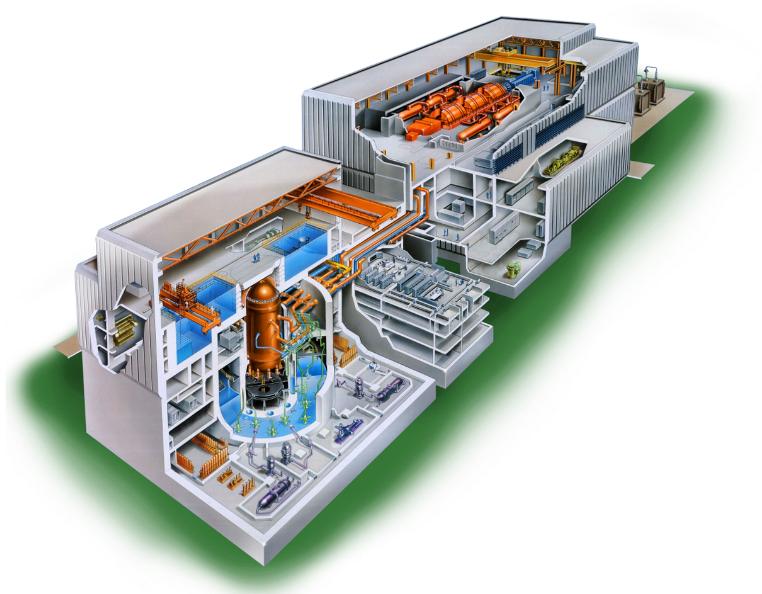
GE Hitachi Nuclear Energy

25A5675AU
Revision 7
October 2019

ABWR
Design Control Document
Tier 2



Chapter 16
Technical Specifications

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TABLE OF CONTENTS

(continued)

TABLE OF CONTENTS

(continued)

TABLE OF CONTENTS

(continued)

TABLE OF CONTENTS

(continued)

TABLE OF CONTENTS (continued)

(continued)

TABLE OF CONTENTS

(continued)

TABLE OF CONTENTS

(continued)

TABLE OF CONTENTS

16.0 Technical Specifications

The NRC Policy Statement (Federal Register, Vol. 52, No.25, February 6, 1987) recognizes that:

> "The purpose of Technical Specifications is to impose conditions or limitations upon reactor operation necessary to obviate the possibility of an abnormal situation or event giving rise to an immediate threat to the public health and safety by establishing those conditions of operation which cannot be changed without prior Commission approval and by identifying those features which are of controlling importance to safety."

This set of proposed Technical Specifications establish these conditions and limitations for the ABWR. This set of Technical Specifications is intended to be used as a guide in the development of plant specific sets of Technical Specifications for license applications that reference the ABWR standard plant.

The NRC Policy Statement criteria stated below has been used to identify all structures, systems, and parameters for which Limiting Conditions for Operation (LCOs) have been included in the ABWR Technical Specifications:

1. Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.
2. A process variable that is an initial condition of a Design Basis Accident (DBA) or Transient Analyses that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.
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.
4. Structures, systems, and components which operating experience and probabilistic risk assessment have generally shown to be important to public health and safety.

The content of the ABWR Technical Specifications meets the 10CFR50.36, "Technical Specifications," requirements and is consistent with the approach of the Standard Technical Specification for BWRs, NUREGs 1433 and 1434, Revision 0, dated September 28, 1992 to the maximum extent possible. In addition, NRC's draft technical specifications on low power and shutdown have been incorporated. This submittal replaces the Chapter 16 Technical Specifications previously submitted in Amendment 9 in its entirety and has been restructured in accordance with NUREGs 1433 and 1434, Revision 0.

16.1 COL License Information

This section outlines the information required to be provided by the COL applicant to complete its plant specific Technical Specifications.

16.1.1 COL Information Required for Plant Specific Technical Specifications

In cases where the detailed design, equipment selection, or other efforts are required to establish the information to be specified in Technical Specifications, “[ ]” has been indicated. The COL applicant will evaluate their applicability and provide the required information to complete its plant specific Technical Specifications.

As part of the Technical Specification Improvement Program undertaken by the NRC and the industry, portions of Section 5.0, Administrative Controls, of NUREGs 1433 and 1434, could be relocated to licensee-controlled document. This improvement has been incorporated into the ABWR Technical Specifications. The COL applicant will have to ensure that the portions of Section 5.0 relocated to licensee-controlled documents are controlled in accordance with an administrative control system acceptable to the NRC.

