ESBWR Design Control Document

Tier 2

Chapter 16

Technical Specifications

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16. TECHNICAL SPECIFICATIONS

16.0 INTRODUCTION

The ESBWR Technical Specifications are provided as required by 10 CFR 50.36, "Technical specifications," and 10 CFR 50.36a, "Technical specifications on effluents from nuclear power reactors." The ESBWR Technical Specifications were developed utilizing NUREG-1434, "Standard Technical Specifications General Electric Plants, BWR/6," Revision 3.1, to the extent practical. The ESBWR Technical Specifications are supported by a separate document (Chapter 16B, Bases) that provides the bases for important aspects of each Technical Specification, other than Design Features and Administrative Controls.

The technical specifications have been derived from the safety analyses and evaluations included in this license application and include the following as required by 10 CFR 50.36 and 50.36a:

- Safety limits, limiting safety system settings, and limiting control settings
- Limiting Conditions for Operation;
- Surveillance requirements;
- Design features; and
- Administrative controls.

10 CFR 50.36 requires a limiting condition for operation for each item meeting one or more of the following section 50.36(c)(2)(ii) criteria:

(A) Criterion 1. Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

(B) 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.

(C) 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 that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

(D) Criterion 4. A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

The ESBWR Technical Specifications are intended as a guide in the future development of plant specific technical specifications for plants whose license applications reference the ESBWR standard plant. Brackets are used to identify information that is plant specific. Brackets are also used to identify information that is currently based on engineering judgment because the detailed design, equipment selection, or other efforts are not sufficiently complete to finalize the information required in Technical Specifications. Combined license applicants who reference the ESBWR standard plant will replace the bracketed information with appropriate plant-specific information.

The "Use and Application" section of the ESBWR Technical Specifications is consistent with NUREG-1434 with the exception of the inclusion of a new "Stable Shutdown" MODE. This

change reflects an initiative to recognize that plant temperatures below 215.6°C (420°F) are an acceptable stable, safe shutdown condition.

Limiting Conditions for Operation (LCOs) for the ESBWR Technical Specifications reflect the criteria specified in 10 CFR 50.36 consistent with evaluations of these criteria as reflected in the Standard Technical Specifications for the most recent Boiling Water Reactor (BWR) designs, NUREG-1434, Revision 3.1. Where the ESBWR passive design presented new features and analyses, these were evaluated against the criteria for inclusion in these Generic Technical Specifications. In general, the ESBWR passive design results in a significant reduction in the number of structures, systems, and parameters for which LCOs are required. Elimination of LCO requirements for offsite electrical circuits, emergency diesel generators, and active decay heat removal systems are examples of significant differences between the ESBWR Technical Specifications and NUREG-1434.

The completion times used in the ESBWR Technical Specifications for the actions required when LCOs are not met are generally consistent with NUREG-1434 for similar conditions, where practical. In some instances, the NUREG-1434 completion times are overly conservative for the ESBWR because they do not reflect the reliability of the ESBWR passive design.

Surveillance requirements and frequencies for monitoring plant status and testing are generally consistent with NUREG-1434, where practical. Again, in some instances, the NUREG-1434 surveillance requirements and frequencies are overly conservative for the ESBWR because they do not reflect the reliability of the ESBWR passive design.

On completion of the Combined License Information requirements, Technical Specifications are incorporated into an appendix to the Combined License (COL), when issued. Subsequent amendments are controlled in accordance with 10 CFR 50.90. Further, the Technical Specifications requirements will become effective/applicable as identified in the COL. The supporting Bases document is not incorporated into the license, but subsequent to the issuance of the COL, the Bases document is separately controlled/revised in accordance with the TS Bases Control Program included within the TS Programs and Manuals section.

Manuals, reports, and program documents identified in the Technical Specifications are also not considered a part of this document, nor a part of the Technical Specifications or Bases documents.

Combined License Information

This set of generic technical specifications is provided as a guide for the development of plant specific technical specifications. Combined License applicants referencing the ESBWR will replace the preliminary information provided in brackets [ ] with final plant specific information with the guidance of applicable Reviewer's Notes included in the generic Technical Specifications for information only. {Certain information remains in curly brackets { } as indicators that the information is considered under the scope of the Design Certification review and not expected to be a COL Information item.}

1.0 USE AND APPLICATION

1.1 Definitions

- NOTE -

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

Term	Definition
ACTIONS	ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.
CHANNEL CALIBRATION	A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass all devices in the channel required for channel OPERABILITY and the CHANNEL FUNCTIONAL TEST. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an in place qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps.
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 the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY of all devices in the channel required for channel OPERABILITY. The CHANNEL FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total channel steps.

1.1 Definitions

CORE ALTERATION	CORE ALTERATION shall be the movement of any fuel, sources, or reactivity control components, within the reactor vessel with the vessel head removed and fuel in the vessel. The following exceptions are not considered to be CORE ALTERATIONS: a. Movement of startup range neutron monitors, local power range monitors, fixed in-core calibration detectors, or special movable detectors (including undervessel replacement); and b. Control rod movement, provided there are no fuel assemblies in the associated core cell. 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 limits shall be determined for each reload cycle in accordance with Specification 5.6.3. Plant operation within these limits is addressed in individual Specifications.
DOSE EQUIVALENT I-131	DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcuries/gram) that alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in {Federal Guidance Report (FGR) 11, "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion," 1989}.
{EMERGENCY CORE COOLING SYSTEM (ECCS) RESPONSE TIME	The ECCS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ECCS initiation setpoint at the channel sensor until the ECCS equipment is capable of performing its safety function (i.e., the valves travel to their required positions, etc). The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.}

1.1 Definitions

{ISOLATION CONDENSER SYSTEM (ICS) RESPONSE TIME	The ICS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ICS initiation setpoint at the channel sensor until the ICS equipment is capable of performing its safety function (i.e., the valves travel to their required positions, etc). The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.}
ISOLATION SYSTEM RESPONSE TIME	The ISOLATION SYSTEM RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its isolation initiation setpoint at the channel sensor until the isolation valves travel to their required positions. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.

1.1 Definitions

LEAKAGE	LEAKAGE shall be: a. <u>Identified LEAKAGE</u> 1. LEAKAGE into the drywell such as that from pump seals or valve packing that is captured and conducted to a sump or collecting tank; or 2. LEAKAGE into the drywell 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; b. <u>Unidentified LEAKAGE</u> All LEAKAGE into the drywell that is not identified LEAKAGE; c. <u>Total LEAKAGE</u> Sum of the identified and unidentified LEAKAGE; and d. <u>Pressure Boundary LEAKAGE</u> LEAKAGE through a nonisolable fault in a Reactor Coolant System (RCS) component body, pipe wall, or vessel wall.
LINEAR HEAT GENERATION RATE (LHGR)	The LHGR shall be the heat generation rate per unit length of fuel rod. It is the integral of the heat flux over the heat transfer area associated with the unit length.
LOGIC SYSTEM FUNCTIONAL TEST	A LOGIC SYSTEM FUNCTIONAL TEST shall be a test of all required logic components required for OPERABILITY of a logic circuit, from as close to the sensor as practicable up to, but not including, the actuated device, to verify OPERABILITY. The LOGIC SYSTEM FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total system steps so that the entire logic system is tested.

1.1 Definitions

MINIMUM CRITICAL POWER RATIO (MCPR)	The MCPR shall be the smallest Critical Power Ratio (CPR) that exists in the core for each class of fuel. The CPR is that power in the assembly that is calculated by application of the appropriate correlation(s) to cause some point in the assembly to experience boiling transition, divided by the actual assembly operating power.
MODE	A MODE shall correspond to any one inclusive combination of mode switch position, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.
OPERABLE — OPERABILITY	A system, subsystem, train, division, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, train, division, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).
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 4500 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 channel sensor until de-energization of the scram pilot valve solenoids. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.

1.1 Definitions

SHUTDOWN MARGIN (SDM)	SDM shall be the amount of reactivity by which the reactor is subcritical or would be subcritical assuming that: a. The reactor is xenon free; b. The moderator temperature is 20°C (68°F); and c. All control rods are fully inserted except for the control rod or control rod pair of highest reactivity worth, which is assumed to be fully withdrawn. With control rods not capable of being fully inserted, the reactivity worth of these control rods must be accounted for in the determination of SDM.
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.
TURBINE BYPASS SYSTEM RESPONSE TIME	The TURBINE BYPASS SYSTEM RESPONSE TIME consists of two components: a. The time for initial movement of the main turbine stop valve or control valve until {80%} of the turbine bypass capacity is established; and b. The time for initial movement of the main turbine stop valve or control valve until initial movement of the turbine bypass valve. The response time may be measured by means of any series of sequential, overlapping, or total steps such that the entire response time is measured.

1.1 Definitions

Table 1.1-1 (page 1 of 1)
MODES

MODE	TITLE	REACTOR MODE SWITCH POSITION	AVERAGE REACTOR COOLANT TEMPERATURE °C (°F)
1	Power Operation	Run	NA
2	Startup	Refuel[(a)] or Startup	NA
3	Hot Shutdown [(a)]	Shutdown	> 215.6 (420)
4	Stable Shutdown[(a)]	Shutdown	≤ 215.6 (420) and > 93.3 (200)
5	Cold Shutdown[(a)]	Shutdown	≤ 93.3 (200)
6	Refueling[(b)]	Shutdown or Refuel	NA

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

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

1.0 USE AND APPLICATION

1.2 Logical Connectors

PURPOSE	The purpose of this section is to explain the meaning of logical connectors. Logical connectors are used in Technical Specifications (TS) to discriminate between, and yet connect, discrete Conditions, Required Actions, Completion Times, Surveillances and Frequencies. The only logical connectors that appear in TS are AND and OR. The physical arrangement of these connectors constitutes logical conventions with specific meanings.
BACKGROUND	Several levels of logic may be used to state Required Actions. These levels are identified by the placement (or nesting) of the logical connectors and by the number assigned to each Required Action. The first level of logic is identified by the first digit of the number assigned to a Required Action and the placement of the logical connector in the first level of nesting (i.e., left justified with the number of the Required Action). The successive levels of logic are identified by additional digits of the Required Action number and by successive 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 examples illustrate the use of logical connectors.

1.2 Logical Connectors

EXAMPLES (continued)

EXAMPLE 1.2-1

ACTIONS

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

1.2 Logical Connectors

EXAMPLES (continued)

EXAMPLE 1.2-2

ACTIONS

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

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

1.0 USE AND APPLICATION

1.3 Completion Times

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

1.3 Completion Times

DESCRIPTION (continued)

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, division, 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 phase “from discovery...”

EXAMPLES

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

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	12 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 12 hours AND in MODE 5 within 36 hours. A total of 12 hours is allowed for reaching MODE 3 and a total of 36 hours (not 48 hours) is allowed for reaching MODE 5 from the time that Condition B was entered. If MODE 3 is reached within 6 hours, the time allowed for reaching MODE 5 is the next 30 hours because the total time allowed for reaching MODE 5 is 36 hours.

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

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One valve inoperable.	A.1 Restore valve 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.	12 hours 36 hours

When a valve is declared inoperable, Condition A is entered. If the valve 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 valve is restored to OPERABLE status after Condition B is entered, Conditions A and B are exited, and therefore, the Required Actions of Condition B may be terminated.

When a second valve is declared inoperable while the first valve is still inoperable, Condition A is not re-entered for the second valve. LCO 3.0.3 is entered, since the ACTIONS do not include a Condition for more than one inoperable valve. 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 valves 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 valves 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

1.3 Completion Times

EXAMPLES (continued)

with Condition B. The Completion Time for Condition B is tracked from the time the Condition A Completion Time expired.

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

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-3

ACTIONS

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

When one Function X subsystem and one Function Y subsystem are inoperable, Condition A and Condition B are concurrently applicable. The Completion Times for Condition A and Condition B are tracked separately for each subsystem starting from the time each subsystem was declared inoperable and the Condition was entered. A separate Completion Time is established for Condition C and tracked from the time the second

1.3 Completion Times

EXAMPLES (continued)

subsystem was declared inoperable (i.e., the time the situation described in Condition C was discovered).

If Required Action C.2 is completed within the specified Completion Time, Conditions B and C are exited. If the Completion Time for Required Action A.1 has not expired, operation may continue in accordance with Condition A. The remaining Completion Time in Condition A is measured from the time the affected subsystem 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.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-4

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more valves inoperable.	A.1 Restore valve(s) to OPERABLE status.	4 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	12 hours 36 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 (plus the extension) expires while one or more valves are still inoperable, Condition B is entered.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-5

ACTIONS

- NOTE -

Separate Condition entry is allowed for each inoperable valve.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more valves inoperable.	A.1 Restore valves 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 5.	12 hours 36 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.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-6

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One channel inoperable.	A.1 Perform SR 3.x.x.x. 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.	12 hours

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

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

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-7

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One subsystem inoperable.	A.1 Verify affected subsystem isolated. 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.	12 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.

1.3 Completion Times

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

1.0 USE AND APPLICATION

1.4 Frequency

PURPOSE	The purpose of this section is to define the proper use and application of Frequency requirements.
DESCRIPTION	Each Surveillance Requirement (SR) has a specified Frequency in which the Surveillance must be met in order to meet the associated LCO. An understanding of the correct application of the specified Frequency is necessary for compliance with the SR. The "specified Frequency" is referred to throughout this section and each of the Specifications of Section 3.0.2, Surveillance Requirement (SR) Applicability. The "specified Frequency" consists of the requirements of the Frequency column of each SR as well as certain Notes in the Surveillance column that modify performance requirements. Sometimes special situations dictate when the requirements of a Surveillance are to be met. They are "otherwise stated" conditions allowed by SR 3.0.1. They may be stated as clarifying Notes in the Surveillance, as part of the Surveillance, or both. Situations where a Surveillance could be required (i.e., its Frequency could expire), but where it is not possible or not desired that it be performed until sometime after the associated LCO is within its Applicability, represent potential SR 3.0.4 conflicts. To avoid these conflicts, the SR (i.e., the Surveillance or the Frequency) is stated such that it is only "required" when it can be and should be performed. With an SR satisfied, SR 3.0.4 imposes no restriction. The use of "met" or "performed" in these instances conveys specific meanings. A Surveillance is "met" only when the acceptance criteria are satisfied. Known failure of the requirements of a Surveillance, even without a Surveillance specifically being "performed," constitutes a Surveillance not "met." "Performance" refers only to the requirement to specifically determine the ability to meet the acceptance criteria. Some Surveillances contain notes that modify the Frequency of performance or the conditions during which the acceptance criteria must be satisfied. For these Surveillances, the MODE-entry restrictions of SR 3.0.4 may not apply. Such a Surveillance is not required to be performed prior to entering a MODE or other specified condition in the Applicability of the associated LCO if any of the following three conditions are satisfied:

1.4 Frequency

DESCRIPTION (continued)

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

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

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

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

EXAMPLES

The following examples illustrate the various ways that Frequencies are specified. In these examples, the Applicability of the LCO (LCO not shown) is MODES 1, 2, 3, and 4.

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Perform CHANNEL CHECK.	12 hours

Example 1.4-1 contains the type of SR most often encountered in the Technical Specifications (TS). The Frequency specifies an interval (12 hours) during which the associated Surveillance must be performed at least one time. Performance of the Surveillance initiates the subsequent interval. Although the Frequency is stated as 12 hours, an extension of the time interval to 1.25 times the interval specified in the 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 Examples 1.4-3 and 1.4-4), then SR 3.0.3 becomes applicable.

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

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-2

SURVEILLANCE REQUIREMENTS

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

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

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

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-3

SURVEILLANCE REQUIREMENTS

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

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

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

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

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-4

SURVEILLANCE REQUIREMENTS

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

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

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-5

SURVEILLANCE REQUIREMENTS

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

The interval continues, whether or not the unit operation is in MODE 1, 2, 3, or 4 (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 interval (plus the extension allowed by SR 3.0.2), but operation was not in MODE 1, it would not constitute a failure of the SR or failure to meet the LCO. Also, no violation of SR 3.0.4 occurs when changing MODES, even with the 7 day Frequency not met, provided operation does not result in entry into MODE 1.

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

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-6

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
--- **- NOTE -** Not required to be met in MODES 3 and 4. ---	
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 or 4 (the assumed Applicability of the associated LCO is MODES 1, 2, 3, and 4). 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 MODES 3 and 4, 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 MODES 3 or 4, 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 With the reactor steam dome pressure < { } MPa gauge ({ } psig) or core flow < { }% rated core flow:

THERMAL POWER shall be ≤ { } RTP.

2.1.1.2 With the reactor steam dome pressure ≥ { } MPa gauge ({ } psig) and core flow ≥ { }% rated core flow:

Greater than 99.9% of the fuel rods in the core would be expected to avoid boiling transition.

2.1.1.3 Reactor vessel water level shall be greater than the top of active irradiated fuel.

2.1.2 Reactor Coolant System Pressure SL

Reactor steam dome pressure shall be ≤ {9.211} MPa gauge ({1336} psig).

2.2 SL VIOLATIONS

With any SL violation, the following actions shall be completed within 2 hours:

2.2.1 Restore compliance with all SLs; and

2.2.2 Insert all insertable control rods.

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

LCO 3.0.1

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

LCO 3.0.2

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

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

LCO 3.0.3

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

a. MODE 2 within 7 hours;

b. MODE 3 within 13 hours;

c. MODE 4 within 25 hours; and

d. MODE 5 within 37 hours.

Exceptions to this Specification are stated in the individual Specifications.

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

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

LCO 3.0.4

When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made:

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time;

LCO Applicability

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

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

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

LCO 3.0.5

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

LCO 3.0.6

When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered. Only the support system LCO ACTIONS are required to be entered. This is an exception to LCO 3.0.2 for the supported system. In this event, an evaluation shall be performed in accordance with Specification 5.5.8, "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 in 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 Operations LCOs in Section 3.10 allow specified Technical Specifications (TS) requirements to be changed to permit performance of special tests and operations. Unless otherwise specified, all other TS requirements remain unchanged. Compliance with Special Operations

LCO Applicability

LCOs is optional. When a Special Operations LCO is desired to be met but is not met, the ACTIONS of the Special Operations LCO shall be met. When a Special Operations 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.

3.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

SR 3.0.1	SRs shall be met during the MODES or other specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR. Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LCO except as provided in SR 3.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.
SR 3.0.2	The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met. For Frequencies specified as “once,” the above interval extension does not apply. If a Completion Time requires periodic performance on a “once per . . .” basis, the above Frequency extension applies to each performance after the initial performance. Exceptions to this Specification are stated in the individual Specifications.
SR 3.0.3	If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater. This delay period is permitted to allow performance of the Surveillance. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours and the risk impact shall be managed. If the Surveillance is not performed within the delay period, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered. When the Surveillance is performed within the delay period and the Surveillance is not met, the LCO must immediately be declared not met, and the applicable Conditions must be entered.