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.
AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)	The APLHGR shall be applicable to a specific planar height and is equal to the sum of the LHGRs heat generation rate per unit length of fuel rod for all the fuel rods in the specified bundle at the specified height divided by the number of fuel rods in the fuel bundle at the height.
CHANNEL CALIBRATION	A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel such that it responds within the necessary range and accuracy to specified values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel, including the required sensor, alarm, display, and trip functions, and shall include the CHANNEL FUNCTIONAL TEST. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an inplace qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps so that the entire channel is calibrated.
CHANNEL CHECK	A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter.

(continued)

1.1 Definitions (continued)

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, including required alarm, interlock, display, and trip functions, and channel failure trips. The CHANNEL FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total channel steps so that the entire channel is tested.
COMPREHENSIVE FUNCTIONAL TEST	A COMPREHENSIVE FUNCTIONAL TEST (CoFT) is a set of tests that exercises each RPS, ESF, and MSIV closure Function by simulating accident events that exercise the inputs and outputs of the SSLC, NMS, PRRM, RPS/MSIV actuation logic and ESF actuation logic. A CoFT also simulates power failures, measures CPU and network performance, runs microprocessor-specific and application-specific diagnostics. Test inputs include out-of-range conditions to verify OPERABILITY of the SSLC electronics, alarms and displays.
CORE ALTERATION	CORE ALTERATION shall be the movement of any fuel, sources, or other reactivity control components within the reactor vessel with the vessel head removed and fuel in the vessel. Movement of startup range neutron monitors, local power range monitors, traversing incore probes, or special movable detectors (including undervessel replacement) is not considered a CORE ALTERATION. In addition, control rod movement with other than the normal control rod drive is not considered a CORE ALTERATION 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 5.7.1.5. Plant operation within these limits is addressed in individual Specifications.

(continued)

1.1 Definitions (continued)

DIVISION FUNCTIONAL TEST	The injection of simulated or actual signals into a division as close to the sensors as practicable to verify OPERABILITY of SENSOR CHANNELS and LOGIC CHANNELS in that division. The DIVISION FUNCTIONAL TEST may be performed by means of a series of sequential or overlapping steps. The test shall comprise all the equipment from the DTM inputs to LOGIC CHANNEL outputs. This test shall also verify that the inputs to the DTMs are the same as the information presented at the control room indicators.
DOSE EQUIVALENT I-131	DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcuries/gram) that alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table III of TID-14844, AEC, 1962, "Calculation of Distance Factors for Power and Test Reactor Sites" or those listed in Table E-7 of Regulatory Guide 1.109, Rev. 1, NRC, 1977 or ICRP 30, Supplement to Part 1, pages 192-212, Table titled` "Committed Dose Equivalent in Target Organs or Tissues per Intake of Unit Activity."
$\bar{E}$-AVERAGE DISINTEGRATION ENERGY	$\bar{E}$ shall be the average (weighted in proportion to the concentration of each radionuclide in the reactor coolant at the time of sampling) of the sum of the average beta and gamma energies per disintegration (in MeV) for isotopes, other than iodines, with half lives > 15 minutes, making up at least 95% of the total noniodine activity in the coolant.
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, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.

(continued)

1.1 Definitions (continued)

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. Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.
LEAKAGE	LEAKAGE shall be: a. Identified LEAKAGE 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. Unidentified LEAKAGE All LEAKAGE into the drywell that is not identified LEAKAGE; c. Total LEAKAGE Sum of the identified and unidentified LEAKAGE; d. Pressure Boundary LEAKAGE 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.

(continued)

1.1 Definitions (continued)

LOGIC CHANNEL	A LOGIC CHANNEL is defined as a set of interconnecting hardware and software components that process the inputs to produce an identifiable RPS trip signal or ESF actuation signal within a division. For the RPS, this includes the trip signal's associated TLU 2-out-of-4 voters, TLU bistable functions, operator controls, interlocks, data transmission, alarms, displays, division-of-sensors bypass, transmission lines out to the OLU inputs. Each ESF function will have two ESF LOGIC CHANNELs to include one of the ESF actuation signal's associated SLU 2-out-of-4 voters, SLU bistable functions, operator controls, interlocks, data transmission, alarms, displays, division-of-sensors bypass, EMS, and transmission lines out to the input of the 2-out-of-2 voters. The ESF actuation signal includes the system actuation signal and all its associated device actuation signals generated in the SLU out to the 2-out-of-2 voter.
LOGIC SYSTEM FUNCTIONAL TEST	A LOGIC SYSTEM FUNCTIONAL TEST shall be a test of all required logic components (i.e., all required relays and contacts, trip functions, solid state logic elements, etc.) of a logic path, 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.
MINIMUM CRITICAL POWER RATIO (MCPR)	The MCPR shall be the smallest critical power ratio (CPR) that exists in the core. 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.

(continued)

1.1 Definitions (continued)

OPERABLE – OPERABILITY	A system, subsystem, 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, displays, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, division, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).
OUTPUT CHANNEL	An OUTPUT CHANNEL is defined as a set of interconnected components that process outputs from associated LOGIC CHANNELS to produce an identifiable signal that deenergizes scram solenoids, deenergizes MSIV Isolation solenoids, or energizes ESF device actuators within a division. For the RPS, this includes the signal's associated OLU, transmission lines, manual divisional trip and reset switches, trip logic output bypass switch, parallel load driver test switch, and scram pilot valve solenoid load drivers. For the MSIVs, this includes the signal's associated OLU, data transmission, manual divisional isolation and reset switches, trip logic output bypass switch, and MSIV isolation pilot valve solenoid load drivers. For the ESF, this includes the signal's associated 2-out-of-2 voter, ESF Output Channel Bypass switch, and data transmission out to the ESF device actuator.
OUTPUT CHANNEL FUNCTIONAL TEST	An OUTPUT CHANNEL FUNCTIONAL TEST is the injection of simulated or actual signals into the OUTPUT CHANNEL to verify OPERABILITY.
PHYSICS TESTS	PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation. These tests are: a. Described in Chapter 14, Initial Test Program of the DCD Tier 2; b. Authorized under the provisions of 10 CFR 50.59; or c. Otherwise approved by the Nuclear Regulatory Commission.

(continued)

1.1 Definitions (continued)

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 5.7.1.6. Plant operation within these operating limits is addressed in LCO 3.4.9, “RCS Pressure and Temperature (P/T) Limits.”
RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 3926 MWt.
REACTOR PUMP TRIP (RPT) SYSTEM RESPONSE TIME	The RPT SYSTEM RESPONSE TIME shall be that time interval from initial signal generation (by the associated turbine stop valve limit switch or the turbine control valve hydraulic oil pressure switch) to the trip of the inverters associated with the reactor internal pumps adjustable speed drives. 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.
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.
SENSOR CHANNEL	A SENSOR CHANNEL is defined as a set of interconnected hardware and software components that process an identifiable sensor signal within a division. This includes the sensor, data acquisition, signal conditioning, data transmission, alarms, displays, and all transmission lines in the division and between divisions associated with the sensor signal up to an input of a 2-out-of-4 voter or an input of a bistable function within the TLU or SLU.
SENSOR CHANNEL CALIBRATION	A SENSOR CHANNEL CALIBRATION is the adjustment, as necessary, of the SENSOR CHANNEL such that it responds within the specified range and accuracy to specified values of the parameter that the SENSOR CHANNEL monitors. The calibration may be performed by any series of sequential,

(continued)

1.1 Definitions

SENSOR CHANNEL CALIBRATION (continued)	overlapping, or total SENSOR CHANNEL test steps so that the entire SENSOR CHANNEL is calibrated. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors shall consist of an inplace cross calibration of the sensing elements and normal calibration of the remaining adjustments in the channel. Whenever a sensing element is replaced, the next required inplace cross calibration consists of comparing the other sensing elements with the recently installed sensing element.
SENSOR CHANNEL CHECK	A SENSOR CHANNEL CHECK is the qualitative assessment, by observation, of a SENSOR CHANNEL's behavior during operation. This observation shall include comparison of this SENSOR CHANNEL's indication to other indications derived from independent SENSOR CHANNELS. This check shall be performed so as to examine as much of the SENSOR CHANNEL as practicable.
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; and c All control rods are fully inserted except for the 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. NOTE: A control rod pair consists of two control rods which are connected to the same, shared scram accumulator. All control rods share an accumulator except for the center control rod which has its own accumulator.