SR Applicability

SR 3.0.4	Entry into a MODE or other specified condition in the Applicability of an LCO shall only be made when the LCO's Surveillances have been met within their Specified Frequency, except as provided by SR 3.0.3. When an LCO is not met due to Surveillances not having been met, entry into a MODE or other specified condition in the Applicability shall only be made in accordance with LCO 3.0.4. This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

3.1 REACTIVITY CONTROL SYSTEMS

3.1.1 SHUTDOWN MARGIN (SDM)

LCO 3.1.1 SDM shall be:

a. ≥ {0.38}% Δk/k, with the highest worth control rod or rod pair analytically determined; or

b. ≥ {0.28}% Δk/k, with the highest worth control rod or rod pair determined by test.

APPLICABILITY: MODES 1, 2, 3, 4, 5, and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SDM not within limits in MODE 1 or 2.	A.1 Restore SDM to within limits.	6 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3.	12 hours
C. SDM not within limits in MODE 3 or 4.	C.1 Initiate action to fully insert all insertable control rods.	Immediately
D. SDM not within limits in MODE 5.	D.1 Initiate action to fully insert all insertable control rods. AND D.2 Initiate action to restore Reactor Building to OPERABLE status.	Immediately 1 hour

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. SDM not within limits in MODE 6.	E.1 Suspend CORE ALTERATIONS except for control rod insertion and fuel assembly removal.	Immediately
	AND	
	E.2 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately
	AND	
	E.3 Initiate action to restore Reactor Building to OPERABLE status.	1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.1.1	Verify SDM to be within limits.	Prior to each in vessel fuel movement during fuel loading sequence AND Once within 4 hours after criticality following fuel movement within the reactor pressure vessel or control rod replacement

3.1 REACTIVITY CONTROL SYSTEMS

3.1.2 Reactivity Anomalies

LCO 3.1.2 The reactivity difference between the monitored core k_{eff} and the predicted core k_{eff} shall be within ± 1% $\Delta k/k$.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Core reactivity difference not within limit.	A.1 Restore core reactivity difference to within limit.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.2.1	Verify core reactivity difference between the monitored core k_{eff} and the predicted core k_{eff} is within ± 1% $\Delta k/k$.	Once within 24 hours after reaching equilibrium conditions following startup after fuel movement within the reactor pressure vessel or control rod replacement AND 1000 MWD/T thereafter during operations in MODE 1

3.1 REACTIVITY CONTROL SYSTEMS

3.1.3 Control Rod OPERABILITY

LCO 3.1.3 Each control rod shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

- NOTE -
Separate Condition entry is allowed for each control rod.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One withdrawn control rod stuck.	**- NOTE -** A stuck control rod may be bypassed in the Rod Control & Information System (RC&IS) in accordance with SR 3.3.2.1.7, if required to allow continued operation.	
	A.1 Verify stuck control rod separation criteria are met.	Immediately
	AND	
	A.2 Disarm the associated control rod drive (CRD).	2 hours
	AND	
	A.3 Perform SR 3.1.3.2 and SR 3.1.3.3 for each withdrawn OPERABLE control rod.	24 hours from discovery of Condition A concurrent with THERMAL POWER greater than the low power setpoint (LPSP)
	AND	

CONDITION	REQUIRED ACTION	COMPLETION TIME
	A.4 Perform SR 3.1.1.1.	72 hours
B. Two or more withdrawn control rods stuck.	B.1 Be in MODE 3.	12 hours
C. One or more control rods inoperable for reasons other than Condition A or B.	C.1 ---------- **- NOTE -** Inoperable control rods may be bypassed in the RC&IS in accordance with SR 3.3.2.1.7, if required, to allow insertion of inoperable control rod and continued operation. ---------- Fully insert inoperable control rod. AND C.2 Disarm the associated CRD.	 3 hours 4 hours
D. ---------- **- NOTE -** Not applicable when THERMAL POWER > {10}% RTP. ---------- Two or more inoperable control rods not in compliance with the Ganged Withdrawal Sequence Restrictions (GWSR) and not separated by two or more OPERABLE control rods.	D.1 Restore compliance with GWSR. OR D.2 Restore control rod to OPERABLE status.	4 hours 4 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition A, C, or D not met. OR Nine or more control rods inoperable.	E.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.3.1	Determine the position of each control rod.	24 hours
SR 3.1.3.2	---------- **- NOTE -** Not required to be performed until 7 days after the control rod is withdrawn and THERMAL POWER is greater than the LPSP. ---------- Insert each fully withdrawn control rod two notches.	7 days
SR 3.1.3.3	---------- **- NOTE -** Not required to be performed until 31 days after the control rod is withdrawn and THERMAL POWER is greater than the LPSP. ---------- Insert each partially withdrawn control rod two notches.	31 days

SURVEILLANCE		FREQUENCY
SR 3.1.3.4	Verify each control rod scram time from fully withdrawn to {60}% rod insertion is ≤ { } seconds.	In accordance with SR 3.1.4.1, SR 3.1.4.2, SR 3.1.4.3, and SR 3.1.4.4
SR 3.1.3.5	Verify each control rod does not go to the withdrawn overtravel position.	Prior to declaring control rod OPERABLE after work on control rod or CRD System that could affect coupling

3.1 REACTIVITY CONTROL SYSTEMS

3.1.4 Control Rod Scram Times

LCO 3.1.4

a. No more than {8} OPERABLE control rods shall be "slow," in accordance with Table 3.1.4-1; and

b. No more than {2} OPERABLE control rods that are "slow" shall occupy adjacent locations.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met.	A.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

- NOTE -

During single or control rod pair scram time Surveillances, the control rod drive (CRD) pumps shall be isolated from the associated scram accumulator.

SURVEILLANCE		FREQUENCY
SR 3.1.4.1	Verify each control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ {6.55 MPaG (950 psig)}.	Prior to exceeding 40% RTP after each reactor shutdown ≥ 120 days
SR 3.1.4.2	Verify, for a representative sample, each tested control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ {6.55 MPaG (950 psig)}.	120 days cumulative operation in MODE 1

SURVEILLANCE		FREQUENCY
SR 3.1.4.3	Verify each affected control rod scram time is within the limits of Table 3.1.4-1 with any reactor steam dome pressure.	Prior to declaring control rod OPERABLE after work on control rod or CRD System that could affect scram time
SR 3.1.4.4	Verify each affected control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ {6.55 MPaG (950 psig)}.	Prior to exceeding 40% RTP after fuel movement within the affected core cell AND Prior to exceeding 40% RTP after work on control rod or CRD System which could affect scram time

Table 3.1.4-1 (page 1 of 1)
Control Rod Scram Times

- NOTES -

1. OPERABLE control rods with scram times not within the limits of this Table are considered "slow."

2. Enter applicable Conditions and Required Actions of LCO 3.1.3, "Control Rod OPERABILITY," for control rods with scram times > { } seconds to {60}% insertion. These control rods are inoperable, in accordance with SR 3.1.3.4, and are not considered "slow."

CONTROL ROD PERCENT INSERTION	SCRAM TIMES[a][b] (seconds)	
	REACTOR STEAM DOME PRESSURE[c] {6.55 MPaG (950 psig)}	REACTOR STEAM DOME PRESSURE[c] {7.239 MPaG (1050 psig)}
10	{0.34}	{0.37}
40	{0.80}	{0.96}
60	{1.15}	{1.36}
100	{2.23}	{2.95}

(a) Maximum scram time from fully withdrawn position, based on de-energization of scram pilot valve solenoids as time zero.

(b) Scram times as a function of reactor steam dome pressure, when < {6.55 MPaG (950 psig)}, are within established limits.

(c) For intermediate reactor steam dome pressures, the scram time criteria are determined by linear interpolation.

3.1 REACTIVITY CONTROL SYSTEMS

3.1.5 Control Rod Scram Accumulators

LCO 3.1.5 Each control rod scram accumulator shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

- NOTE -
Separate Condition entry is allowed for each control rod scram accumulator.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more control rod scram accumulators inoperable.	A.1 Declare the associated control rod(s) inoperable.	8 hours
B. Two or more control rod scram accumulators inoperable.	B.1 Declare the associated control rod(s) inoperable.	1 hour
C. Required Action and associated Completion Time not met.	C.1 ---------- **- NOTE -** Not applicable if all inoperable control rod scram accumulators are associated with fully inserted control rods. ---------- Place the reactor mode switch in the shutdown position.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.5.1	Verify each control rod scram accumulator pressure is ≥ {12.76 MPaG (1850 psig)}.	7 days

3.1 REACTIVITY CONTROL SYSTEMS

3.1.6 Rod Pattern Control

LCO 3.1.6 The position of OPERABLE control rods shall comply with the requirements of the Ganged Withdrawal Sequence Restrictions (GWSR).

APPLICABILITY: MODES 1 and 2 with THERMAL POWER ≤ {10}% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more OPERABLE control rod positions not in compliance with GWSR.	---------- **- NOTE -** Affected control rods may be bypassed in the Rod Control & Information System (RC&IS) in accordance with SR 3.3.2.1.7. ----------	
	A.1 Move associated control rod(s) to correct position.	8 hours
	OR	
	A.2 Declare associated control rod(s) inoperable.	8 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Nine or more OPERABLE control rod positions not in compliance with GWSR.	---------- **- NOTE -** Affected control rods may be bypassed in RC&IS in accordance with SR 3.3.2.1.7 for insertion only. ---------- B.1 Suspend withdrawal of control rods. <u>AND</u> B.2 Place the reactor mode switch in the shutdown position.	 Immediately 1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.6.1	Verify position of all OPERABLE control rods comply with GWSR.	24 hours

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Standby Liquid Control (SLC) System

LCO 3.1.7 Two SLC trains shall be OPERABLE.

APPLICABILITY: MODES 1 and 2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. [Concentration of sodium pentaborate in solution in one or more accumulators is not within limits.	A.1 Restore concentration of sodium pentaborate in solution to within limits in each accumulator.	72 hours]
B. One injection squib valve flow path inoperable in one or two trains.	B.1 Restore injection squib valve flow path(s) to OPERABLE status.	7 days
C. SLC train(s) inoperable for reasons other than Condition A or B.	C.1 Restore SLC System to OPERABLE status.	8 hours
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.7.1	Verify available volume of sodium pentaborate solution in each accumulator is ≥ 7.8 m^3 (2061 gallons).	24 hours
SR 3.1.7.2	Verify temperature of the areas containing accumulator, piping, and valves containing sodium pentaborate solution is within limits of Figure 3.1.7-1.	24 hours
SR 3.1.7.3	Verify SLC accumulator pressure is ≥ 14.72 MPa gauge (2135 psig).	24 hours
SR 3.1.7.4	--- **- NOTE -** Not required to be met for one squib charge intermittently bypassed under administrative controls. --- Verify continuity of explosive charges.	31 days
SR 3.1.7.5	Verify each SLC System manual, power-operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	31 days

SURVEILLANCE		FREQUENCY
SR 3.1.7.6	Verify the concentration of sodium pentaborate in solution is within the limits of Figure 3.1.7-1.	31 days AND Once within 24 hours after water or sodium pentaborate is added to solution AND Once within 24 hours after solution temperature is restored within limit
SR 3.1.7.7	---------- **- NOTE -** Squib actuation may be excluded. ---------- Verify SLC train actuates on an actual or simulated initiation signal.	24 months
SR 3.1.7.8	Verify flow through one flow path on one SLC train from accumulator into reactor pressure vessel.	24 months on a STAGGERED TEST BASIS for each flow path
SR 3.1.7.9	Verify sodium pentaborate enrichment is ≥ 94.0 atom percent B-10.	Prior to addition to SLC accumulator

{Figure 3.1.7-1
Sodium Pentaborate Solution Temperature/Concentration Requirements}

3.2 POWER DISTRIBUTION LIMITS

3.2.1 LINEAR HEAT GENERATION RATE (LHGR)

LCO 3.2.1 All LHGRs shall be less than or equal to the limits specified in the COLR.

APPLICABILITY: THERMAL POWER ≥ {25%} RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any LHGR not within limits.	A.1 Restore LHGR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < {25%} RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.1.1	Verify all LHGRs are less than or equal to the limits specified in the COLR.	Once within 12 hours after ≥ {25%} RTP AND 24 hours thereafter

3.2 POWER DISTRIBUTION LIMITS

3.2.2 MINIMUM CRITICAL POWER RATIO (MCPR)

LCO 3.2.2 All MCPRs shall be greater than or equal to the MCPR operating limits specified in the COLR.

APPLICABILITY: THERMAL POWER ≥ {25%} RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any MCPR not within limits.	A.1 Restore MCPR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < {25%} RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.2.1	Verify all MCPRs are greater than or equal to the limits specified in the COLR.	Once within 12 hours after ≥ {25%} RTP AND 24 hours thereafter

3.3 INSTRUMENTATION

3.3.1.1 Reactor Protection System (RPS) Instrumentation

LCO 3.3.1.1 Three RPS instrumentation channels associated with the DC and Uninterruptible AC Electrical Power Distribution Divisions required by LCO 3.8.6, "Distribution Systems – Operating," and LCO 3.8.7, "Distribution Systems – Shutdown," for each Function in Table 3.3.1.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1.1-1.

ACTIONS

- NOTE -
Separate Condition entry is allowed for each RPS instrumentation channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one required channel inoperable.	A.1 Verify instrumentation division in trip.	12 hours
B. One or more Functions with RPS trip capability not maintained.	B.1 Restore RPS trip capability.	1 hour
C. Required Actions and associated Completion Times not met.	C.1 Enter the Condition(s) referenced in Table 3.3.1.1-1 for the associated Function.	Immediately
D. As required by Required Action C.1 and referenced in Table 3.3.1.1-1.	D.1 Reduce THERMAL POWER to < {40}% RTP.	4 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. As required by Required Action C.1 and referenced in Table 3.3.1.1-1.	E.1 Reduce THERMAL POWER to < {25}% RTP.	4 hours
F. As required by Required Action C.1 and referenced in Table 3.3.1.1-1.	F.1 Be in MODE 2.	6 hours
G. As required by Required Action C.1 and referenced in Table 3.3.1.1-1.	G.1 Be in MODE 3.	12 hours
H. As required by Required Action C.1 and referenced in Table 3.3.1.1-1.	H.1 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

- NOTE -

Refer to Table 3.3.1.1-1 to determine which SRs apply for each RPS Function.

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.1	Perform CHANNEL CHECK on each required channel.	24 hours
SR 3.3.1.1.2	Perform CHANNEL FUNCTIONAL TEST on each required channel.	184 days
SR 3.3.1.1.3	Perform CHANNEL CALIBRATION on each required channel consistent with Specification 5.5.11, "Setpoint Control Program (SCP)."	24 months
SR 3.3.1.1.4	Verify the RPS RESPONSE TIME of each required channel is within limits.	24 months on a STAGGERED TEST BASIS for four channels

Table 3.3.1.1-1 (page 1 of 2)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	SETTING BASIS
1. Neutron Monitor System Input - Startup Range Neutron Monitors	2	G	SR 3.3.1.1.2	NA
	6[(a)]	H	SR 3.3.1.1.2	NA
2. Neutron Monitor System Input - Average Power Range Monitors / Oscillation Power Range Monitors	1,2	G	SR 3.3.1.1.2	NA
3. Control Rod Drive Accumulator Charging Water Header Pressure - Low	1,2	G	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.3	≥ {12.75 MPa G (1850 psig)}
	6[(a)]	H	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.3	≥ {12.75 MPa G (1850 psig)}
4. Reactor Vessel Steam Dome Pressure - High	1,2	G	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.3 SR 3.3.1.1.4	≤ 7.619 MPa G (1105 psig)
5. Reactor Vessel Water Level - Low, Level 3	1,2	G	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.3 SR 3.3.1.1.4	≥ 19.78 m (778.7 inches)
6. Reactor Vessel Water Level – High, Level 8	≥ {25}% RTP	E	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.3 SR 3.3.1.1.4	≤ 21.89 m (861.8 inches)
7. Main Steam Isolation Valve – Closure (Per Steam Line)	1	F	SR 3.3.1.1.2 SR 3.3.1.1.3 SR 3.3.1.1.4	≥ 85% open

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

Table 3.3.1.1-1 (page 2 of 2)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	SETTING BASIS
8. Drywell Pressure - High	1,2	G	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.3 SR 3.3.1.1.4	≤ 13.8kPaG (2.0 psig)
9. Suppression Pool Temperature - High	1,2	G	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.3 SR 3.3.1.1.4	≤ 48.9°C (120)°F
10. Turbine Stop Valve Closure Trip	≥ {40}% RTP	D	SR 3.3.1.1.2 SR 3.3.1.1.3 SR 3.3.1.1.4	≥ 85% open
11. Turbine Control Valve Fast Closure Trip Oil Pressure - Low	≥ {40}% RTP	D	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.3 SR 3.3.1.1.4	≥ { Mpa G (psig)}
12. Main Condenser Pressure - High	1, 2	G	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.3 SR 3.3.1.1.4	≤ { MPa G (psig)}
13. Loss of Power Generation Bus	1	F	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.3 SR 3.3.1.1.4	≥ { } V

3.3 INSTRUMENTATION

3.3.1.2 Reactor Protection System (RPS) Actuation

LCO 3.3.1.2 Three Reactor Protection System (RPS) automatic actuation divisions associated with the DC and Uninterruptible AC Electrical Power Distribution Divisions required by LCO 3.8.6, "Distribution Systems – Operating," and LCO 3.8.7, "Distribution Systems – Shutdown," shall be OPERABLE.

APPLICABILITY MODE 1 and 2,
MODE 6 with any control rod withdrawn from a core cell containing one or more fuel assemblies.

ACTIONS

- NOTE -

Separate Condition entry is allowed for each RPS automatic trip actuation division.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required RPS automatic actuation division inoperable.	A.1 Verify division in trip.	12 hours
B. RPS automatic actuation capability not maintained	B.1 Restore RPS automatic actuation capability.	1 hour
C. Required Action and associated Completion Time not met in MODE 1 or 2.	C.1 Be in MODE 3.	12 hours
D. Required Action and associated Completion Time not met in MODE 6.	D.1 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.1.2.1	Perform LOGIC SYSTEM FUNCTIONAL TEST for each required RPS automatic actuation division.	24 months on a STAGGERED TEST BASIS for four divisions
SR 3.3.1.2.2	Verify the RPS RESPONSE TIME of each required division is within limits.	24 months on a STAGGERED TEST BASIS for four divisions

3.3 INSTRUMENTATION

3.3.1.3 Reactor Protection System (RPS) Manual Actuation

LCO 3.3.1.3 Division 1 and Division 2 manual actuation channels, and Division 1 and Division 2 Reactor Mode Switch-Shutdown actuation channels shall be OPERABLE.

APPLICABILITY MODE 1 and 2,
MODE 6 with any control rod withdrawn from a core cell containing one or more fuel assemblies.

ACTIONS

- NOTE -
Separate Condition entry is allowed for each RPS manual actuation Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more manual actuation channels inoperable. <u>OR</u> One or more Reactor Mode Switch-Shutdown actuation channels inoperable.	A.1 Restore manual trip capability.	12 hours
B. Required Action and associated Completion Time not met in MODE 1 or 2.	B.1 Be in MODE 3.	12 hours
C. Required Action and associated Completion Time not met in MODE 6.	C.1 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.1.3.1	Perform CHANNEL FUNCTIONAL TEST for the manual actuation Function.	92 days
SR 3.3.1.3.2	Perform CHANNEL FUNCTIONAL TEST for the Reactor Mode Switch-Shutdown Function.	24 months

3.3 INSTRUMENTATION

3.3.1.4 Neutron Monitoring System (NMS) Instrumentation

LCO 3.3.1.4 Three NMS instrumentation divisions associated with the DC and Uninterruptible AC Electrical Power Distribution Divisions required by LCO 3.8.6, "Distribution Systems – Operating," and LCO 3.8.7, "Distribution Systems – Shutdown," for each Function in Table 3.3.1.4-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1.4-1.

ACTIONS

- NOTE -

Separate Condition entry is allowed for each NMS instrument channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with channel(s) inoperable in one required division.	A.1 Verify NMS division in trip.	12 hours
B. One or more Functions with NMS trip capability not maintained.	B.1 Restore NMS trip capability.	1 hour
C. Required Actions and associated Completion Times not met.	C.1 Enter the Condition(s) referenced in Table 3.3.1.4-1 for the associated Function.	Immediately
D. As required by Required Action C.1 and referenced in Table 3.3.1.4-1.	D.1 Be in MODE 2.	6 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. As required by Required Action C.1 and referenced in Table 3.3.1.4-1.	E.1 Be in MODE 3.	12 hours
F As required by Required Action C.1 and referenced in Table 3.3.1.4-1.	F.1 Initiate alternate method to detect and suppress thermal hydraulic instability oscillations. AND F.2 Restore required channels to OPERABLE status.	12 hours 120 days
G. As required by Required Action C.1 and referenced in Table 3.3.1.4-1.	G.1 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

- NOTE -

Refer to Table 3.3.1.4-1 to determine which SRs apply for each NMS Instrumentation Function.

SURVEILLANCE		FREQUENCY
SR 3.3.1.4.1	Perform CHANNEL CHECK on each required channel.	24 hours

SURVEILLANCE		FREQUENCY
SR 3.3.1.4.2	---------- **- NOTE -** Not required to be performed until 12 hours after THERMAL POWER ≥ 25% RTP. ---------- Verify the absolute difference between the average power range monitor (APRM) channels and the calculated power ≤ 2% RTP while operating at ≥ 25% RTP for each required channel.	7 days
SR 3.3.1.4.3	---------- **- NOTE -** For Functions 1.a, 1.b, 1.c, and 2.a not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. ---------- Perform CHANNEL FUNCTIONAL TEST on each required channel.	92 days
SR 3.3.1.4.4	Calibrate the local power range monitors on each required channel.	1000 MWD/T average core exposure
SR 3.3.1.4.5	---------- **- NOTES -** 1. For Functions 1.a, 1.b, 1.c, and 2.a not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. 2. Neutron detectors may be excluded. ---------- Perform CHANNEL CALIBRATION on each required channel consistent with Specification 5.5.11, "Setpoint Control Program (SCP)."	24 months

SURVEILLANCE		FREQUENCY
SR 3.3.1.4.6	Verify the APRM Simulated Thermal Power – High time constant is within limit for each required channel.	24 months
SR 3.3.1.4.7	---------- **- NOTE -** Neutron detectors are excluded. ---------- Verify the RPS RESPONSE TIME of each required channel is within limits.	 24 months on a STAGGERED TEST BASIS for four channels

Table 3.3.1.4-1 (page 1 of 2)
Neutron Monitoring System (NMS) Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	SETTING BASIS
1. Startup Range Neutron Monitors (SRNM)				
a. Neutron Flux - High	2	E	SR 3.3.1.4.1 SR 3.3.1.4.3 SR 3.3.1.4.5 SR 3.3.1.4.7	≤ 45% RTP
	6[(a)]	G	SR 3.3.1.4.1 SR 3.3.1.4.3 SR 3.3.1.4.5 SR 3.3.1.4.7	≤ { }% RTP
b. Neutron Flux - Short Period	2	E	SR 3.3.1.4.1 SR 3.3.1.4.3 SR 3.3.1.4.5 SR 3.3.1.4.7	≥ 10 second period
c. Inop	2	E	SR 3.3.1.4.3	N/A
	6[(a)]	G	SR 3.3.1.4.3	N/A

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

Table 3.3.1.4-1 (page 2 of 2)
Neutron Monitoring System (NMS) Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	CONDITIONS REFERENCED FROM REQUIRED ACTION E.1	SURVEILLANCE REQUIREMENTS	SETTING BASIS
2. Average Power Range Monitors				
a. Fixed Neutron Flux - High, Setdown	2	E	SR 3.3.1.4.1 SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.5 SR 3.3.1.4.7	≤ 15% RTP
b. APRM Simulated Thermal Power - High	1	D	SR 3.3.1.4.1 SR 3.3.1.4.2 SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.5 SR 3.3.1.4.6 SR 3.3.1.4.7	≤ 115% RTP
c. Fixed Neutron Flux - High	1	D	SR 3.3.1.4.1 SR 3.3.1.4.2 SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.5 SR 3.3.1.4.7	≤ 125% RTP
d. Inop	1,2	E	SR 3.3.1.4.3	N/A
3. Oscillation Power Range Monitor				
{Period-Based Trip}	1	F	SR 3.3.1.4.3 SR 3.3.1.4.5 SR 3.3.1.4.7	{Later}

3.3 INSTRUMENTATION

3.3.1.5 Neutron Monitoring System (NMS) Automatic Actuation

LCO 3.3.1.5 Three NMS automatic actuation divisions associated with the DC and Uninterruptible AC Electrical Power Distribution Divisions required by LCO 3.8.6, "Distribution Systems – Operating," and LCO 3.8.7, "Distribution Systems – Shutdown," for the Functions in Table 3.3.1.5-1 shall be OPERABLE.

APPLICABILITY According to Table 3.3.1.5-1.

ACTIONS

- NOTE -
Separate Condition entry is allowed for each NMS automatic actuation division.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one required division inoperable.	A.1 Verify division in trip.	12 hours
B. One or more Functions with NMS actuation capability lost.	B.1 Restore NMS actuation capability.	1 hour
C. Required Actions and associated Completion Times of Condition A or B not met.	C.1 Enter the Condition referenced in Table 3.3.1.5-1 for the associated actuation Function.	Immediately
D. As required by Required Action C.1 and referenced in Table 3.3.1.5-1.	D.1 Be in MODE 3.	12 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. As required by Required Action C.1 and referenced in Table 3.3.1.5-1.	E.1 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.1.5.1	Perform LOGIC SYSTEM FUNCTIONAL TEST for each required division.	24 months on a STAGGERED TEST BASIS for four divisions
SR 3.3.1.5.2	Verify the RPS RESPONSE TIME of each required division is within limits.	24 months on a STAGGERED TEST BASIS for four divisions

Table 3.3.1.5 -1 (page 1 of 1)
Neutron Monitoring System (NMS) Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1
1. Startup Range Neutron Monitors (SRNM)	2	D
	6[(a)]	E
2. Average Power Range Monitors	1, 2	D
3. Oscillation Power Range Monitors	1	D

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

3.3 INSTRUMENTATION

3.3.1.6 Startup Range Neutron Monitor (SRNM) Instrumentation

LCO 3.3.1.6 The SRNM instrumentation in Table 3.3.1.6-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1.6-1.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required SRNMs inoperable in MODE 3, 4, or 5.	A.1 Fully insert all insertable control rods.	1 hour
	AND	
	A.2 Place reactor mode switch in the shutdown position.	1 hour
B. One or more required SRNMs inoperable in MODE 6.	B.1 Suspend CORE ALTERATIONS except for control rod insertion.	Immediately
	AND	
	B.2 Initiate action to insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

- NOTE -

Refer to Table 3.3.1.6-1 to determine which SRs apply for each applicable MODE or other specified conditions.

SURVEILLANCE		FREQUENCY
SR 3.3.1.6.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.1.6.2	**- NOTES -** 1. Only required to be met during CORE ALTERATIONS. 2. One SRNM may be used to satisfy more than one of the following. Verify an OPERABLE SRNM detector is located in: a. The fueled region; b. The core quadrant where CORE ALTERATIONS are being performed when the associated SRNM is included in the fueled region; and c. A core quadrant adjacent to where CORE ALTERATIONS are being performed, when the associated SRNM is included in the fueled region.	12 hours
SR 3.3.1.6.3	Perform CHANNEL CHECK.	24 hours

SURVEILLANCE		FREQUENCY
SR 3.3.1.6.4	---------- **- NOTE -** Not required to be met with less than or equal to four fuel assemblies adjacent to the SRNM and no other fuel assemblies in the associated core quadrant. ---------- Verify count rate is ≥ {3.0} cps {and if special movable detectors are being used in place of SRNM detectors verify} a signal to noise ratio ≥ {2:1}.	12 hours during CORE ALTERATIONS <u>AND</u> 24 hours
SR 3.3.1.6.5	Perform CHANNEL FUNCTIONAL TEST.	7 days
SR 3.3.1.6.6	Perform CHANNEL FUNCTIONAL TEST.	31 days
SR 3.3.1.6.7	---------- **- NOTE -** Neutron detectors may be excluded. ---------- Perform CHANNEL CALIBRATION.	24 months

Table 3.3.1.6-1 (page 1 of 1)
Startup Range Neutron Monitor Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS
1. Startup Range Neutron Monitor	3, 4, 5	2	SR 3.3.1.6.3 SR 3.3.1.6.4 SR 3.3.1.6.6 SR 3.3.1.6.7
	6	2[(a)(b)]	SR 3.3.1.6.1 SR 3.3.1.6.2 SR 3.3.1.6.4 SR 3.3.1.6.5 SR 3.3.1.6.7

(a) {Only one SRNM channel is required to be OPERABLE during spiral offload or reload when the fueled region includes only that SRNM detector.}

{(b) Special movable detectors may be used in place of SRNM if connected to normal SRNM circuits.}

3.3 INSTRUMENTATION

3.3.2.1 Control Rod Block Instrumentation

LCO 3.3.2.1 The control rod block instrumentation for each Function in Table 3.3.2.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.2.1-1.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Automated Thermal Limit Monitor (ATLM) channel inoperable.	---------- **- NOTE -** LCO 3.0.4.c is applicable. ---------- A.1 Restore the inoperable ATLM channel to OPERABLE status.	7 days
B. One Rod Worth Minimizer (RWM) channel inoperable.	---------- **- NOTE -** LCO 3.0.4.c is applicable. ---------- B.1 Restore the inoperable RWM channel to OPERABLE status.	7 days

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Actions and associated Completion Time of Condition A or B not met. <u>OR</u> Two ATLM channels inoperable. <u>OR</u> Two RWM channels inoperable.	C.1 Suspend control rod withdrawal.	Immediately
D. One or more Reactor Mode Switch - Shutdown Position Channels inoperable.	D.1 Suspend control rod withdrawal. <u>AND</u> D.2 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

- NOTES -

1. Refer to Table 3.3.2.1-1 to determine which SRs apply for each Control Rod Block Function.
2. When an ATLM or RWM channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains control rod block capability.

SURVEILLANCE		FREQUENCY
SR 3.3.2.1.1	**- NOTE -** Not required to be performed until one hour after THERMAL POWER is ≥ {30}% RTP. Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.2.1.2	**- NOTE -** Not required to be performed until one hour after any control rod is withdrawn in MODE 2. Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.2.1.3	**- NOTE -** Not required to be performed until one hour after THERMAL POWER is ≤ {10}% RTP. Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.2.1.4	Verify the RWM channels are not bypassed when THERMAL POWER is ≤ {10}% RTP.	24 months
SR 3.3.2.1.5	Verify the ATLM channels are not bypassed when THERMAL POWER is ≥ {30}% RTP.	24 months

SURVEILLANCE		FREQUENCY
SR 3.3.2.1.6	---------- **- NOTE -** Not required to be performed until one hour after reactor mode switch is in shutdown position. ---------- Perform CHANNEL FUNCTIONAL TEST.	24 months
SR 3.3.2.1.7	Verify the bypassing and movement of control rods required to be bypassed in the Rod Action Control Subsystem (RACS) cabinets by a second licensed operator or other qualified member of the technical staff.	Prior to and during the movement of control rods bypassed in RACS

Table 3.3.2.1-1 (page 1 of 1)
Control Rod Block Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS
1. Rod Control and Information System			
a. Automated Thermal Limit Monitor	(a)	2	SR 3.3.2.1.1 SR 3.3.2.1.5
b. Rod Worth Minimizer	1(b), 2(b)	2	SR 3.3.2.1.2 SR 3.3.2.1.3 SR 3.3.2.1.4 SR 3.3.2.1.7
2. Reactor Mode Switch - Shutdown Position	(c)	2	SR 3.3.2.1.6

(a) THERMAL POWER ≥ {30}% RTP.

(b) THERMAL POWER ≤ {10}% RTP.

(c) Reactor mode switch in the shutdown position.

3.3 INSTRUMENTATION

3.3.3.1 Post-Accident Monitoring (PAM) Instrumentation

LCO 3.3.3.1 Two channels of each Type A PAM Instrumentation Function shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required Type A PAM Functions with one required channel inoperable.	A.1 Restore required channel to OPERABLE status.	30 days
B. One or more required Type A PAM Functions with two required channels inoperable.	B.1 Restore one required channel to OPERABLE status.	7 days
C. Required Action and associated Completion Time not met.	C.1 Initiate action in accordance with Specification 5.6.5.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.3.1.1	Perform CHANNEL CHECK.	31 days
SR 3.3.3.1.2	Perform CHANNEL CALIBRATION.	24 months

3.3 INSTRUMENTATION

3.3.3.2 Remote Shutdown System

LCO 3.3.3.2 The Remote Shutdown System Functions shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

- NOTES -

1. LCO 3.0.4.c is 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 Function to OPERABLE status.	30 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.3.2.1	Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	31 days
SR 3.3.3.2.2	Verify each required control circuit is capable of performing its intended function.	24 months
SR 3.3.3.2.3	Perform CHANNEL CALIBRATION.	24 months

3.3 INSTRUMENTATION

3.3.4.1 Reactor Coolant System (RCS) Leakage Detection Instrumentation

LCO 3.3.4.1 The following RCS leakage detection instrumentation shall be OPERABLE:

a. Drywell floor drain high conductivity water (HCW) sump monitoring system;

b. Particulate channel of the drywell fission product monitoring system; and

c. Drywell air coolers condensate flow monitoring system.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drywell floor drain HCW sump monitoring system inoperable.	A.1 Restore drywell floor drain HCW sump monitoring system to OPERABLE status.	30 days
B. Drywell fission product monitoring system particulate channel inoperable.	B.1 Analyze samples of drywell atmosphere.	Once per 12 hours
C. Drywell air coolers condensate flow monitoring systems inoperable.	---------- **- NOTE -** Not applicable when the drywell fission product monitoring system particulate channel is inoperable. ----------	
	C.1 Perform SR 3.3.4.1.1.	8 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Drywell fission product monitoring system particulate channel inoperable. AND Drywell air coolers condensate flow monitoring system inoperable.	D.1 Restore drywell fission product monitoring system particulate channel to OPERABLE status. OR D.2 Restore drywell air cooler condensate flow rate monitoring system to OPERABLE status.	30 days 30 days
E. Required Action and associated Completion Time of Condition A, B, C or D not met. OR All required LEAKAGE detection systems inoperable.	E.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.4.1.1	Perform CHANNEL CHECK of drywell fission product monitoring system particulate channel.	12 hours
SR 3.3.4.1.2	Perform CHANNEL FUNCTIONAL TEST of required leakage detection instrumentation.	31 days
SR 3.3.4.1.3	Perform CHANNEL CALIBRATION of required leakage detection instrumentation.	24 months

3.3 INSTRUMENTATION

3.3.5.1 Emergency Core Cooling System (ECCS) Instrumentation

LCO 3.3.5.1 Three Emergency Core Cooling System (ECCS) instrumentation channels associated with the DC and Uninterruptible AC Electrical Power Distribution Divisions required by LCO 3.8.6, "Distribution Systems – Operating," and LCO 3.8.7, "Distribution Systems – Shutdown," for each Function in Table 3.3.5.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.5.1-1.

ACTIONS

- NOTE -
Separate Condition entry is allowed for each ECCS instrumentation channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one required channel inoperable.	A.1 Restore channel to OPERABLE status.	12 hours
B. One or more Functions with ECCS actuation capability not maintained.	B.1 Restore ECCS actuation capability.	1 hour
C. Required Actions and associated Completion Times not met.	C.1 Declare associated ECCS components inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

- NOTE -

Refer to Table 3.3.5.1-1 to determine which SRs apply for each ECCS Instrumentation Function.

SURVEILLANCE		FREQUENCY
SR 3.3.5.1.1	Perform CHANNEL CHECK on each required channel.	24 hours
SR 3.3.5.1.2	Perform CHANNEL FUNCTIONAL TEST on each required channel.	184 days
SR 3.3.5.1.3	Perform CHANNEL CALIBRATION on each required channel consistent with Specification 5.5.11, "Setpoint Control Program (SCP)."	24 months
SR 3.3.5.1.4	Verify ECCS RESPONSE TIME of each required channel is within limits.	24 months on a STAGGERED TEST BASIS for four channels

Table 3.3.5.1-1 (page 1 of 1)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	SETTING BASIS
1. Reactor Vessel Water Level – Low, Level 1	1,2,3,4,5,6[(a)]	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4	≥ 11.50 m (452.8 inches)
2. Reactor Vessel Water Level – Low, Level 0.5	1,2,3,4	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.4	≥ 8.45 m (332.7 inches)

(a) Except with the new fuel pool gate removed and water level ≥ 7.01 meters (23.0 feet) over the top of the reactor pressure vessel flange.

3.3 INSTRUMENTATION

3.3.5.2 Emergency Core Cooling System (ECCS) Actuation

LCO 3.3.5.2 Three Emergency Core Cooling System (ECCS) actuation divisions associated with the DC and Uninterruptible AC Electrical Power Distribution Divisions required by LCO 3.8.6, "Distribution Systems – Operating," and LCO 3.8.7, "Distribution Systems – Shutdown," for each Function in Table 3.3.5.2-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.5.2-1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one required actuation division inoperable.	A.1 Restore inoperable division to OPERABLE status.	12 hours
B. One or more Functions with two or more required actuation divisions inoperable.	B.1 Restore ECCS actuation capability to associated ECCS components.	1 hour
C. Required Actions and associated Completion Time not met.	C.1 Declare associated ECCS components inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.5.2.1	Perform LOGIC SYSTEM FUNCTIONAL TEST for each required division.	24 months on a STAGGERED TEST BASIS for four divisions
SR 3.3.5.2.2	Verify the ECCS RESPONSE TIME of each required division is within limits.	24 months on a STAGGERED TEST BASIS for four divisions

Table 3.3.5.2-1 (page 1 of 1)
Emergency Core Cooling System Actuation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS
1. Automatic Depressurization System (ADS)	1,2,3,4
2. Gravity–Driven Cooling System (GDCS) Injection Lines	1,2,3,4,5,6[(a)]
3. Gravity—Driven Cooling System (GDCS) Equalizing Lines	1,2,3,4
4. Standby Liquid Control (SLC)	1,2

(a) Except with the new fuel pool gate removed and water level ≥ 7.01 meters (23.0 feet) over the top of the reactor pressure vessel flange.