(continued)

1.1 Definitions (continued)

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 from initial movement of the main turbine stop valve or control valve until 80% of the turbine bypass capacity is established; and b. The time from 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 so that the entire response time is measured.

Table 1.1-1 (page 1 of 1)
MODES

MODE	TITLE	REACTOR MODE SWITCH POSITION	AVERAGE REACTOR COOLANT TEMPERATURE °C
1	Power Operation	Run	NA
2	Startup	Refuel[(a)] or Startup/Hot Standby	NA
3	Hot Shutdown[(a)]	Shutdown	> 93
4	Cold Shutdown[(a)]	Shutdown	≤ 93
5	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.

(continued)

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.

(continued)

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

However, when a subsequent 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:

(continued)

1.3 Completion Times

DESCRIPTION (continued)

a. Must exist concurrent with the first inoperability; and

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

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

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

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

The above Completion Time extensions do not apply to those Specifications that have exceptions that allow completely separate re-entry into the Condition (for each 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 phrase “from discovery . . .” Example 1.3-3 illustrates one use of this type of Completion Time. The 10 day Completion Time specified for Conditions A and B in Example 1.3-3 may not be extended.

EXAMPLES

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

(continued)

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 4.	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 4 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 4 from the time that Condition B was entered. If MODE 3 is reached within 6 hours, the time allowed for reaching MODE 4 is the next 30 hours because the total time allowed for reaching MODE 4 is 36 hours.

If Condition B is entered while in MODE 3, the time allowed for reaching MODE 4 is the next 36 hours.

(continued)

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One pump inoperable.	A.1 Restore pump to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

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

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

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

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

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-2 (continued)

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

(continued)

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 AND 10 days from discovery of failure to meet the LCO
B. One Function Y subsystem inoperable.	B.1 Restore Function Y subsystem to OPERABLE status.	72 hours AND 10 days from discovery of failure to meet the LCO
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

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-3 (continued)

inoperable and the Condition was entered. A separate Completion Time is established for Condition C and tracked from the time the second 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).

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

(continued)

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 4.	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 extensions) expires while one or more valves are still inoperable, Condition B is entered.

(continued)

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-5

ACTIONS

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

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

(continued)

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 is entered and the initial performance of Required Action A.1 must be completed 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.

(continued)

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-7

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One subsystem inoperable.	A.1 Verify affected subsystem isolated.	1 hour AND Once per 8 hours thereafter
	AND A.2 Restore subsystem to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours
	AND B.2 Be in MODE 4.	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.

(continued)

1.3 Completion Times (continued)

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

1.0 USE AND APPLICATION

1.4 Frequency

PURPOSE

The purpose of this section is to define the proper use and application of Frequency requirements.

DESCRIPTION

Each Surveillance Requirement (SR) has a specified Frequency in which the Surveillance must be met in order to meet the associated LCO. An understanding of the correct application of the specified Frequency is necessary for compliance with the SR.

The “specified Frequency” is referred to throughout this section and each of the Specifications of Section 3.0, Surveillance Requirement (SR) Applicability. The “specified Frequency” consists of the requirements of the Frequency column of each SR, as well as certain Notes in the Surveillance column that modify performance requirements.

Sometimes special situations dictate when the requirements of a Surveillance are to be met. They are “otherwise stated” conditions allowed by SR 3.0.1. They may be stated as clarifying Notes in the Surveillance, as part of the Surveillance, or both. Example 1.4-4 discusses these special situations.

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 specified 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.
SR 3.0.4 restrictions would not apply if both the following conditions are satisfied:

a. The Surveillance is not required to be performed; and

b. The Surveillance is not required to be met or, even if required to be met, is not known to be failed.

(continued)

1.4 Frequency (continued)

EXAMPLES

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

EXAMPLE 1.4-1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Perform CHANNEL CHECK.	12 hours

Example 1.4-1 contains the type of SR most often encountered in the Technical Specifications (TS). The Frequency specifies an interval (12 hours) during which the associated Surveillance must be performed at least one time. Performance of the Surveillance initiates the subsequent interval. Although the Frequency is stated as 12 hours, an extension of the time interval to 1.25 times the 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, the Surveillance must be performed within the Frequency requirements of SR 3.0.2 prior to entry into the MODE or other specified condition. Failure to do so would result in a violation of SR 3.0.4.

(continued)

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 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.

(continued)

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.