3.3 INSTRUMENTATION

3.3.5.3 Isolation Condenser System (ICS) Instrumentation

LCO 3.3.5.3 Three ICS instrumentation channels associated with the DC and Uninterruptible AC Electrical Power Distribution Divisions required by LCO 3.8.6, "Distribution Systems – Operating," and LCO 3.8.7, "Distribution Systems – Shutdown," for the Functions in Table 3.3.5.3-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.5.3-1.

ACTIONS

- NOTE -

Separate Condition entry is allowed for each ICS instrumentation channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one required channel inoperable.	A.1 Verify instrumentation division in trip.	12 hours
B. One or more Functions with ICS actuation capability not maintained.	B.1 Restore ICS actuation capability.	1 hour
C. Required Actions and associated Completion Times not met.	C.1 Declare associated ICS components inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

- NOTES -

Refer to Table 3.3.5.3-1 to determine which SRs apply for each ICS Function.

SURVEILLANCE		FREQUENCY
SR 3.3.5.3.1	Perform CHANNEL CHECK on each required channel.	24 hours
SR 3.3.5.3.2	Perform CHANNEL FUNCTIONAL TEST on each required channel.	184 days
SR 3.3.5.3.3	Perform CHANNEL CALIBRATION on each required channel consistent with Specification 5.5.11, "Setpoint Control Program (SCP)."	24 months
SR 3.3.5.3.4	Perform ICS RESPONSE TIME TEST on each required channel.	24 months on a STAGGERED TEST BASIS for four channels

Table 3.3.5.3-1 (page 1 of 1)
Isolation Condenser System (ICS) Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	SETTING BASIS
1.	Reactor Vessel Steam Dome Pressure - High	1, 2, 3[(a)], 4[(a)]	SR 3.3.5.3.1 SR 3.3.5.3.2 SR 3.3.5.3.3 SR 3.3.5.3.4	≤ 7.447MPaG (1080) psig
2.	Reactor Vessel Water Level – Low, Level 2	1, 2, 3[(a)], 4[(a)]	SR 3.3.5.3.1 SR 3.3.5.3.2 SR 3.3.5.3.3 SR 3.3.5.3.4	≥ 16.05 m (631.9) inches
3.	Reactor Vessel Water Level – Low, Level 1	1, 2, 3[(a)], 4[(a)]	SR 3.3.5.3.1 SR 3.3.5.3.2 SR 3.3.5.3.3 SR 3.3.5.3.4	≥ 11.50 m (452.8) inches
4.	Main Steam Isolation Valve – Closure	1	SR 3.3.5.3.1 SR 3.3.5.3.2 SR 3.3.5.3.3 SR 3.3.5.3.4	≥ 92% open
5.	Loss of Power Generation Bus	1	SR 3.3.5.3.1 SR 3.3.5.3.2 SR 3.3.5.3.3 SR 3.3.5.3.4	≥ { } V

(a) When < 2 hours since reactor was critical.

3.3 INSTRUMENTATION

3.3.5.4 Isolation Condenser System (ICS) Actuation

LCO 3.3.5.4 Three ICS actuation logic divisions associated with the DC and Uninterruptible AC Electrical Power Distribution Divisions required by LCO 3.8.6, "Distribution Systems – Operating," and LCO 3.8.7, "Distribution Systems – Shutdown," shall be OPERABLE.

APPLICABILITY: MODES 1 and 2,
MODES 3 and 4 when < 2 hours since reactor was critical.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required division inoperable.	A.1 Restore inoperable division to OPERABLE status.	12 hours
B. ICS actuation capability not maintained.	B.1 Restore ICS actuation capability.	1 hour
C. Required Actions and associated Completion Time not met.	C.1 Declare associated ICS train inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.5.4.1	Perform LOGIC SYSTEM FUNCTIONAL TEST for each required division.	24 months on a STAGGERED TEST BASIS for four divisions
SR 3.3.5.4.2	Verify the ICS RESPONSE TIME of each required division is within limits.	24 months on a STAGGERED TEST BASIS for four divisions

3.3 INSTRUMENTATION

3.3.6.1 Main Steam Isolation Valve (MSIV) Instrumentation

LCO 3.3.6.1 Three MSIV instrumentation channels associated with the DC and Uninterruptible AC Electrical Power Distribution Divisions required by LCO 3.8.6, "Distribution Systems – Operating," for the trip Functions in Table 3.3.6.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.6.1-1.

ACTIONS

- NOTES -

1. Penetration flow paths may be unisolated intermittently under administrative controls.
2. Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one required channel inoperable.	A.1 Verify instrumentation division in trip.	12 hours
B. One or more Functions with MSIV isolation capability not maintained.	B.1 Restore MSIV isolation capability.	1 hour
C. Required Action and associated Completion Times of Condition A or B not met.	C.1 Enter the Condition(s) referenced in Table 3.3.6.1-1 for the associated Function.	Immediately
D. As required by Required Action C.1 and referenced in Table 3.3.6.1-1.	D.1 Be in MODE 2.	6 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. As required by Required Action C.1 and referenced in Table 3.3.6.1-1.	E.1 Declare associated MSIV(s) inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

- NOTE -

Refer to Table 3.3.6.1-1 to determine which SRs shall be performed for each isolation Function.

SURVEILLANCE		FREQUENCY
SR 3.3.6.1.1	Perform CHANNEL CHECK on each required channel.	24 hours
SR 3.3.6.1.2	Perform CHANNEL FUNCTIONAL TEST on each required channel.	184 days
SR 3.3.6.1.3	Perform CHANNEL CALIBRATION on each required channel consistent with Specification 5.5.11, "Setpoint Control Program (SCP)."	24 months
SR 3.3.6.1.4	Verify the ISOLATION SYSTEM RESPONSE TIME for each required channel is within limits.	24 months on a STAGGERED TEST BASIS for four channels

Table 3.3.6.1-1 (page 1 of 1)
MSIV Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	SETTING BASIS
1. Reactor Vessel Water Level - Low, Level 2	1,2,3,4	E	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.4	≥ 16.05 m (631.9 inches)
2. Reactor Vessel Water Level - Low, Level 1	1,2,3,4	E	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.4	≥ 11.50 m (452.8 inches)
3. Main Steam Line Pressure - Low	1	D	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.4	≥ {5.17 MPaG (750 psig)}
4. Main Steam Line Flow - High (Per Steam Line)	1,2,3,4	E	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.4	≤ {140}%
5. Condenser Pressure – High	1,2[(a)],3[(a)],4[(a)]	E	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.4	≤ { MPaG (psig)}
6. Main Steam Tunnel Ambient Temperature - High	1,2,3,4	E	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.4	≤ { °C (°F)}
7. Main Steam Turbine Area Ambient Temperature - High	1,2,3,4	E	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.4	≤ { °C (°F)}

{(a) With any turbine stop valve not closed.}

3.3 INSTRUMENTATION

3.3.6.2 Main Steam Isolation Valve (MSIV) Actuation

LCO 3.3.6.2 Three MSIV actuation divisions associated with the DC and Uninterruptible AC Electrical Power Distribution Divisions required by LCO 3.8.6, "Distribution Systems – Operating," shall be OPERABLE.

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

ACTIONS

- NOTES -

1. Penetration flow paths may be unisolated intermittently under administrative controls.
2. Separate Condition entry is allowed for each MSIV actuation division.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One MSIV actuation division inoperable.	A.1 Verify MSIV actuation division in trip.	12 hours
B. MSIV actuation capability not maintained.	B.1 Restore MSIV actuation capability.	1 hour
C. Required Actions and associated Completion Times of Condition A or B not met.	C.1 Declare associated MSIV(s) inoperable	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.6.2.1	Perform LOGIC SYSTEM FUNCTIONAL TEST for each required division.	24 months on a STAGGERED TEST BASIS for four divisions
SR 3.3.6.2.2	Verify the ISOLATION SYSTEM RESPONSE TIME for each required division is within limits.	24 months on a STAGGERED TEST BASIS for four divisions

3.3 INSTRUMENTATION

3.3.6.3 Isolation Instrumentation

LCO 3.3.6.3 Three isolation instrumentation channels associated with the DC and Uninterruptible AC Electrical Power Distribution Divisions required by LCO 3.8.6, "Distribution Systems – Operating," for the Functions in Table 3.3.6.3-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.6.3-1.

ACTIONS

- NOTES -

1. Penetration flow paths may be unisolated intermittently under administrative controls.
2. Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one required channel inoperable.	A.1 Verify instrumentation division in trip.	12 hours
B. One or more Functions with isolation capability not maintained.	B.1 Restore isolation capability.	1 hour
C. Required Action and associated Completion Times of Condition A or B not met.	C.1 Isolate affected penetration flowpath(s).	1 hour
D. Required Action and associated Completion Time of Condition C not met for Function 4.	D.1 Be in MODE 2.	6 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition C not met for any Function, except Function 4.	E.1 Declare associated containment isolation valves inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

- NOTE -

Refer to Table 3.3.6.3-1 to determine which SRs shall be performed for each isolation Function.

SURVEILLANCE		FREQUENCY
SR 3.3.6.3.1	Perform CHANNEL CHECK on each required channel.	24 hours
SR 3.3.6.3.2	Perform CHANNEL FUNCTIONAL TEST on each required channel.	184 days
SR 3.3.6.3.3	Perform CHANNEL CALIBRATION on each required channel consistent with Specification 5.5.11, "Setpoint Control Program (SCP)."	24 months
SR 3.3.6.3.4	**- NOTE -** Radiation detectors may be excluded. Verify the ISOLATION SYSTEM RESPONSE TIME of each required channel is within limits.	24 months on a STAGGERED TEST BASIS for four channels

Table 3.3.6.3-1 (page 1 of 2)
Isolation Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	SETTING BASIS
1.	Reactor Vessel Water Level - Low, Level 2	1,2,3,4	SR 3.3.6.3.1 SR 3.3.6.3.2 SR 3.3.6.3.3 SR 3.3.6.3.4	≥ 16.05 m (631.9 inches)
2.	Reactor Vessel Water Level - Low, Level 1	1,2,3,4	SR 3.3.6.3.1 SR 3.3.6.3.2 SR 3.3.6.3.3 SR 3.3.6.3.4	≥ 11.50 m (452.8 inches)
3.	Drywell Pressure - High	1,2,3,4	SR 3.3.6.3.1 SR 3.3.6.3.2 SR 3.3.6.3.3 SR 3.3.6.3.4	{≤ kPaG (psig)}
4.	Main Steam Line Pressure - Low	1	SR 3.3.6.3.1 SR 3.3.6.3.2 SR 3.3.6.3.3 SR 3.3.6.3.4	≥ {5.17 MPaG (750 psig)}
5.	Main Steam Line Flow – High (Per Steam Line)	1,2,3,4	SR 3.3.6.3.1 SR 3.3.6.3.2 SR 3.3.6.3.3 SR 3.3.6.3.4	≤ {140}%
6.	Condenser Pressure - High	1,2[(a)],3[(a)],4[(a)]	SR 3.3.6.3.1 SR 3.3.6.3.2 SR 3.3.6.3.3 SR 3.3.6.3.4	≤ { MPaG (psig)}
7.	Main Steam Tunnel Ambient Temperature - High	1,2,3,4	SR 3.3.6.3.1 SR 3.3.6.3.2 SR 3.3.6.3.3 SR 3.3.6.3.4	≤ { °C (°F)}

(a) With any turbine stop valve not closed.

Table 3.3.6.3-1 (page 2 of 2)
Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	SETTING BASIS
8. Main Steam Turbine Area Ambient Temperature – High	1,2,3,4	SR 3.3.6.3.1 SR 3.3.6.3.2 SR 3.3.6.3.3 SR 3.3.6.3.4	≤ { °C (°F)}
9. RWCU/SDC System Differential Flow – High (Per RWCU/SDC subsystem)	1,2,3,4	SR 3.3.6.3.1 SR 3.3.6.3.2 SR 3.3.6.3.3 SR 3.3.6.3.4	≤ { kg/s (lbm/s)}
10. Isolation Condenser Steam Line Flow - High (Per Isolation Condenser)	1,2,3,4	SR 3.3.6.3.1 SR 3.3.6.3.2 SR 3.3.6.3.3 SR 3.3.6.3.4	≤ { }%
11. Isolation Condenser Condensate Return Line Flow – High (Per Isolation Condenser)	1,2,3,4	SR 3.3.6.3.1 SR 3.3.6.3.2 SR 3.3.6.3.3 SR 3.3.6.3.4	≤ { }%
12. Isolation Condenser Pool Vent Discharge Radiation - High (Per Isolation Condenser)	1,2,3,4	SR 3.3.6.3.1 SR 3.3.6.3.2 SR 3.3.6.3.3 SR 3.3.6.3.4	≤ { Bq/hr (mR/hr)}

3.3 INSTRUMENTATION

3.3.6.4 Isolation Actuation

LCO 3.3.6.4 Three isolation actuation divisions associated with the DC and Uninterruptible AC Electrical Power Distribution Divisions required by LCO 3.8.6, "Distribution Systems – Operating," for the Functions in Table 3.3.6.4-1 shall be OPERABLE.

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

ACTIONS

- NOTES -

1. Penetration flow paths may be unisolated intermittently under administrative controls.
2. Separate Condition entry is allowed for each isolation actuation division.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one or more required isolation actuation divisions inoperable.	A.1 Verify isolation actuation division in trip.	4 hours
B. Isolation actuation capability not maintained.	B.1 Restore isolation actuation capability.	1 hour
C. Required Actions and associated Completion Times of Condition A or B not met.	C.1 Isolate affected penetration flowpath(s).	1 hour
D. Required Action and associated Completion Time of Condition C not met.	D.1 Declare associated containment isolation valves inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.6.4.1	Perform LOGIC SYSTEM FUNCTIONAL TEST for each required division.	24 months on a STAGGERED TEST BASIS for four divisions
SR 3.3.6.4.2	Verify the ISOLATION SYSTEM RESPONSE TIME of each required division is within limits.	24 months on a STAGGERED TEST BASIS for four divisions

Table 3.3.6.4-1 (page 1 of 1)
Isolation Actuation

FUNCTION
1. Main Steam Line Drains
2. Reactor Water Cleanup/Shutdown Cooling System Lines
3. Isolation Condenser System Lines
4. Fission Product Sampling Lines
5. Drywell Low Conductivity Waste Sump Drain Line
6. Drywell High Conductivity Waste Sump Drain Line
7. Containment Purge and Vent Lines
8. Reactor Component Cooling System Water Lines to the Drywell Air Coolers
9. Fuel and Auxiliary Pools Cooling System Process Lines
10. Reactor Building Boundary Isolation Dampers
11. Chilled Cooling Water System
12. Process Radiation Monitoring System
13. High Pressure Nitrogen Gas Supply System

3.3 INSTRUMENTATION

3.3.7.1 Emergency Breathing Air System (EBAS) Instrumentation

LCO 3.3.7.1 Three EBAS instrumentation channels associated with the DC and Uninterruptible AC Electrical Power Distribution Divisions required by LCO 3.8.6, "Distribution Systems - Operating," and LCO 3.8.7, "Distribution Systems – Shutdown," for each Function in Table 3.3.7.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.7.1-1.

ACTIONS

- NOTE -

Separate Condition entry is allowed for each EBAS instrumentation channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one required channel inoperable.	A.1 Verify instrumentation division in trip.	12 hours
B. One or more Functions with EBAS actuation capability not maintained.	B.1 Restore EBAS actuation capability.	1 hour

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Actions and associated Completion Times not met.	C.1.1 Isolate control room habitability area (CRHA) envelope. AND	Immediately
	C.1.2 Initiate actions to place EBAS in operation. OR	Immediately
	C.2 Declare associated EBAS train(s) inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

- NOTE -

Refer to Table 3.3.7.1-1 to determine which SRs apply for each EBAS Instrumentation Function.

SURVEILLANCE		FREQUENCY
SR 3.3.7.1.1	Perform CHANNEL CHECK on each required channel.	24 hours
SR 3.3.7.1.2	Perform CHANNEL FUNCTIONAL TEST on each required channel.	184 days
SR 3.3.7.1.3	Perform CHANNEL CALIBRATION on each required channel consistent with Specification 5.5.11, "Setpoint Control Program (SCP)."	24 months

Table 3.3.7.1-1 (page 1 of 1)
Emergency Breathing Air System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	SETTING BASIS
1.	Control Room Air Intake Radiation – High (per train)	1, 2, 3, 4, 5[(a)(b)], 6[(a)(b)]	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.3	≤ { } Bq/hr ({ } mR/hr)
2.	Emergency Filter Unit (EFU) Air Flow - Low (per train)	1, 2, 3, 4, 5[(a)(b)], 6[(a)(b)]	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.3	≤ { } l/s ({ } cfm)
3.	EFU Outlet Radiation – High (per train)	1, 2, 3, 4, 5[(a)(b)], 6[(a)(b)]	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.3	≤ { } Bq/hr ({ } mR/hr)
4.	Control Room Habitability Area (CRHA) Envelope Isolation Signal to EBAS (per CRHA isolation damper)	1, 2, 3, 4, 5[(a)(b)], 6[(a)(b)]	SR 3.3.7.1.2	N/A

(a) During movement of {recently} irradiated fuel assemblies in the reactor building or fuel building,

(b) During operations with a potential for draining the reactor vessel (OPDRVs).

3.3 INSTRUMENTATION

3.3.7.2 Emergency Breathing Air System (EBAS) Actuation

LCO 3.3.7.2 Three EBAS actuation divisions associated with the DC and Uninterruptible AC Electrical Power Distribution Divisions required by LCO 3.8.6, "Distribution Systems - Operating," and LCO 3.8.7, "Distribution Systems – Shutdown," shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4,
During movement of {recently} irradiated fuel assemblies in the reactor building or fuel building,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One required division inoperable.	A.1	Restore inoperable division to OPERABLE status.	12 hours
B. EBAS actuation capability not maintained.	B.1	Restore EBAS actuation capability.	1 hour
C. Required Actions and associated Completion Times not met.	C.1.1	Isolate control room habitability area (CRHA) envelope.	Immediately
		AND	
	C.1.2	Initiate actions to place EBAS in operation.	Immediately
	OR		
	C.2	Declare associated EBAS train(s) inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.7.2.1	Perform LOGIC SYSTEM FUNCTIONAL TEST for each required division.	24 months on a STAGGERED TEST BASIS for four divisions

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.1 Safety Relief Valves (SRVs)

LCO 3.4.1 The safety mode of four SRVs shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required SRV inoperable.	A.1 Restore required SRV to OPERABLE status.	14 days
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3.	12 hours
C. Two or more required SRVs inoperable.	C.1 Be in MODE 3 AND C.2 Be in MODE 5.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.1.1	Verify the safety function lift setpoints of the required SRVs are within ± {0.8}% of the established limits. Following testing, lift settings shall be within ± {0.8}% of the established limits.	In accordance with Inservice Testing Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.2 RCS Operational LEAKAGE

LCO 3.4.2 RCS operational LEAKAGE shall be limited to:

a. No pressure boundary LEAKAGE;

b. ≤ 19 L/min (5 gpm) unidentified LEAKAGE; and

c. ≤ 114 L/min (30 gpm) total LEAKAGE averaged over the previous 24-hour period.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RCS LEAKAGE not within limits for reasons other than pressure boundary LEAKAGE.	A.1 Reduce LEAKAGE to within limits.	4 hours
B. Required Action and associated Completion Time of Condition A not met. OR Pressure boundary LEAKAGE exists.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.2.1	Verify RCS unidentified and total LEAKAGE are within limits.	12 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.3 RCS Specific Activity

LCO 3.4.3 The specific activity of the reactor coolant shall be limited to DOSE EQUIVALENT I-131 specific activity ≤ 7400 Bq/gm (0.2 µCi/gm).