(continued)

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 (plus the extension allowed by SR 3.0.2) interval, 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.

2.0 SAFETY LIMITS (SLs)

2.1 SLs

2.1.1 Reactor Core SLs

2.1.1.1 With the reactor steam dome pressure < 5.41 MPaG or core flow < 10% rated core flow:

THERMAL POWER shall be ≤ 25% RTP.

2.1.1.2 With the reactor steam dome pressure ≥ 5.41 MPaG and core flow ≥ 10% rated core flow:

MCPR shall be ≥ 1.07.

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 ≤ 9.13 MPaG.

2.2 SL Violations

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

2.2.1 Within 1 hour, notify the NRC Operations Center, in accordance with 10 CFR 50.72.

2.2.2 Within 2 hours:

2.2.2.1 Restore compliance with all SLs; and

2.2.2.2 Insert all insertable control rods.

2.2.3 Within 24 hours, notify the [General Manager – Nuclear Plant and Vice President – Nuclear Operations] and the [offsite reviewers specified in Specification 5.5.2, “[Offsite] Review and Audit”].

2.2.4 Within 30 days, a Licensee Event Report (LER) shall be prepared pursuant to 10 CFR 50.73. The LER shall be submitted to the NRC, the [offsite reviewers specified in Specification 5.5.2], and the [General Manager – Nuclear Plant and Vice President – Nuclear Operations].

2.2.5 Operation of the unit shall not be resumed until authorized by the NRC.

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; and

c. MODE 4 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, and 3.

LCO 3.0.4 When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS.

(continued)

3.0 LCO APPLICABILITY

LCO 3.0.4 (continued)	Exceptions to this Specification are stated in the individual Specifications. These exceptions allow entry into MODES or other specified conditions in the Applicability when the associated ACTIONS to be entered allow unit operation in the MODE or other specified condition in the Applicability only for a limited period of time.
LCO 3.0.5	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, additional evaluations and limitations may be required in accordance with Specification 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 into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with LCO 3.0.2.
LCO 3.0.7	Special 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 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 less. This delay period is permitted to allow performance of the Surveillance.

If the Surveillance is not performed within the delay period, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.

When the Surveillance is performed within the delay period and the Surveillance is not met, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.

(continued)

3.0 SR APPLICABILITY (continued)

SR 3.0.4 Entry into a MODE or other specified condition in the Applicability of an LCO shall not be made unless the LCO’s Surveillances have been met within their specified Frequency. This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS.

3.1 REACTIVITY CONTROL SYSTEMS

3.1.1 Shutdown Margin (SDM)

LCO 3.1.1 SDM shall be:

a. $\geq$ 0.38% $\Delta k/k$, with the highest worth control rod or rod pair analytically determined; or

b. $\geq$ 0.28% $\Delta k/k$, with the highest worth control rod or rod pair determined by test.

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

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.	C.1 Initiate action to fully insert all insertable control rods.	Immediately
D. SDM not within limits in MODE 4.	D.1 Initiate action to fully insert all insertable control rods. <u>AND</u> D.2 Initiate action to restore secondary containment to OPERABLE status.	Immediately 1 hour

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. (continued)	AND		
	D.3	Initiate action to restore one standby gas treatment (SGT) subsystem to OPERABLE status.	1 hour
	AND		
	D.4	Initiate action to restore one isolation valve and associated instrumentation to OPERABLE status in each required secondary containment penetration flow path not isolated.	1 hour
E. SDM not within limits in MODE 5.	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 secondary containment to OPERABLE status.	1 hour
	AND		

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
E. (continued)	E.4	Initiate action to restore one SGT subsystem to OPERABLE status.	1 hour
	AND		
	E.5	Initiate action to restore one isolation valve and associated instrumentation to OPERABLE status in each required secondary containment penetration flow path not isolated.	1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.1.1	Verify SDM is: a. $\geq$ 0.38% $\Delta k/k$ with the highest worth control rod or control rod pair analytically determined; or b. $\geq$ 0.28% $\Delta k/k$ with the highest worth control rod or control rod pair determined by test.	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 <u>AND</u> 1000 MW • d/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 rod may be bypassed in the Rod Action and Position Information (RAPI) Subsystem in accordance with SR 3.3.5.1.7 if required to allow continued operation. ---	
	A.1 Disarm the associated control rod drive (CRD).	2 hours
	<u>AND</u>	
	A.2 ------------NOTE-------------- Not applicable when less than or equal to the low power setpoint (LPSP) of the Rod Control and Information System (RCIS). ----------------------------------	