APPLICABILITY: MODE 1,
MODES 2, 3 and 4 with any main steam line not isolated.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Reactor coolant specific activity > 7400 Bq/gm (0.2 µCi/gm) and ≤ 148,000 Bq/gm (4.0 µCi/gm) DOSE EQUIVALENT I-131.	---------- **- NOTE -** LCO 3.0.4.c is applicable. ----------	
	A.1 Determine DOSE EQUIVALENT I-131.	Once per 4 hours
	AND	
	A.2 Restore DOSE EQUIVALENT I-131 to within limits.	48 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Determine DOSE EQUIVALENT I-131.	Once per 4 hours
	AND	
OR	B.2 Isolate all main steam lines.	12 hours
Reactor coolant specific activity > 148,000 Bq/gm (4.0 µCi/gm) DOSE EQUIVALENT I-131.		

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.3.1	---------- **- NOTE -** Only required to be performed in MODE 1. ---------- Verify reactor coolant DOSE EQUIVALENT I-131 specific activity is ≤ 7400 Bq/gm (0.2 μCi/gm).	7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.4 RCS Pressure and Temperature (P/T) Limits

LCO 3.4.4 RCS pressure, RCS temperature, and RCS heatup and cooldown rates shall be maintained within the limits specified in the PTLR.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
---------- **- NOTE -** Required Action A.2 shall be completed whenever this Condition is entered. ---------- A. Requirements of the LCO not met in MODES 1, 2, 3, and 4.	A.1 Restore parameter(s) to within limits. AND A.2 Determine RCS is acceptable for continued operation.	30 minutes 72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Be In MODE 5.	12 hours 36 hours

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.4.1	---------- **- NOTE -** Only required to be met during RCS heatup and cooldown operations, and RCS inservice leak and hydrostatic testing. ---------- Verify RCS pressure, RCS temperature, and RCS heatup and cooldown rates are within the limits specified in the PTLR.	30 minutes
SR 3.4.4.2	Verify RCS pressure and RCS temperature are within the criticality limits specified in the PTLR.	Once within 15 minutes prior to control rod withdrawal for the purpose of achieving criticality

SURVEILLANCE		FREQUENCY
SR 3.4.4.3	---------- **- NOTE -** Only required to be performed when tensioning the reactor vessel head bolting studs. ---------- Verify reactor vessel flange and head flange temperatures are within the limits specified in the PTLR.	30 minutes
SR 3.4.4.4	---------- **- NOTE -** Not required to be performed until 30 minutes after RCS temperature ≤ {26.7°C (80°F)} in MODE 5. ---------- Verify reactor vessel flange and head flange temperatures are within the limits specified in the PTLR.	30 minutes
SR 3.4.4.5	---------- **- NOTE -** Not required to be performed until 12 hours after RCS temperature ≤ {37.8°C (100°F)} in MODE 5. ---------- Verify reactor vessel flange and head flange temperatures are within the limits specified in the PTLR.	12 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 Reactor Steam Dome Pressure

LCO 3.4.5 The reactor steam dome pressure shall be ≤ 7.07 MPaG (1025 psig).

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Reactor steam dome pressure not within limit.	A.1 Restore reactor steam dome pressure to within limit.	15 minutes
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.5.1	Verify reactor steam dome pressure is ≤ 7.07 MPaG (1025 psig).	12 hours

3.5 Emergency Core Cooling Systems (ECCS)

3.5.1 Automatic Depressurization System (ADS) - Operating

LCO 3.5.1 The ADS function of ten Safety Relief Valves (SRVs) and eight Depressurization Valves (DPVs) shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ADS SRV inoperable.	A.1 Restore ADS SRV to OPERABLE status.	{Prior to entering MODE 2 or 4 from MODE 5}
B. One DPV inoperable.	B.1 Restore DPV to OPERABLE status.	{Prior to entering MODE 2 or 4 from MODE 5}
{C. Two ADS SRVs inoperable.	C.1 Restore one ADS SRV to OPERABLE status.	14 days}
{D. Two DPVs inoperable.	D.1 Restore one DPV to OPERABLE status.	14 days}

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. {Three} or more ADS SRVs inoperable. OR {Three} or more DPVs inoperable. OR Required Action and associated Completion Time of Condition C or D not met.	E.1 Be in MODE 3. AND E.2 Be in MODE 5.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify High Pressure Nitrogen Supply System (HPNSS) supply pressure to ADS SRVs is ≥ 1.13 MPaG (164 psig).	31 days
SR 3.5.1.2	---------- **- NOTE -** Not required to be met for one squib charge firing circuit intermittently bypassed under administrative controls. ---------- Verify continuity of explosive charges in required squib-actuated valves.	 31 days

SURVEILLANCE		FREQUENCY
SR 3.5.1.3	---------- **- NOTE -** Valve actuation may be excluded. ---------- Verify the ADS function of each SRV actuates on an actual or simulated automatic initiation signal.	24 months
SR 3.5.1.4	---------- **- NOTE -** Squib actuation may be excluded. ---------- Verify each DPV actuates on an actual or simulated automatic initiation signal.	24 months
SR 3.5.1.5	---------- **- NOTE -** Not required to be performed until 12 hours after reactor steam dome pressure is ≥ {6.2 } MPa gauge ({900} psig) and steam flow is adequate to perform the test. ---------- Verify each ADS SRV opens when manually actuated.	24 months on a STAGGERED TEST BASIS for each valve solenoid

3.5 Emergency Core Cooling Systems (ECCS)

3.5.2 Gravity-Driven Cooling System (GDCS) - Operating

LCO 3.5.2 The following GDCS subsystems shall be OPERABLE:

a. Eight branch lines of the injection subsystem; and

b. Four trains of the equalizing subsystem.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One branch line of the injection subsystem inoperable.	A.1 Restore branch line of the injection subsystem to OPERABLE status.	{Prior to entering MODE 2 or 4 from MODE 5}
B. One equalizing train inoperable.	B.1 Restore equalizing train to OPERABLE status.	{Prior to entering MODE 2 or 4 from MODE 5}
{C. Two branch lines of the injection subsystem inoperable.	C.1 Restore one branch line of the injection subsystem to OPERABLE status.	14 days}
{D. Two equalizing trains inoperable.	D.1 Restore one equalizing train to OPERABLE status.	14 days}

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. {Three} or more branch lines of the injection subsystem inoperable. OR {Three} or more equalizing trains inoperable. OR Required Action and associated Completion Time of Condition C or D not met.	E.1 Be in MODE 3. AND E.2 Be in MODE 5.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.2.1	Verify water level in each GDCS pool is ≥ 6.5 meters (21.3 feet).	12 hours
SR 3.5.2.2	---------- **- NOTE -** Not required to be met for one squib charge firing circuit intermittently bypassed under administrative controls. ---------- Verify continuity of explosive charges in required squib-actuated valves.	 31 days

SURVEILLANCE		FREQUENCY
SR 3.5.2.3	---------- **- NOTE -** Squib actuation may be excluded. ---------- Verify GDCS actuates on an actual or simulated automatic initiation signal.	24 months

3.5 Emergency Core Cooling Systems (ECCS)

3.5.3 Gravity-Driven Cooling System (GDCS) - Shutdown

LCO 3.5.3 {Four} branch lines of the GDCS injection subsystem capable of injecting a combined volume ≥ {888 m^3 (31,367 ft^3)} from the associated GDCS pools shall be OPERABLE.

APPLICABILITY: MODE 5,
MODE 6 except with the new fuel pool gate removed and water level ≥ 7.01 meters (23.0 feet) over the top of the reactor pressure vessel flange.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required branch line of the GDCS injection subsystem inoperable.	A.1 Restore required GDCS branch line to OPERABLE status.	14 days
B. LCO not met for reasons other than Condition A.	B.1 Ensure capability of two methods of injecting a combined water volume of ≥ {888 m^3 (31,367 ft^3)}.	4 hours from discovery of each Condition B entry
	AND	
	B.2 Restore compliance with the LCO.	72 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Actions and associated Completion Times of Condition A or B not met.	C.1 Initiate action to suspend operations with a potential for draining the reactor vessel (OPDRVs).	Immediately
	AND	
	C.2 Initiate action to restore Reactor Building to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.3.1	Verify available combined water volume in GDCS pools associated with OPERABLE GDCS injection branch lines is ≥ {888 m^3 (31,367 ft^3)}.	24 hours
SR 3.5.3.2	---------- **- NOTE -** Not required to be met for one squib charge intermittently bypassed under administrative controls. ---------- Verify continuity of explosive charges in required GDCS squib-actuated valves.	31 days

3.5 Emergency Core Cooling Systems (ECCS)

3.5.4 Isolation Condenser System (ICS) - Operating

LCO 3.5.4 Four ICS trains shall be OPERABLE.

APPLICABILITY: MODES 1 and 2,
MODES 3 and 4 when < 2 hours since reactor was critical.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ICS train inoperable.	A.1 Restore inoperable ICS train to OPERABLE status.	14 days
{B. Two ICS trains inoperable.	B.1 Restore one inoperable ICS train to OPERABLE status.	72 hours}
C. {Three} ICS trains inoperable.	C.1 Restore one inoperable ICS train to OPERABLE status.	1 hour
D. Required Action and associated Completion Time of Condition A, B, or C not met. OR Four ICS trains inoperable.	D.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.4.1	Verify each ICS train manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secure in position is in the correct position.	31 days
SR 3.5.4.2	Verify High Pressure Nitrogen Supply System (HPNSS) pressure to each nitrogen operated ICS valve is ≥ 1.13 MPa gauge (164 psig).	31 days
SR 3.5.4.3	Verify each ICS subcompartment manual isolation valve is locked open.	24 months
SR 3.5.4.4	Verify ICS actuates on an actual or simulated automatic initiation signal.	24 months

3.5 Emergency Core Cooling Systems (ECCS)

3.5.5 Isolation Condenser System (ICS) - Shutdown

LCO 3.5.5 Two ICS trains shall be OPERABLE

APPLICABILITY: MODE 3 and 4 when > 2 hours since reactor was critical,
MODE 5.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required ICS trains inoperable.	A.1 Ensure two methods capable of decay heat removal are available.	4 hours from discovery of each inoperable ICS train
B. Required Action and associated Completion Time not met.	B.1 Initiate action to restore Reactor Building to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.5.1	Verify each ICS train manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secure in position is in the correct position or can be aligned to the correct position.	31 days
SR 3.5.5.2	Verify High Pressure Nitrogen Supply System (HPNSS) pressure to each nitrogen operated ICS valve is ≥ 1.13 MPa gauge (164 psig).	31 days

SURVEILLANCE		FREQUENCY
SR 3.5.5.3	Verify required ICS pool subcompartment manual isolation valves are locked open.	24 months
SR 3.5.5.4	---------- **- NOTE –** Not required to be met in MODES 5 and 6. ---------- Verify ICS actuates on an actual or simulated automatic initiation signal.	24 months

3.6 CONTAINMENT SYSTEMS

3.6.1.1 Containment

LCO 3.6.1.1 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.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.1.1	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 3.6.1.1.2	Verify drywell to wetwell bypass leakage is less than 1 cm^2 ($A/\sqrt{K}$).	24 months <u>AND</u> 12 months with two test failures in three most recent tests

3.6 CONTAINMENT SYSTEMS

3.6.1.2 Containment Air Lock

LCO 3.6.1.2 Two containment air locks shall be OPERABLE.

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

ACTIONS

- NOTES -

1. Entry and exit are permissible to perform repairs on the affected air lock components.
2. Separate Condition entry is allowed for each air lock.
3. Enter applicable Conditions and Required Actions of LCO 3.6.1.1, “Containment,” when air lock 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.	---------- **- NOTES -** 1. Required Actions A.1, A.2, and A.3 are not applicable if both doors in the same air lock are inoperable and Condition C is entered. 2. Entry and exit are permissible under the control of a dedicated individual. ----------	
	A.1 Verify the OPERABLE door is closed in the affected air lock.	1 hour
	AND	
	A.2 Lock the OPERABLE door closed in the affected air lock.	24 hours
	AND	
	A.3 ---------- **- NOTE-** Air Lock Doors in high radiation areas may be verified locked closed by administrative means. ---------- Verify the OPERABLE door is locked closed in the affected airlock.	Once per 31 days

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One or more containment air locks inoperable for reasons other than Condition A or B.	C.1 Initiate action to evaluate containment overall leakage rate per LCO 3.6.1.1, using current air lock test results. AND C.2 Verify a door is closed in the affected air lock. AND C.3 Restore air lock to OPERABLE status.	Immediately 1 hour 24 hours
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.2.1	---------- **- NOTES -** 1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. 2. Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1.1. ---------- Perform required containment air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program.	In accordance with the Containment Leakage Rate Testing Program

SURVEILLANCE		FREQUENCY
SR 3.6.1.2.2	Verify only one door in the containment air lock can be opened at a time.	24 months

3.6 CONTAINMENT SYSTEMS

3.6.1.3 Containment Isolation Valves (CIVs)

LCO 3.6.1.3 Each CIV shall be OPERABLE.

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

ACTIONS

- NOTES -

1. Penetration flow paths may be opened intermittently under administrative controls.
2. Separate Condition entry is allowed for each penetration flow path.
3. Enter applicable Conditions and Required Actions for supported systems made inoperable by CIVs.
4. Enter applicable Conditions and Required Actions of LCO 3.6.1.1, " Containment," when CIV leakage results in exceeding overall containment leakage rate acceptance criteria in MODES 1, 2, 3, and 4.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ---------- **- NOTE -** Only applicable to penetration flow paths with two CIVs. ---------- One or more penetration flow paths with one CIV inoperable for reasons other than Condition D.	A.1 Isolate the affected penetration flow path by use of at least one closed and deactivated automatic valve, closed manual valve, check valve with flow secured, or blind flange. <u>AND</u>	4 hours except for main steam line <u>AND</u> 8 hours for main steam line

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2 Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside containment <u>AND</u> Prior to entering MODE 2, 3, or 4 from MODE 5, if containment was de-inerted while in MODE 5, if not performed within the previous 92 days, for isolation devices inside containment
B. ---------- **- NOTE -** Only applicable to penetration flow paths with two CIVs. ---------- One or more penetration flow paths with two CIVs inoperable for reasons other than Condition D.	B.1 Isolate the affected penetration flow path by use of at least one closed and deactivated automatic valve, closed manual valve, or blind flange.	1 hour

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. ---------- **- NOTE -** Only applicable to penetration flow paths with one CIV. ---------- One or more penetration flow paths with one CIV inoperable for reasons other than Condition D.	C.1 Isolate the affected penetration flow path by use of at least one closed and deactivated automatic valve, closed manual valve, or blind flange.	4 hours except for penetrations with excess flow check valves (EFCVs) and penetrations with a closed system <u>AND</u> 72 hours for penetrations with EFCVs and penetrations with a closed system
	<u>AND</u>	
	C.2 Verify the affected penetration flow path is isolated.	Once per 31 days

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One or more reactor building bypass leakage rate, {or} MSIV leakage rate, {or hydrostatically tested line leakage rate} not within limit.	D.1 Restore leakage rate to within limit.	{4 hours for hydrostatically tested line leakage {not on a closed system} <u>AND}</u> 4 hours for reactor building bypass leakage <u>AND</u> 8 hours for MSIV leakage <u>{AND</u> 72 hours for hydrostatically tested line leakage {on a closed system} }
E. Required Action and associated Completion Time of Condition A, C, or D not met in MODE 1, 2, 3, or 4.	E.1 Be in MODE 3.	12 hours
F. Required Action and associated Completion time of Condition B not met in MODE 1, 2, 3, or 4	F.1 Be in MODE 3. <u>AND</u> F.2 Be in MODE 5.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.1	---------- **- NOTE -** Not required to be met when the 500 mm (20 in) containment purge valves are open for inerting, de-inerting, pressure control, ALARA or air quality considerations for personnel entry, or Surveillances that require the valves to be open. ---------- Verify each 500 mm (20 in) containment purge valve is closed.	31 days
SR 3.6.1.3.2	---------- **- NOTE -** Not required to be met on CIVs that are open under administrative controls. ---------- 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.	31 days
SR 3.6.1.3.3	---------- **- NOTE -** Not required to be met on CIVs that are open under administrative controls. ---------- Verify each containment manual isolation 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.	Prior to entering MODE 2, 3, or 4 from MODE 5 if containment was de-inerted while in MODE 5, if not performed within the previous 92 days

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.4	Verify the isolation time of each power operated automatic CIV, except for MSIVs, is within limits.	In accordance with the Inservice Testing Program
SR 3.6.1.3.5	Verify the full closure isolation time of each MSIV is ≥ 3 seconds and ≤ 5 seconds.	24 months
SR 3.6.1.3.6	Verify each automatic CIV actuates to the isolation position on an actual or simulated isolation signal.	24 months
SR 3.6.1.3.7	Verify a representative sample of reactor instrumentation line EFCV actuate on a simulated instrument line break to restrict flow.	24 months
SR 3.6.1.3.8	Verify the leakage rate through each MSIV is ≤ {0.326 m^3/hour (11.5 scfh)} when tested at ≥ {200 kPa gauge (29 psig)}.	In accordance with the Containment Leakage Rate Testing Program
{SR 3.6.1.3.9	Verify combined leakage rate through hydrostatically tested lines that penetrate the containment is within limits.	In accordance with the Containment Leakage Rate Testing Program}
{SR 3.6.1.3.10	Verify the leakage rate for all Reactor Building bypass leakage paths, except MSIVs, is within limits.	In accordance with the Containment Leakage Rate Testing Program}

3.6 CONTAINMENT SYSTEMS

3.6.1.4 Drywell Pressure

LCO 3.6.1.4 Drywell pressure shall be {≤ 8.96 kPa gauge (1.3 psig)}.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drywell pressure not within limit.	A.1 Restore drywell pressure to within limit.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.1.4.1 Verify drywell pressure is within limit.	12 hours

3.6 CONTAINMENT SYSTEMS

3.6.1.5 Drywell Air Temperature

LCO 3.6.1.5 Drywell average air temperature shall be ≤ {46.1°C (115°F)}.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drywell average air temperature not within limit.	A.1 Restore drywell average air temperature to within limit.	8 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.5.1	Verify drywell average air temperature is within limit.	24 hours

3.6 CONTAINMENT SYSTEMS

3.6.1.6 Wetwell-to-Drywell Vacuum Breakers

LCO 3.6.1.6 Three wetwell-to-drywell vacuum breaker flow paths shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One wetwell-to-drywell vacuum breaker inoperable for opening. <u>OR</u> One wetwell-to-drywell vacuum breaker isolation valve not open.	A.1 Restore vacuum breaker flow path to OPERABLE status.	7 days
B. One wetwell-to-drywell vacuum breaker not closed. <u>OR</u> One wetwell-to-drywell vacuum breaker flow path isolation function inoperable.	B.1 Isolate the vacuum breaker flow path.	8 hours
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3.	12 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One wetwell-to-drywell vacuum breaker not closed. AND Associated wetwell-to-drywell vacuum breaker flow path isolation function inoperable.	D.1 Isolate the affected wetwell-to-drywell vacuum breaker flow path.	1 hour
E. Two wetwell-to-drywell vacuum breaker flow paths inoperable.	E.1 Restore one wetwell-to-drywell flow path to OPERABLE status.	1 hour
F. Required Action and associated Completion Time of Condition D or E not met.	F.1 Be in MODE 3. AND F.2 Be in MODE 5.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.6.1	Verify each vacuum breaker is closed.	14 days
SR 3.6.1.6.2	Verify each vacuum breaker isolation valve is open.	31 days
SR 3.6.1.6.3	Verify each vacuum breaker fully opens at ≤ 3.45 kPaD (0.5 psid).	24 months
SR 3.6.1.6.4	Perform CHANNEL CALIBRATION of each vacuum breaker flow path isolation function.	24 months

SURVEILLANCE		FREQUENCY
SR 3.6.1.6.5	Perform a system functional test of each vacuum breaker flow path isolation function.	24 months

3.6 CONTAINMENT SYSTEMS

3.6.1.7 Passive Containment Cooling System (PCCS)

LCO 3.6.1.7 Six PCCS loops shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more PCCS loops inoperable.	A.1 Restore PCCS loops to OPERABLE status.	8 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.7.1	Verify that the spectacle flanges for the vent and drain line for each PCCS loop are in the free flow position.	Prior to entering MODE 2 or 4 from MODE 5 if containment was de-inerted while in MODE 5, if not performed within the previous 92 days
SR 3.6.1.7.2	Verify each PCCS subcompartment manual isolation valve is locked open.	24 months
SR 3.6.1.7.3	Verify that both modules in each PCCS loop have an unobstructed path from the drywell inlet through the condenser tubes to the following: a. the GDCS pool through the drain line; and b. the suppression pool through the vent line.	24 months on a STAGGERED TEST BASIS for each PCCS loop

3.6 CONTAINMENT SYSTEMS

3.6.2.1 Suppression Pool Average Temperature

LCO 3.6.2.1 Suppression pool average temperature shall be:

a. ≤ 43.3°C (110°F) with THERMAL POWER > 1% of RTP, and no testing that adds heat to the suppression pool is being performed.

b. ≤ 46.1°C (115°F) with THERMAL POWER > 1% of RTP and testing that adds heat to the suppression pool is being performed.

c. ≤ 48.9°C (120°F) with THERMAL POWER ≤ 1% of RTP.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Suppression pool average temperature > 43.3°C (110°F) but ≤ 48.9°C (120°F). AND THERMAL POWER > 1% RTP. AND Not performing testing that adds heat to the suppression pool.	A.1 Verify suppression pool average temperature is ≤ 48.9°C (120°F). AND A.2 Restore suppression pool average temperature to ≤ 43.3°C (110°F).	Once per hour 24 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Reduce THERMAL POWER to ≤ 1% RTP.	12 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Suppression pool average temperature > 46.1°C (115°F). <u>AND</u> THERMAL POWER > 1% RTP. <u>AND</u> Performing testing that adds heat to the suppression pool.	C.1 Suspend all testing that adds heat to the suppression pool.	Immediately
D. Suppression pool average temperature > 48.9°C (120°F).	D.1 Place the reactor mode switch in the shutdown position. <u>AND</u> D.2 Verify suppression pool average temperature is ≤ 54.4°C (130°F).	Immediately Once per 30 minutes
E. Suppression pool average temperature > 54.4°C (130°F).	E.1 Depressurize the reactor vessel to {< 1.38 MPa gauge (200 psig)}. <u>AND</u> E.2 Be in MODE 5.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.1.1	Verify suppression pool average temperature is within the applicable limits.	24 hours

3.6 CONTAINMENT SYSTEMS

3.6.2.2 Suppression Pool Water Level

LCO 3.6.2.2 Suppression pool water level shall be ≥ 5.4 meters (213 inches) and ≤ 5.5 meters (216 inches).

APPLICABILITY: MODES 1, 2, and 3,
MODE 4, {except the pool upper water level limit is not applicable.}

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Suppression pool water level not within limits.	A.1 Restore suppression pool water level to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.2.1	Verify suppression pool water level is within limits.	24 hours

3.6 CONTAINMENT SYSTEMS

3.6.3.1 Reactor Building

LCO 3.6.3.1 The Reactor Building shall be OPERABLE.

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

ACTIONS

- NOTES -

1. Penetration flow paths may be opened intermittently under administrative controls.

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more penetration flow paths with one Reactor Building boundary isolation damper inoperable.	A.1 Isolate the affected flow path by use of at least one closed and de-activated automatic damper, closed manual damper, or blind flange. AND A.2 Verify the affected penetration flow path is isolated.	7 days Once per 31 days
B. One or more penetration flow paths with two Reactor Building boundary isolation dampers inoperable.	B.1 Isolate the affected flow path by use of at least one closed and de-activated automatic damper, closed manual damper, or blind flange.	48 hours
C. Reactor Building inoperable for reasons other than Conditions A and B.	C.1 Restore Reactor Building to OPERABLE status.	24 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.3.1.1	Verify all Reactor Building equipment hatches are closed.	31 days
SR 3.6.3.1.2	Verify one Reactor Building access door in each access opening is closed, except when the access opening is being used for entry and exit.	31 days
SR 3.6.3.1.3	Verify Reactor Building boundary isolation dampers actuate on an actual or simulated isolation signal.	24 months
SR 3.6.3.1.4	Verify Reactor Building exfiltration rate within limits.	60 months

3.7 PLANT SYSTEMS

3.7.1 Isolation Condenser (IC)/Passive Containment Cooling (PCC) Pools

LCO 3.7.1 The IC/PCC pools shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. IC/PCC pool inoperable.	A.1 Restore IC/PCC pool to OPERABLE status.	8 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.1.1	Verify water levels in the IC/PCC expansion pools are ≥ 4.8 meters (15.75 feet).	24 hours
SR 3.7.1.2	{---------- **- NOTE -** Not required to be met in MODES 3 and 4. ----------} Verify water levels in the dryer/separator pool and reactor well are ≥ 6.7 meters (22.0 feet).	 24 hours

SURVEILLANCE		FREQUENCY
SR 3.7.1.3	Verify average water temperature in IC/PCC pools is ≤ 43.3°C (110°F).	24 hours
SR 3.7.1.4	{---------- **- NOTE -** Not required to be met in MODES 3 and 4. ----------} Verify the {reactor well-to-dryer/separator pool gate is not installed or each isolation valve between the reactor well and the dryer/separator pool is locked open or opens on an actual or simulated automatic initiation signal}.	24 months
{SR 3.7.1.5	{---------- **- NOTE -** Not required to be met in MODES 3 and 4. ----------} Verify each isolation valve between the IC/PCC expansion pools and the dryer/separator pool opens on an actual or simulated automatic initiation signal.	24 months}
SR 3.7.1.6	Verify each IC and PCC pool subcompartment has an unobstructed path through moisture separator to the atmosphere.	10 years

3.7 PLANT SYSTEMS

3.7.2 Emergency Breathing Air System (EBAS)

LCO 3.7.2 Three EBAS trains shall be OPERABLE.

- NOTE -

The control room habitability area (CRHA) envelope may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, 3, and 4,
During movement of {recently} irradiated fuel assemblies in the Reactor Building (RB) or Fuel Building (FB),
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One EBAS train inoperable	A.1 Restore EBAS train to OPERABLE status.	7 days
B. EBAS trains inoperable due to inoperable CRHA envelope in MODE 1, 2, 3, or 4.	B.1 Restore CRHA envelope to OPERABLE status.	24 hours
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.	12 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A not met during movement of {recently} irradiated fuel assemblies in the RB or FB, or during OPDRVs.	---------- **- NOTE -** LCO 3.0.3 is not applicable. ---------- D.1 Suspend movement of {recently} irradiated fuel assemblies in the RB and FB. <u>AND</u> D.2 Initiate action to suspend OPDRVs.	 Immediately Immediately
E. Two or more EBAS trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.	E.1 Be in MODE 3.	12 hours
F. Two or more EBAS trains inoperable during movement of {recently} irradiated fuel assemblies in the RB or FB, or during OPDRVs.	---------- **- NOTE -** LCO 3.0.3 is not applicable. ---------- F.1 Suspend movement of {recently} irradiated fuel assemblies in the RB and FB. <u>AND</u> F.2 Initiate action to suspend OPDRVs.	 Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.2.1	Verify the compressed breathing air tanks in each EBAS train contain a total pressurized volume equivalent to ≥ {6,156,000} liters ({227,400} cubic feet) of air at Standard atmospheric temperature and pressure.	24 hours
SR 3.7.2.2	Verify each EBAS valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.7.2.3	Verify CRHA isolation dampers and EBAS automatic valves actuate on an actual or simulated actuation signal.	24 months
SR 3.7.2.4	Verify a positive pressure in the CRHA envelope during simulated or actual EBAS emergency mode operation.	60 months

3.7 PLANT SYSTEMS

3.7.3 Main Condenser Offgas

LCO 3.7.3 The gross gamma activity rate of the noble gases measured at the offgas recombiner effluent shall be ≤ 16700 MBq/s (450 mCi/second) after decay of 30 minutes.

APPLICABILITY: MODE 1,
MODES 2, 3, and 4 with any main steam line not isolated and steam jet air ejector (SJAE) in operation.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Gross gamma activity rate of the noble gases not within limit.	A.1 Restore gross gamma activity rate of the noble gases to within limit.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Isolate all main steam lines. OR B.2 Isolate SJAE.	12 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.3.1	---------- **- NOTE -** Not required to be performed until 31 days after any main steam line not isolated and SJAE in operation. ---------- Verify the gross gamma activity rate of the noble gases is ≤ 16700 MBq/s (450 mCi/second) after decay of 30 minutes.	31 days <u>AND</u> Once within 4 hours after a ≥ 50% increase in the nominal steady state fission gas release after factoring out increases due to changes in THERMAL POWER level

3.7 PLANT SYSTEMS

3.7.4 Main Turbine Bypass System

LCO 3.7.4 The Main Turbine Bypass System shall be OPERABLE.

[OR

LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)," limits for an inoperable Turbine Bypass System, as specified in the Core Operating Limits Report (COLR), are made applicable.]

APPLICABILITY: THERMAL POWER ≥ {25%} RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met.	A.1 Satisfy the requirements of the LCO.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < {25%} RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Verify one complete cycle of each main turbine bypass valve.	[31 days]
SR 3.7.4.2	Perform a system functional test.	24 months
SR 3.7.4.3	Verify the TURBINE BYPASS SYSTEM RESPONSE TIME is within limits.	24 months

3.7 PLANT SYSTEMS

3.7.5 Fuel Pool Water Level

LCO 3.7.5 The fuel pool water level shall be ≥ 7.01 m (23.0 ft) over the top of irradiated fuel assemblies seated in the spent fuel storage racks in the Reactor Building and Fuel Building.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.5.1	Verify the fuel pool water level is ≥ 7.01 m (23.0 ft) over the top of irradiated fuel assemblies seated in the storage racks.	7 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 DC Sources - Operating

LCO 3.8.1 DC Sources shall be OPERABLE to support the three Divisions of DC and Uninterruptible AC Electrical Power Distribution required by LCO 3.8.6, "Distribution Systems – Operating."

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or both required battery chargers inoperable on one required division.	A.1 Restore battery terminal voltage to greater than or equal to the minimum established float voltage.	2 hours
	AND	
	A.2 Verify battery float current ≤ {2} amps.	Once per 12 hours
	AND	
	A.3 Restore battery charger to OPERABLE status.	72 hours
B. One or more DC Sources inoperable on one required division for reasons other than Condition A. OR Required Action and associated Completion Time of Required Action A.1 or A.2 not met.	B.1 Restore DC Sources to OPERABLE status.	24 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One or more DC Sources inoperable on two or more required divisions. OR Required Action and associated Completion Time of Required Action A.3 or Condition B not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify each required battery terminal voltage is greater than or equal to the minimum established float voltage.	7 days
SR 3.8.1.2	Verify each required battery charger supplies ≥ rated amps at greater than or equal to the minimum established float voltage for ≥ {4} hours. OR Verify each required 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.	24 months

SURVEILLANCE		FREQUENCY
SR 3.8.1.3	---------- **- NOTE -** The modified performance discharge test in SR 3.8.3.6 may be performed in lieu of SR 3.8.1.3. ---------- Verify each required 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.	24 months

3.8 ELECTRICAL POWER SYSTEMS

3.8.2 DC Sources - Shutdown

LCO 3.8.2 DC Sources shall be OPERABLE to support the DC and Uninterruptible AC Electrical Power Distribution Divisions required by LCO 3.8.7, "Distribution Systems – Shutdown."

APPLICABILITY: MODES 5 and 6,
During movement of {recently} irradiated fuel assemblies in the Reactor Building (RB) or Fuel Building (FB).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required DC Sources inoperable.	A.1 Declare affected required features inoperable.	Immediately
	OR	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2.2 Suspend movement of {recently} irradiated fuel assemblies in the RB and FB.	Immediately
	AND	
	A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel.	Immediately
	AND	

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.4 Initiate action to restore required DC Sources to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.2.1	For DC Sources required to be OPERABLE the following SRs are applicable: SR 3.8.1.1 SR 3.8.1.2 SR 3.8.1.3	In accordance with applicable SRs

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Battery Parameters

LCO 3.8.3 Battery parameters shall be within limits.

APPLICABILITY: When associated DC Sources are required to be OPERABLE.

ACTIONS

- NOTE -

Separate Condition entry allowed for each battery.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two batteries on one required division with one or more battery cells float voltage < {2.07} V.	A.1 Perform SR 3.8.1.1. AND A.2 Perform SR 3.8.3.1. AND A.3 Restore affected cell voltage ≥ {2.07} V.	2 hours 2 hours 24 hours
B. One or two batteries on one required division with float current > {2} amps.	B.1 Perform SR 3.8.1.1. AND B.2 Restore battery float current to ≤ {2} amps.	2 hours 12 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
--- **- NOTE -** Required Action C.2 shall be completed if electrolyte level was below the top of plates. ---	--- **- NOTE -** Required Actions C.1 and C.2 are only applicable if electrolyte level was below the top of plates. ---	
C. One or two batteries on one required division with one or more cells electrolyte level less than minimum established design limits.	C.1 Restore electrolyte level to above top of plates. <u>AND</u> C.2 Verify no evidence of leakage. <u>AND</u> 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 required 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 required batteries in redundant required divisions with battery parameters not within limits.	E.1 Restore battery parameters to within limits.	2 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met. OR Required battery with one or more battery cell float voltage < {2.07} V and float current > {2} amps.	F.1 Declare associated battery inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	---------- **- NOTE -** Not required to be met when battery terminal voltage is less than the minimum established float voltage of SR 3.8.1.1. ---------- Verify each required battery float current is ≤ {2} amps.	7 days
SR 3.8.3.2	Verify each required battery pilot cell voltage is ≥ {2.07} V.	31 days
SR 3.8.3.3	Verify each required battery connected cell electrolyte level is greater than or equal to minimum established design limits.	31 days
SR 3.8.3.4	Verify each required battery pilot cell temperature is greater than or equal to minimum established design limits.	31 days

SURVEILLANCE		FREQUENCY
SR 3.8.3.5	Verify each required battery connected cell voltage is ≥ {2.07} V.	92 days
SR 3.8.3.6	Verify each required battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	60 months <u>AND</u> 12 months when battery shows degradation, or has reached 85% of the expected life with capacity < 100% of manufacturer's rating <u>AND</u> 24 months when battery has reached 85% of the expected life with capacity ≥ 100% of manufacturer's rating

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 Inverters - Operating

LCO 3.8.4 Inverters shall be OPERABLE to support the three Divisions of Uninterruptible AC Electrical Power Distribution required by LCO 3.8.6, "Distribution Systems – Operating."

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required division inoperable.	---------- **- NOTE -** Enter applicable Conditions and Required Actions of LCO 3.8.6, "Distribution Systems - Operating" with any Uninterruptible AC Electrical Power Distribution bus de-energized. ---------- A.1 Restore required division to OPERABLE status.	24 hours
B. Two or more required divisions inoperable. <u>OR</u> 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.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.4.1	Verify correct inverter voltage, frequency, and alignment to each required uninterruptible AC bus.	7 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 Inverters - Shutdown

LCO 3.8.5 Inverters shall be OPERABLE to support the Uninterruptible AC Electrical Power Distribution Divisions required by LCO 3.8.7, "Distribution Systems – Shutdown."

APPLICABILITY: MODES 5 and 6,
During movement of {recently} irradiated fuel assemblies in the Reactor Building (RB) or Fuel Building (FB).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required inverters inoperable.	A.1 Declare affected required feature(s) inoperable.	Immediately
	OR	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2.2 Suspend movement of {recently} irradiated fuel assemblies in the RB and FB.	Immediately
	AND	
	A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel.	Immediately
	AND	

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.4 Initiate action to restore required inverters to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.5.1	Verify correct inverter voltage, frequency, and alignment to each required uninterruptible AC bus.	7 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.6 Distribution Systems - Operating

LCO 3.8.6 Three Divisions of DC and Uninterruptible AC Electrical Power Distribution shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required division of DC Electrical Power Distribution inoperable.	A.1 Restore required division of DC Electrical Power Distribution to OPERABLE status.	24 hours
B. One required division of Uninterruptible AC Electrical Power Distribution inoperable.	B.1 Restore required division of Uninterruptible AC Electrical Power Distribution to OPERABLE status.	8 hours
C. Two or more required divisions of DC and Uninterruptible AC Electrical Power Distribution inoperable. OR 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 5.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.6.1	Verify correct breaker alignments and voltage to required DC and Uninterruptible AC Electrical Power Distribution buses.	7 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Distribution Systems - Shutdown

LCO 3.8.7 The necessary portions of DC and Uninterruptible AC Electrical Power Distribution shall be OPERABLE to support equipment required to be OPERABLE.

APPLICABILITY: MODES 5 and 6.
During movement of {recently} irradiated fuel assemblies in the Reactor Building (RB) or Fuel Building (FB).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required divisions of DC and Uninterruptible AC Electrical Power Distribution inoperable.	A.1 Declare associated supported required feature(s) inoperable.	Immediately
	OR	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2.2 Suspend movement of {recently} irradiated fuel assemblies in the RB and FB.	Immediately
	AND	
	A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel.	Immediately
	AND	

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.4 Initiate actions to restore required divisions of DC and Uninterruptible AC Electrical Power Distribution to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.7.1	Verify correct breaker alignments and voltage to required DC and Uninterruptible AC Electrical Power Distribution buses.	7 days

3.9 REFUELING OPERATIONS

3.9.1 Refueling Equipment Interlocks

LCO 3.9.1 The refueling equipment interlocks shall be OPERABLE.