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	Perform SR 3.1.3.2 and SR 3.1.3.3 for each withdrawn OPERABLE control rod. AND A.3 Perform SR 3.1.1.1.	24 hours 72 hours
B. Two or more withdrawn control rods stuck.	B.1 Disarm the associated CRD. AND B.2 Be in MODE 3.	2 hours 12 hours
C. One or more control rods inoperable for reasons other than Condition A or B.	------------------NOTE---------------- 1. Inoperable control rods may be bypassed in the RAPI Subsystem in accordance with SR 3.3.5.1.7, if required, to allow insertion of inoperable control rod and continued operation. 2. Inoperable control rods with failed motor drives can only be fully inserted by individual scram. --- C.1 Fully insert inoperable control rod. AND C.2 Disarm the associated CRD.	 3 hours 4 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. ------------NOTE------------ Not applicable when THERMAL POWER > 10% RTP. --------------------------------- Two or more inoperable control rods not in compliance with Ganged Withdrawal Sequence Restrictions (GWSR) and not separated by two or more OPERABLE control rods.	D.1	Restore compliance with GWSR.	4 hours
	<u>OR</u>		
	D.2	Restore control rod to OPERABLE status.	4 hours
E. Required Action and associated Completion Time of Condition A, C, or D not met. <u>OR</u> 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 of the RCIS. --- 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 of the RCIS. --- Insert each partially withdrawn control rod two notches.	31 days
SR 3.1.3.4	Verify each control rod scram time from fully withdrawn to 60% rod insertion position 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 AND Once the first time the control rod is withdrawn to “full out” position after the associated orificed fuel support has been moved

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 pair control rod 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 $\geq$ 6.55 MPaG.	Prior to exceeding 40% RTP after fuel movement within the reactor pressure vessel <u>AND</u> (continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.4.1 (continued)		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.	120 days cumulative operation in MODE 1
SR 3.1.4.3	Verify each affected control rod scram time is within the limits of Table 3.1.4-1.	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.	Prior to exceeding 40% RTP after work on control rod or CRD System that could affect scram time

Table 3.1.4-1
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% rod insertion position. These control rods are inoperable, in accordance with SR 3.1.3.4, and are not considered "slow."

ROD POSITION PERCENT INSERTION (%)	SCRAM TIMES[a] (seconds)		
	REACTOR STEAM DOME PRESSURE[b] 0 MPaG	REACTOR STEAM DOME PRESSURE[b] 6.55 MPaG	REACTOR STEAM DOME PRESSURE[b] 7.24 MPaG
10	(c)	[ ]	[ ]
40	(c)	[ ]	[ ]
60		[ ]	[ ]

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

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

(c) For reactor steam dome pressure ≤ 6.55 MPaG, only 60% rod insertion position scram time limit applies.

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 control rod scram accumulator 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

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Required Action and associated Completion Time of Required Action A.1 or B.1 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 ≥ 12.75 MPaG.	7 days

3.1 REACTIVITY CONTROL SYSTEMS

3.1.6 Rod Pattern Control

LCO 3.1.6 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 rods not in compliance with GWSR.	A.1	---------------NOTE------------- Affected control rods may be bypassed in the Rod Action and Position Information (RAPI) Subsystem in accordance with SR 3.3.5.1.7. -------------------------------------	
		Move associated control rod(s) to correct position.	8 hours
	<u>OR</u>		
	A.2	Declare associated control rod(s) inoperable.	8 hours
B. Nine or more OPERABLE control rods not in compliance with GWSR.	B.1	---------------NOTE------------- Affected control rods may be bypassed in the RAPI Subsystem in accordance with SR 3.3.5.1.7 for insertion only. -------------------------------------	
		Suspend withdrawal of control rods.	Immediately
	<u>AND</u>		