APPLICABILITY: During in-vessel fuel movement with equipment associated with the interlocks.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required refueling equipment interlocks inoperable.	A.1 Suspend in-vessel fuel movement with equipment associated with the inoperable interlock(s).	Immediately
	OR	
	A.2.1 Insert a control rod withdrawal block.	Immediately
	AND	
	A.2.2 Verify all control rods are fully inserted.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.1.1	Perform a CHANNEL FUNCTIONAL TEST on each of the following required refueling equipment interlock inputs: a. All-rods-in; b. Refueling machine position; and c. Refueling machine main hoist, fuel-loaded.	7 days

3.9 REFUELING OPERATIONS

3.9.2 Refuel Position One-Rod/Rod-Pair-Out Interlock

LCO 3.9.2 The refuel position one-rod/rod-pair-out interlock shall be OPERABLE.

APPLICABILITY: MODE 6 with the reactor mode switch in the refuel position and any control rod withdrawn.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Refuel position one-rod/rod-pair-out interlock inoperable.	A.1 Suspend control rod withdrawal.	Immediately
	AND	
	A.2 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.2.1	Verify reactor mode switch locked in refuel position.	12 hours
SR 3.9.2.2	--- **- NOTE -** Not required to be performed until 1 hour after any control rod is withdrawn. --- Perform a CHANNEL FUNCTIONAL TEST.	7 days

3.9 REFUELING OPERATIONS

3.9.3 Control Rod Position

LCO 3.9.3 All control rods shall be fully inserted.

APPLICABILITY: When loading fuel assemblies into the core.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more control rods not fully inserted.	A.1 Suspend loading fuel assemblies into the core.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.3.1	Verify all control rods are fully inserted.	12 hours

3.9 REFUELING OPERATIONS

3.9.4 Control Rod Position Indication

LCO 3.9.4 One control rod "full-in" position indication channel for each control rod shall be OPERABLE.

APPLICABILITY: MODE 6.

ACTIONS

- NOTE -

Separate Condition entry is allowed for each required channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required control rod position indication channels inoperable.	A.1.1 Suspend in-vessel fuel movement.	Immediately
	AND	
	A.1.2 Suspend control rod withdrawal.	Immediately
	AND	
	A.1.3 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately
	OR	

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.1 Initiate action to fully insert the control rod associated with the inoperable position indicator. AND A.2.2 Initiate action to disarm the associated fully inserted control rod drive.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.4.1	Verify the required channel has no "full-in" indication on each control rod that is not "full-in".	Each time the control rod is withdrawn from the "full-in" position

3.9 REFUELING OPERATIONS

3.9.5 Control Rod OPERABILITY - Refueling

LCO 3.9.5 Each withdrawn control rod shall be OPERABLE.

APPLICABILITY: MODE 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more withdrawn control rods inoperable.	A.1 Initiate action to fully insert inoperable withdrawn control rods.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.5.1	---------- **- NOTE -** Not required to be performed until 7 days after any control rod is withdrawn. ---------- Verify each withdrawn control rod will insert at least two notches.	7 days
SR 3.9.5.2	Verify each withdrawn control rod scram accumulator pressure is ≥ {12.76 MPaG (1850 psig)}.	7 days

3.9 REFUELING OPERATIONS

3.9.6 Reactor Pressure Vessel (RPV) Water Level

LCO 3.9.6 RPV water level shall be ≥ 7.01 m (23.0 ft) over the top of the RPV flange.

APPLICABILITY: During movement of irradiated fuel assemblies within the RPV.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RPV water level not within limit.	A.1 Suspend movement of irradiated fuel assemblies within the RPV.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.6.1	Verify RPV water level is ≥ 7.01 m (23.0 ft) above the top of the RPV flange.	24 hours

3.9 REFUELING OPERATIONS

3.9.7 Decay Time

LCO 3.9.7 The reactor shall be subcritical for at least 24 hours.

APPLICABILITY: During movement of irradiated fuel assemblies within the reactor pressure vessel (RPV).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Reactor not subcritical for at least 24 hours.	A.1 Suspend movement of irradiated fuel assemblies within the RPV.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.7.1	Verify reactor has been subcritical for at least 24 hours.	Prior to movement of irradiated fuel assemblies within the RPV.

3.10 SPECIAL OPERATIONS

3.10.1 Inservice Leak and Hydrostatic Testing Operation

LCO 3.10.1 The average reactor coolant temperature specified in Table 1.1-1 for MODE 5 may be changed to "N/A," and operation considered not to be in MODE 3 or 4 to allow reactor coolant temperature > 93.3°C (200°F):

- For performance of an inservice leak or hydrostatic test,
- As a consequence of maintaining adequate pressure for an inservice leak or hydrostatic test, or
- As a consequence of maintaining adequate pressure for control rod scram time testing initiated in conjunction with an inservice leak or hydrostatic test,

provided the following MODE 3 LCOs are met:

a. LCO 3.3.6.3, "Isolation Instrumentation," for Functions 1 and 2 of Table 3.3.6.3-1; and

b. LCO 3.3.6.4, "Isolation Actuation," for Function 10; and

c. LCO 3.6.3.1, "Reactor Building."

APPLICABILITY: MODE 5 with average reactor coolant temperature > 93.3°C (200°F).

ACTIONS

- NOTE -
Separate Condition entry allowed for each requirement of the LCO.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more of the above requirements not met.	A.1 ---------- **- NOTE -** Required Actions to be in MODE 3 include reducing average reactor coolant temperature to ≤ 93.3°C (200°F) within 36 hours. ---------- Enter the applicable Condition of the affected LCOs.	Immediately
	OR	
	A.2.1 Suspend activities that could increase the average reactor coolant temperature or pressure.	Immediately
	AND	
	A.2.2 Reduce average reactor coolant temperature to ≤ 93.3°C (200°F).	24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.1.1	Perform the applicable SRs for the required MODE 3 LCOs.	According to the applicable SRs

3.10 SPECIAL OPERATIONS

3.10.2 Reactor Mode Switch Interlock Testing

LCO 3.10.2 The reactor mode switch position specified in Table 1.1-1 for MODES 3, 4, 5, and 6 operation may be changed to include the run, startup, and refuel position, and operation considered not to be in MODE 1 and 2 to allow testing of instrumentation associated with the reactor mode switch interlock functions, provided:

a. All control rods remain fully inserted in core cells containing one or more fuel assemblies; and

b. No CORE ALTERATIONS are in progress.

APPLICABILITY: MODES 3, 4 and 5 with the reactor mode switch in the run, startup, or refuel position,
MODE 6 with the reactor mode switch in the run or startup position.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more of the above requirements not met.	A.1 Suspend CORE ALTERATIONS except for control rod insertion.	Immediately
	AND	
	A.2 Fully insert all insertable control rods in core cells containing one or more fuel assemblies.	1 hour
	AND	

CONDITION	REQUIRED ACTION	COMPLETION TIME
	A.3.1 Place the reactor mode switch in the shutdown position.	1 hour
	OR	
	A.3.2 ---------- **- NOTE -** Only applicable in MODE 6. ----------	
	Place the reactor mode switch in the refuel position.	1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.2.1	Verify all control rods are fully inserted in core cells containing one or more fuel assemblies.	12 hours
SR 3.10.2.2	Verify no CORE ALTERATIONS are in progress.	24 hours

3.10 SPECIAL OPERATIONS

3.10.3 Control Rod Withdrawal – Shutdown

LCO 3.10.3 The reactor mode switch position specified in Table 1.1-1 for MODES 3 and 4 operation may be changed to include the refuel position, and operation considered not to be in MODE 2, to allow withdrawal of a single control rod or control rod pair, provided the following requirements are met:

a. LCO 3.9.2, "Refuel Position One-Rod/Rod-Pair-Out Interlock";

b. LCO 3.9.4, "Control Rod Position Indication";

c. All other control rods are fully inserted; and

d. 1. MODE 6 requirements for LCO 3.3.1.1 "Reactor Protection System (RPS) Instrumentation," Functions 1 and 3, of Table 3.3.1.1-1, LCO 3.3.1.2, "Reactor Protection System (RPS) Actuation," LCO 3.3.1.3, "Reactor Protection System (RPS) Manual Actuation," LCO 3.3.1.4, "Neutron Monitoring System (NMS) Instrumentation," Functions 1.a and 1.c of Table 3.3.1.4-1, LCO 3.3.1.5, "Neutron Monitoring System (NMS) Automatic Actuation," Function 1 of Table 3.3.1.5-1, and LCO 3.9.5, "Control Rod OPERABILITY – Refueling,"

<u>OR</u>

2. All other control rods in a {five-by-five} array centered on each control rod being withdrawn are disarmed, and LCO 3.1.1, "SHUTDOWN MARGIN (SDM)," MODE 6 requirements except the control rod or control rod pair to be withdrawn may be assumed to be the highest worth control rod or control rod pair.

APPLICABILITY: MODES 3 and 4 with the reactor mode switch in the refuel position.

ACTIONS

- NOTE -

Separate Condition entry allowed for each requirement of the LCO.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more of the above requirements not met.	A.1 ---------- **- NOTES -** 1. Required Actions to fully insert all insertable control rods include placing the reactor mode switch in the shutdown position 2. Only applicable if the requirement not met is a required LCO. ---------- Enter the applicable Condition of the affected LCO.	Immediately
	OR	
	A.2.1 Initiate action to fully insert all insertable control rods.	Immediately
	AND	
	A.2.2 Place the reactor mode switch in the shutdown position.	1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.3.1	Perform the applicable SRs for the required LCOs.	According to the applicable SRs

SURVEILLANCE		FREQUENCY
SR 3.10.3.2	---------- **- NOTE -** Not required to be met if SR 3.10.3.1 is satisfied for LCO 3.10.3.d.1 requirements. ---------- Verify all other control rods, other than the control rod(s) being withdrawn, in a {five-by-five} array centered on each control rod being withdrawn, are disarmed.	24 hours
SR 3.10.3.3	Verify all other control rods, other than the control rod or control rod pair being withdrawn, are fully inserted.	24 hours

3.10 SPECIAL OPERATIONS

3.10.4 Control Rod Withdrawal - Cold Shutdown

LCO 3.10.4 The reactor mode switch position specified in Table 1.1-1 for MODE 5 may be changed to include refuel position, and operation considered not to be in MODE 2, to allow withdrawal of a single control rod or control rod pair, and subsequent removal of the associated control rod drive(s) (CRD) if desired, provided the following requirements are met:

a. All other control rods are fully inserted;

b. 1. LCO 3.9.2, "Refuel Position One-Rod/Rod-Pair-Out Interlock," and LCO 3.9.4, "Control Rod Position Indication,"

<u>OR</u>

2. A control rod withdrawal block is inserted; and

c. 1. MODE 6 requirements for LCO 3.3.1.1 "Reactor Protection System (RPS) Instrumentation," Functions 1 and 3 of Table 3.3.1.1-1, LCO 3.3.1.2, "Reactor Protection System (RPS) Actuation," LCO 3.3.1.3, "Reactor Protection System (RPS) Manual Actuation," LCO 3.3.1.4, "Neutron Monitoring System (NMS) Instrumentation," Functions 1.a and 1.c of Table 3.3.1.4-1, LCO 3.3.1.5, "Neutron Monitoring System (NMS) Automatic Actuation," Function 1 of Table 3.3.1.5-1, and LCO 3.9.5, "Control Rod OPERABILITY – Refueling,"

<u>OR</u>

2. All other control rods in a {five-by-five} array centered on the control rod being withdrawn are disarmed and LCO 3.1.1, "SHUTDOWN MARGIN (SDM)," MODE 6 requirements except the single control rod or control rod pair to be withdrawn may be assumed to be the highest worth control rod or control rod pair.

APPLICABILITY: MODE 5 with the reactor mode switch in the refuel position.

ACTIONS

- NOTE -

Separate Condition entry allowed for each requirement of the LCO.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more of the above requirements not met with the affected control rod(s) insertable.	A.1 ---------- **- NOTES -** 1. Required Actions to fully insert all insertable control rods include placing the reactor mode switch in the shutdown position 2. Only applicable if the requirement not met is a required LCO. ---------- Enter the applicable Condition of the affected LCO.	Immediately
	OR	
	A.2.1 Initiate action to fully insert all insertable control rods.	Immediately
	AND	
	A.2.2 Place the reactor mode switch in the shutdown position.	1 hour

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more of the above requirements are not met with the affected control rod(s) not insertable.	B.1 Suspend withdrawal of the control rod(s) and removal of associated CRD(s).	Immediately
	AND	
	B.2.1 Initiate action to fully insert all control rods.	Immediately
	OR	
	B.2.2 Initiate action to satisfy the requirements of this LCO.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.4.1	Perform the applicable SRs for the required LCOs.	According to applicable SRs
SR 3.10.4.2	---------- **- NOTE -** Not required to be met if SR 3.10.4.1 is satisfied for LCO 3.10.4.c.1 requirements. ---------- Verify all control rods, other than the control rod(s) being withdrawn, in a {five-by-five} array centered on each control rod being withdrawn, are disarmed.	24 hours
SR 3.10.4.3	Verify all other control rods, other than the control rod or control rod pair being withdrawn, are fully inserted.	24 hours

SURVEILLANCE		FREQUENCY
SR 3.10.4.4	---------- **- NOTE -** Not required to be met if SR 3.10.4.1 is satisfied for LCO 3.10.4.b.1 requirements. ---------- Verify a control rod withdrawal block is inserted.	24 hours

3.10 SPECIAL OPERATIONS

3.10.5 Control Rod Drive (CRD) Removal - Refueling

LCO 3.10.5 The requirements of LCO 3.3.1.1, "Reactor Protection System (RPS) Instrumentation"; LCO 3.3.1.2 "Reactor Protection System (RPS) Actuation," LCO 3.3.1.3, "Reactor Protection System (RPS) Manual Actuation," LCO 3.3.1.4, "Neutron Monitoring System (NMS) Instrumentation," LCO 3.3.1.5, "Neutron Monitoring System (NMS) Automatic Actuation," LCO 3.9.1, "Refueling Equipment Interlocks"; LCO 3.9.2, "Refuel Position One-Rod/Rod-Pair-Out Interlock"; LCO 3.9.4, "Control Rod Position Indication"; and LCO 3.9.5, "Control Rod OPERABILITY - Refueling," may be suspended during MODE 6 operation to allow the removal of a single CRD or CRD pair associated with control rod(s) withdrawn from core cell(s) containing one or more fuel assemblies, provided the following requirements are met:

a. All other control rods are fully inserted;

b. All other control rods in a {five-by-five} array centered on the control rod(s) being removed are disarmed;

c. A control rod withdrawal block is inserted and LCO 3.1.1, "SHUTDOWN MARGIN (SDM)," MODE 6 requirements may be changed to allow the single control rod or control rod pair withdrawn to be assumed to be the highest worth control rod(s); and

d. No CORE ALTERATIONS are in progress.

APPLICABILITY: MODE 6 with LCO 3.9.5 not met.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more of the above requirements not met.	A.1 Suspend removal of the CRD mechanism(s).	Immediately
	AND	
	A.2.1 Initiate action to fully insert all control rods.	Immediately
	OR	
	A.2.2 Initiate action to satisfy the requirements of this LCO.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.5.1	Perform SR 3.1.1.1.	According to SR 3.1.1.1
SR 3.10.5.2	Verify all control rods, other than the control rod(s) withdrawn for the removal of the associated CRD(s), are fully inserted.	24 hours
SR 3.10.5.3	Verify all control rods, other than the control rod or control rod pair withdrawn for the removal of the associated CRD(s), in a {five-by-five} array centered on each control rod(s) withdrawn for the removal of the associated CRD(s), are disarmed.	24 hours
SR 3.10.5.4	Verify a control rod withdrawal block is inserted.	24 hours
SR 3.10.5.5	Verify no CORE ALTERATIONS are in progress.	24 hours

3.10 SPECIAL OPERATIONS

3.10.6 Multiple Control Rod Withdrawal - Refueling

LCO 3.10.6 The requirements of LCO 3.9.3, "Control Rod Position"; LCO 3.9.4, "Control Rod Position Indication"; and LCO 3.9.5, "Control Rod OPERABILITY - Refueling," may be suspended and the "full-in" position indicators may be bypassed for any number of control rods during MODE 6 operation to allow withdrawal of these control rods, removal of associated control rod drives (CRDs), or both, provided the following requirements are met:

a. The four fuel assemblies are removed from the core cells associated with each control rod or CRD to be removed;

b. All other control rods in core cells containing one or more fuel assemblies are fully inserted; and

c. Fuel assemblies shall only be loaded in compliance with an approved spiral reload sequence.

APPLICABILITY: MODE 6 with LCO 3.9.3, LCO 3.9.4, or LCO 3.9.5 not met.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more of the above requirements not met.	A.1 Suspend withdrawal of control rods and removal of associated CRDs.	Immediately
	AND	
	A.2 Suspend loading fuel assemblies.	Immediately
	AND	
	A.3.1 Initiate action to fully insert all control rods in core cells containing one or more fuel assemblies.	Immediately
	OR	
	A.3.2 Initiate action to satisfy the requirements of this LCO.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.6.1	Verify the four fuel assemblies are removed from core cells associated with each control rod or CRD removed.	24 hours
SR 3.10.6.2	Verify all other control rods in core cells containing one or more fuel assemblies are fully inserted.	24 hours

SURVEILLANCE		FREQUENCY
SR 3.10.6.3	---------- **- NOTE -** Only required to be met during fuel loading. ---------- Verify fuel assemblies being loaded are in compliance with an approved spiral reload sequence.	24 hours

3.10 SPECIAL OPERATIONS

3.10.7 Control Rod Testing - Operating

LCO 3.10.7 The requirements of LCO 3.1.6, "Rod Pattern Control," may be suspended and control rods bypassed in the Rod Control and Information System (RC&IS) as allowed by SR 3.3.2.1.7, to allow performance of SDM demonstrations, control rod scram time testing, control rod friction testing, and the Startup Test Program, provided conformance to the approved control rod sequence for the specified test is verified by a second licensed operator or other qualified member of the technical staff.