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.2	Place the reactor mode switch in the Shutdown position.	1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.6.1	Verify 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 subsystems shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Concentration of boron in solution not within limits.	A.1	Restore concentration of boron in solution to within limits.	72 hours <u>AND</u> 10 days from discovery of failure to meet the LCO
B. One SLC subsystem inoperable for reasons other than Condition A.	B.1	Restore SLC subsystem to OPERABLE status.	7 days <u>AND</u> 10 days from discovery of failure to meet the LCO
C. Two SLC subsystems inoperable for reasons other than Condition A.	C.1	Restore one SLC subsystem 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 is ≥ 23.1 m^3.	24 hours
SR 3.1.7.2	Verify temperature of sodium pentaborate solution is within the limits of Figure 3.1.7-1.	24 hours
SR 3.1.7.3	Verify the concentration of boron in solution is within the limits of Figure 3.1.7-1.	31 days AND Once within 24 hours after water or boron is added to solution AND Once within 24 hours after solution temperature is restored within the limits of Figure 3.1.7-1
SR 3.1.7.4	Verify each SLC subsystem 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, or can be aligned to the correct position.	31 days
SR 3.1.7.5	Verify each pump develops a flow rate ≥ 11.4 m^3/h at a discharge pressure ≥ 8.43 MPaG.	92 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.1.7.6	Verify one complete cycle of each motor operated valve.	92 days
SR 3.1.7.7	Verify flow through one SLC subsystem from pump into reactor pressure vessel.	18 months on a STAGGERED TEST BASIS
SR 3.1.7.8	Verify that simultaneous operation of both pumps develop a flow rate $\geq$ 22.7 m^3/h at a pressure $\geq$ 8.43 MPaG.	18 months

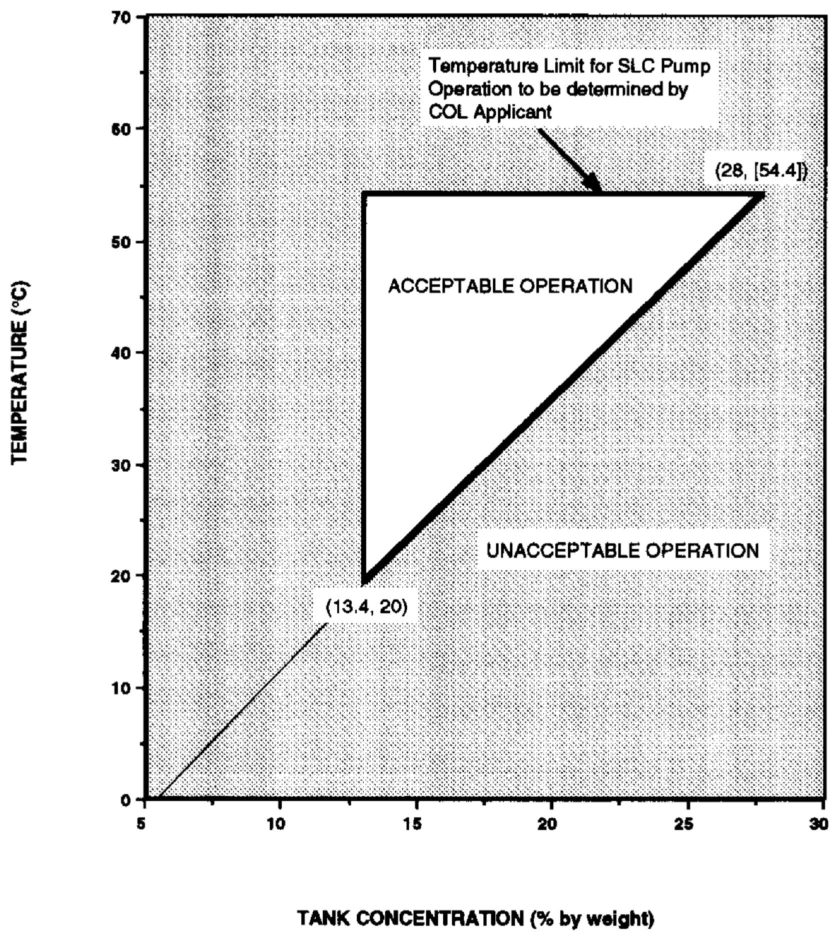

Figure 3.1.7-1 (Page 1 of 1)
Sodium Pentaborate Solution Temperature/Concentration Requirements

3.2 POWER DISTRIBUTION LIMITS

3.2.1 Average Planar Linear Heat Generation Rate (APLHGR)

LCO 3.2.1 All APLHGRs 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 APLHGR not within limits.	A.1	Restore APLHGR(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 APLHGRs 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 <u>AND</u> 24 hours thereafter