APPLICABILITY: MODES 1 and 2 with LCO 3.1.6 not met.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met.	A.1 Suspend performance of the test and exception to LCO 3.1.6.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.7.1	Verify movement of control rods is in compliance with the approved control rod sequence for the specified test, by a second licensed operator or other qualified member of the technical staff.	During control rod movement

3.10 SPECIAL OPERATIONS

3.10.8 SHUTDOWN MARGIN (SDM) Test - Refueling

LCO 3.10.8 The reactor mode switch position specified in Table 1.1-1 for MODE 6 operation may be changed to include the startup position, and operation considered not to be in MODE 2, to allow SDM testing, provided the following requirements are met:

a. MODE 2 requirements for LCO 3.3.1.1, "Reactor Protection System (RPS) Instrumentation Channels," Function 2 of Table 3.3.1.1-1, LCO 3.3.1.2, "Reactor Protection (RPS) Actuation," LCO 3.3.1.4 "Neutron Monitoring System (NMS) Instrumentation," Functions 2.a and 2.d of Table 3.3.1.4-1, and LCO 3.3.1.5, "Neutron Monitoring System (NMS) Automatic Actuation, Function 2;"

b. 1. LCO 3.3.2.1, "Control Rod Block Instrumentation," MODE 2 requirements for Function 1.b of Table 3.3.2.1-1;

<u>OR</u>

2. Conformance to the approved control rod sequence for the SDM test is verified by a second licensed operator or other qualified member of the technical staff;

c. Each withdrawn control rod shall be coupled to the associated CRD;

d. All control rod withdrawals during out-of-sequence control rod moves shall be made in notch movement mode;

e. No other CORE ALTERATIONS are in progress; and

f. MODE 2 requirements for LCO 3.6.3.1, "Reactor Building," with the Reactor Building boundary dampers isolated.

APPLICABILITY: MODE 6 with the reactor mode switch in startup position.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ----------NOTE---------- Separate Condition entry is allowed for each control rod. ---------- One or more control rods not coupled to its associated CRD.	----------NOTE---------- Inoperable control rods may be bypassed in accordance with SR 3.3.2.1.7, if required, to allow insertion of inoperable control rod and continued operation. ---------- A.1 Fully insert inoperable control rod.	3 hours
	AND	
	A.2 Disarm the associated CRD.	4 hours
B. One or more of the above requirements not met for reasons other than Condition A.	B.1 Place the reactor mode switch in the shutdown or refuel position.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.8.1	Perform the MODE 2 applicable SRs for LCO 3.3.1.1 Function 2 of Table 3.3.1.1-1, LCO 3.3.1.2, LCO 3.3.1.4, Functions 2.a and 2.d of Table 3.3.1.4-1, LCO 3.3.1.5, Function 2 of Table 3.3.1.5-1, and LCO 3.6.3.1	According to the applicable SRs
SR 3.10.8.2	---------- **- NOTE -** Not required to be met if SR 3.10.8.3 satisfied. ----------	
	Perform the MODE 2 applicable SRs for LCO 3.3.2.1, Function 1.b of Table 3.3.2.1-1.	According to the applicable SRs

SURVEILLANCE		FREQUENCY
SR 3.10.8.3	---------- **- NOTE -** Not required to be met if SR 3.10.8.2 satisfied. ---------- Verify movement of control rods is in compliance with the approved control rod sequence for the SDM test by a second licensed operator or other qualified member of the technical staff.	During control rod movement
SR 3.10.8.4	Verify no other CORE ALTERATIONS are in progress.	12 hours
SR 3.10.8.5	Verify each withdrawn control rod does not go to the withdrawn overtravel position.	Prior to satisfying LCO 3.10.8.c requirement after work on control rod or CRD system could affect coupling

4.0 DESIGN FEATURES

4.1 Site Location

[Description to be provided by the COL applicant.]

4.2 Reactor Core

4.2.1 Fuel Assemblies

The reactor shall contain 1132 fuel assemblies. Each assembly shall consist of a matrix of Zircaloy clad fuel rods with an initial composition of slightly enriched uranium dioxide (UO_2) as fuel material, and water rods. 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 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 269 cruciform shaped control rod assemblies. The control material shall be boron carbide or a combination of boron carbide and hafnium metal, as approved by the NRC.

4.3 Fuel Storage

4.3.1 Criticality

4.3.1.1 The spent fuel storage racks in the Fuel Building spent fuel storage pool and in the Reactor Building buffer pool deep pit are designed and shall be maintained with:

a. Fuel assemblies having a maximum lattice {k-infinity of {1.31} in the normal reactor core configuration at cold conditions};

b. $k_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties and biases as described in Section 9.1; and

4.0 DESIGN FEATURES

- NOTE -

Spent fuel storage rack information is to be provided by the COL applicant. Information provided here is typical.

---

c. A nominal fuel assembly center to center storage spacing of {167} mm ({6.6} inches), {with a neutron poison material between storage spaces, in the high density storage racks} in the Fuel Building spent fuel storage pool and in the Reactor Building buffer pool deep pit.

4.3.1.2 The new fuel storage racks in the Reactor Building buffer pool are designed and shall be maintained with:

a. Fuel assemblies having a maximum beginning-of-life (BOL) lattice k-infinity of 1.35 in the normal reactor core configuration at cold conditions;

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

c. A nominal fuel assembly center to center storage spacing of {167} mm ({6.6} inches){, with a neutron poison material between storage spaces, in the high density} storage racks in the buffer pool.

4.3.2 Drainage

4.3.2.1 The Fuel Building spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below {elevation }.

4.3.2.2 The Reactor Building buffer pool deep pit is designed and shall be maintained to prevent inadvertent draining of the pool below {elevation }.

4.3.3 Capacity

4.3.3.1 The Fuel Building spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than {the total number of irradiated fuel assemblies resulting from 10 calendar years of plant operation plus one full core off load of} fuel assemblies.

4.0 DESIGN FEATURES

4.3.3.2 The Reactor Building buffer pool deep pit is designed and shall be maintained with a storage capacity limited to no more than 154 fuel assemblies.

4.3.3.3 No more than {60% of the core capacity of fuel assemblies (with channels) or bundles (without channels)} may be stored in the new fuel storage racks in the Reactor Building buffer pool.

5.0 ADMINISTRATIVE CONTROLS

5.1 Responsibility

---------- **NOTE** ----------
Organizational positions listed or described in the Administrative Controls Section shall have corresponding plant-specific staff titles specified in the Final Safety Analysis Report.

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 [---------- **REVIEWER'S NOTE** ----------
The applicant must provide the plant specific title for the individual fulfilling the control room command function in place of the bracketed information.
----------]

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 FSAR;

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.

[---------- **REVIEWER'S NOTE** ----------
Two unit sites with both units shutdown or defueled require a total of three non-licensed operators for the two units.
----------]

5.2 Organization

5.2.2 Unit Staff (continued)

b. Shift crew composition may be less than the minimum requirement of 10 CFR 50.54(m)(2)(i) and 5.2.2.a and 5.2.2.f for a period of time not be 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. Administrative procedures shall be developed and implemented to limit the working hours of personnel who perform safety related functions.

   The controls shall include guidelines on working hours that ensure adequate shift coverage shall be maintained without routine heavy use of overtime.

   Any deviation from the above guidelines shall be authorized in advance by the plant manager or the plant manager's designee, in accordance with approved administrative procedures, with documentation of the basis for granting the deviation. Routine deviation from the working hour guidelines shall not be authorized.

   Controls shall be included in the procedures to require a periodic independent review be conducted to ensure that excessive hours have not been assigned.

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

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

5.0 ADMINISTRATIVE CONTROLS

5.3 Unit Staff Qualifications

[---------- **REVIEWER'S NOTE** ----------
Minimum qualifications for members of the unit staff shall be specified by use of an overall qualification statement referencing an ANSI Standard acceptable to the NRC staff or by specifying individual position qualifications. Generally, the first method is preferable; however, the second method is adaptable to those unit staffs requiring special qualification statements because of unique organizational structures.
----------]

5.3.1 Each member of the unit staff shall meet or exceed the minimum qualifications of [Regulatory Guide 1.8, Revision 3, 2000, or more recent revisions, or ANSI Standard acceptable to the NRC staff]. [The staff not covered by Regulatory Guide 1.8 shall meet or exceed the minimum qualifications of Regulations, Regulatory Guides, or ANSI Standards acceptable to NRC staff].

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

5.0 ADMINISTRATIVE CONTROLS

5.4 Procedures

[---------- **REVIEWER'S NOTE** ----------
The Applicant must provide appropriate guidance documents for procedures in place of the bracketed information.
----------]

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

a. The applicable procedures recommended in [Regulatory Guide 1.33, Revision 2, Appendix A, February 1978];

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

c. Quality assurance for effluent and environmental monitoring;

d. Fire Protection Program implementation; and

e. All programs specified in Specification 5.5.

5.0 ADMINISTRATIVE CONTROLS

5.5 Programs and Manuals

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

5.5.1 Offsite Dose Calculation Manual (ODCM)

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

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

c. Licensee initiated changes to the ODCM:

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

i. sufficient information to support the change(s) together with the appropriate analyses or evaluations justifying the change(s), and

ii. a determination that the change(s) maintain the 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;

2. Shall become effective after approval of the plant manager; and

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

5.5 Programs and Manuals

5.5.2 Primary Coolant Sources Outside Containment

This program provides controls to minimize leakage from those portions of systems outside containment that could contain highly radioactive fluids during a serious transient or accident to levels as low as practicable. The systems include the Passive Containment Cooling System, the Isolation Condenser System, the Reactor Water Cleanup System/Shutdown Cooling, the Main Steam System, the Fuel and Auxiliary Pool Cooling System, the Containment Inerting System, and the Equipment and Floor Drainage System (Lower Drywell Sumps). The program shall include the following:

a. Preventive maintenance and periodic visual inspection requirements; and

b. Integrated leak test requirements for each system at least once per 24 months.

The provisions of SR 3.0.2 are applicable.

5.5.3 Radioactive Effluent Controls Program

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

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

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

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

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

5.5 Programs and Manuals

5.5.3 Radioactive Effluent Controls Program (continued)

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

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

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

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

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

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

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

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 Programs and Manuals

5.5.4 Component Cyclic or Transient Limit

This program provides controls to track the FSAR Table 3.9-1 cyclic and transient occurrences to ensure that components are maintained within the design limits.

5.5.5 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):

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 other normal and accelerated Frequencies specified 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 Programs and Manuals

5.5.6 Explosive Gas Monitoring Program

[---------- **REVIEWER'S NOTE** ----------
Applicants incorporating unprotected outdoor liquid radioactive waste storage tanks in their design must incorporate the bracketed requirements and surveillance program for unprotected outdoor storage tanks.
----------]

This program provides controls for potentially explosive gas mixtures contained in the quantity of radioactivity fed into the offgas treatment system[and the quantity of radioactivity contained in unprotected outdoor liquid storage tanks]. The gaseous radioactivity quantities shall be determined following the methodology in Branch Technical Position (BTP) ETSB 11-5, "Postulated Radioactive Release due to Waste Gas System Leak or Failure". [The liquid radwaste quantities shall be determined in accordance with Standard Review Plan, Section 15.7.3, "Postulated Radioactive Release Due to Tank Failures."]

The program shall include:

a. The limits for concentrations of hydrogen and oxygen in the offgas treatment 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); and

b. A surveillance program to ensure that the quantity of radioactivity fed into the offgas treatment system is less than the amount that would result in a whole body exposure of ≥ 0.5 rem to any individual in an unrestricted area, in the event of an uncontrolled release.

[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 Monitoring Program surveillance frequencies.

5.5 Programs and Manuals

5.5.7 Technical Specifications (TS) Bases Control Program

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

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

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

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

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

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

d. Proposed changes that meet the criteria of 5.5.7.b 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).

5.5.8 Safety Function Determination Program (SFDP)

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

a. Provisions for cross division 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;

5.5 Programs and Manuals

5.5.8 Safety Function Determination Program (SFDP) (continued)

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, or no concurrent loss of onsite Class 1E power, 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 system(s) supported by the inoperable support system is also inoperable;

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

c. A required system redundant to 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.

5.5.9 Primary 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 Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," dated September, 1995 as modified by the following exceptions:

1. The visual examination of primary containment concrete surfaces intended to fulfill the requirements of 10 CFR 50, Appendix J, Option B testing, shall be performed in accordance with the requirements of and frequency specified by ASME Code Section XI, Subsection IWL, except where relief has been authorized by the NRC. The primary containment concrete visual examinations may be performed during either power operation or during a maintenance/refueling outage.

5.5 Programs and Manuals

5.5.9 Primary Containment Leakage Rate Testing Program (continued)

2. The visual examination of the steel liner plate inside containment intended to fulfill the requirements of 10 CFR 50, Appendix J, Option B testing shall be performed in accordance with the requirements of and frequency specified by ASME Code Section XI, Subsection IWE, except where relief has been authorized by the NRC.

[---------- **REVIEWER'S NOTE** ----------
Applicants are to determine if additional exception(s) to Regulatory Guide 1.163 are applicable and describe the additional exception(s).
----------]

[3. . .]

b. The calculated peak containment internal pressure for the design basis loss of coolant accident, P_a, is 243 kPag (35.2 psig). The containment design pressure is 310 kPag (45 psig).

c. The maximum allowable containment leakage rate, L_a, at P_a, shall be 0.5% of containment air weight per day.

d. Leakage rate acceptance criteria are:

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

2. Air lock testing acceptance criteria are:

a) Overall air lock leakage rate is ≤ 0.05 L_a when tested at ≥ P_a.

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

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

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

5.5 Programs and Manuals

5.5.10 Battery Monitoring and Maintenance Program

This Program provides for battery restoration and maintenance, based on {the recommendations of IEEE Standard 450-1995, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," or of the battery manufacturer} of the following:

a. Actions to restore battery cells with float voltage < {2.13} V, and

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

5.5.11 Setpoint Control Program (SCP)

a. The Nominal Trip Setpoints (NTSPs), Allowable Values (AVs), and As-Found and Leave Alone Tolerance Bands, and the methodologies used to determine these values shall be established and shall be documented in the SCP for each of the required Technical Specification Instrumentation Functions in the following:

   1. Specification 3.3.1.1, “Reactor Protection System (RPS) Instrumentation,”
   2. Specification 3.3.1.4, “Neutron Monitoring System (NMS) Instrumentation,”
   3. Specification 3.3.5.1, “Emergency Core Cooling System (ECCS) Instrumentation,”
   4. Specification 3.3.5.3, “Isolation Condenser System (ICS) Instrumentation,”
   5. Specification 3.3.6.1, “Main Steam Isolation Valve (MSIV) Instrumentation,”
   6. Specification 3.3.6.3, “Isolation Instrumentation,” and
   7. Specification 3.3.7.1, “Emergency Breathing Air System (EBAS) Instrumentation.”

b. The analytical methods used to determine the NTSPs, and AVs, and As-Found and Leave Alone Tolerance Bands shall be those previously reviewed and approved by the NRC, specifically those described in the following document[s]:

5.5 Programs and Manuals

5.5.11 Setpoint Control Program (SCP) (continued)

[---------- **REVIEWER'S NOTE** ----------
The applicant must identify the Topical Report(s) by number and title or identify the staff Safety Evaluation Report for a plant specific methodology by NRC letter and date. The SCP will contain the complete identification for each of the Technical Specification referenced topical reports used to prepare the LTSPs, AVs, NTSPs (where applicable), and As-Found and As-Left Tolerance Bands included in the SCP (i.e., report number, title, revision, date, and any supplements).
----------]

[1. NEDC-31336P-A, "General Electric Instrument Setpoint Methodology,"]

c. The SCP shall also establish provisions for:

1. Evaluation of an instrumentation channel to verify it is functioning as required, before return to service, when the as-found channel setpoint is found conservative with respect to the Allowable Value but outside its predefined As-Found Tolerance Band; and

2. Resetting an instrumentation channel setpoint to a value that is within the Leave Alone Tolerance Band of the associated NTSP or of a value that is more conservative than the NTSP or, otherwise, declaring the channel to be inoperable.

5.0 ADMINISTRATIVE CONTROLS

5.6 Reporting Requirements

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

5.6.1 Annual Radiological Environmental Operating Report

---------- **NOTE** ----------
[A single submittal may be made for a multiple unit station. The submittal should combine sections common to all units at the station.]

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

The Annual Radiological Environmental Operating Report shall include the results of analyses of all radiological environmental samples and of all environmental radiation measurements taken during the period pursuant to the locations specified in the table and figures in the ODCM, as well as summarized and tabulated results of these analyses and measurements [in the 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 Reporting Requirements

5.6.2 Radioactive Effluent Release Report

---------- **NOTE** ----------
[A single submittal may be made for a multiple unit station. The submittal shall combine sections common to all units at the station; however, for units with separate radwaste systems, the submittal shall specify the releases of radioactive material from each unit.]

The Radioactive Effluent Release Report covering the operation of the unit during 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:

   1. Specification 3.2.1, “Linear Heat Generation Rate (LHGR)”

   2. Specification 3.2.2, “Minimum Critical Power Ratio (MCPR)”

   [Any additional individual specifications that address core operating limits must be referenced here.]

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:

   [Identify the Topical Report(s) by number and title or identify the staff Safety Evaluation Report for a plant specific methodology by NRC letter and date. The COLR will contain the complete identification for each of the Technical Specification referenced topical reports used to prepare the COLR (i.e., report number, title, revision, date, and any supplements).]

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

5.6 Reporting Requirements

5.6.3 CORE OPERATING LIMITS REPORT (COLR) (continued)

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 heatup, 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:

LCO 3.4.4, "RCS Pressure and Temperature (P/T) Limits."

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:

[Identify the Topical Report(s) by number and title or identify the NRC Safety Evaluation for a plant specific methodology by NRC letter and date. The PTLR will contain the complete identification for each of the TS referenced Topical Reports used to prepare the PTLR (i.e., report number, title, revision, date, and any supplements).]

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

---------- **REVIEWER'S NOTE** ----------
The methodology for the calculation of the P-T limits for NRC approval should include the following provisions:
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1. The methodology shall describe how the neutron fluence is calculated (reference new Regulatory Guide when issued).

2. The Reactor Vessel Material Surveillance Program shall comply with Appendix H to 10 CFR 50. The reactor vessel material irradiation surveillance specimen removal schedule shall be provided, along with how the specimen examinations shall be used to update the PTLR curves.

3. Low Temperature Overpressure Protection (LTOP) System lift setting limits for the Power Operated Relief Valves (PORVs), developed using NRC-approved methodologies may be included in the PTLR.

5.6 Reporting Requirements

5.6.4 RCS PRESSURE AND TEMPERATURE LIMITS REPORT (continued)

4. The adjusted reference temperature (ART) for each reactor beltline material shall be calculated, accounting for radiation embrittlement, in accordance with Regulatory Guide 1.99, Revision 2.

5. The limiting ART shall be incorporated into the calculation of the pressure and temperature limit curves in accordance with NUREG-0800 Standard Review Plan 5.3.2, Pressure-Temperature Limits.

6. The minimum temperature requirements of Appendix G to 10 CFR Part 50 shall be incorporated into the pressure and temperature limit curves.

5.6.5 Post Accident Monitoring Report

When a Special Report is required by Condition C of LCO 3.3.3.1, "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

5.0 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 mSv (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 of radiation dose rates in the immediate work area(s) and other appropriate radiation protection equipment and measures.

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

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

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

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

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

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

5.7 High Radiation Area

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

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

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

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

5.7.2 High Radiation Areas with Dose Rates Greater than 1.0 mSv (1.0 rem)/hour at 30 Centimeters from the Radiation Source or from any Surface Penetrated by the Radiation, but less that 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.

5.7 High Radiation Area

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

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 one of the following:

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

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

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

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

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

5.7 High Radiation Area

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

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. The dose rate determination, knowledge, and pre-job briefing do 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.