3.2 POWER DISTRIBUTION LIMITS

3.2.3 Linear Heat Generation Rate (LHGR) (Non-GE Fuel)

LCO 3.2.3 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 3.2.3.1	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

3.3 INSTRUMENTATION

3.3.1.1 Safety System Logic and Control (SSLC) Sensor Instrumentation

LCO 3.3.1.1 The SSLC instrumentation 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 channel.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more Functions with one required SENSOR CHANNEL inoperable.	A.1	Place SENSOR CHANNEL in trip.	6 hours
	<u>OR</u>		
	A.2.1.1	-------------NOTE------------- Applies only to Functions 3 through 33. ----------------------------------	
		Place affected division in division of sensors bypass.	6 hours
	<u>OR</u>		
	A.2.1.2	-------------NOTE------------- Applies only to Functions 1 & 2. ----------------------------------	
		Place channel in bypass at Neutron Monitoring System.	6 hours
	<u>AND</u>		

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.2.1 Restore required channel to OPERABLE status.	30 days
	OR	
	A.2.2.2 ------------NOTE-------------- 1. Remove division of sensors bypass or NMS channel bypass after placing channel in trip. 2. Division of sensor bypass or NMS bypass is allowed for [6] hours for restoring channel to OPERABLE status. 3. SENSOR CHANNEL(s) may be considered to remain in a tripped condition when a division containing tripped channel(s) is placed in division of sensors bypass due to subsequent entries into this condition. ---------------------------------- Place channel in trip.	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. One or more Functions with two required SENSOR CHANNELS inoperable.	B.1	Place one channel in trip.	3 hours
	<u>AND</u>		
	B.2.1	-------------NOTE------------- Applies only to Functions 3 through 33. ---------------------------------- Place the other affected division in division of sensors bypass.	6 hours
	<u>OR</u>		
	B.2.2	-------------NOTE------------- Applies only to Functions 1 & 2. ---------------------------------- Place the other affected channel in bypass.	6 hours
	<u>AND</u>		
	B.3	Restore at least one required channel to OPERABLE status.	30 days
C. One or more Functions with three required SENSOR CHANNELS inoperable.	C.1	Place one channel in trip.	Immediately
	<u>AND</u>		
	C.2	Restore at least one required channel to OPERABLE status.	6 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. One or more Functions with four required SENSOR CHANNELS inoperable.	D.1	Place one channel in trip.	Immediately
	AND		
	D.2	Restore at least one required channel to OPERABLE status.	1 hour
E. Required Action and associated Completion Time of Condition A, B, C, or D not met.	E.1	Enter the Condition referenced in Table 3.3.1.1-1 for the Function.	Immediately
F. As required by Required Action E.1 and referenced in Table 3.3.1.1-1.	F.1	Reduce THERMAL POWER to below the level listed in Table 3.3.1.1-1 for the Function.	4 hours
G. As required by Required Action E.1 and referenced in Table 3.3.1.1-1.	G.1	Be in MODE 2.	6 hours
H. As required by Required Action E.1 and referenced in Table 3.3.1.1-1.	H.1	Be in MODE 3.	12 hours
I. As required by Required Action E.1 and referenced in Table 3.3.1.1-1.	I.1	Initiate action to insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately
J. As required by Required Action E.1 and referenced in Table 3.3.1.1-1.	J.1	Initiate action to place the reactor power/flow relationship outside of the region of applicability shown in Figure 3.3.1.1-1.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
K. As required by Required Action E.1 and referenced in Table 3.3.1.1-1.	K.1	Isolate the affected penetration flow path(s).	1 hour
L. As required by Required Action E.1 and referenced in Table 3.3.1.1-1.	L.1	Isolate the affected penetration flow path(s).	Immediately
	<u>OR</u>		
	L.2.1	Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>		
	L.2.2	-------------NOTE------------- Applies only to Function 24. ---------------------------------	
		Suspend movement of irradiated fuel assemblies in the containment.	Immediately
	<u>AND</u>		
	L.2.3	Initiate action to suspend operations with a potential for draining the reactor vessel.	Immediately
M. As required by Required Action E.1 and referenced in Table 3.3.1.1-1.	--------------------NOTE------------------- Only applicable if RCIC and/or HPCF pump suction is not aligned to the suppression pool. ---		
	M.1	Align RCIC and HPCF suction to the suppression pool.	1 hour from discovery of loss of transfer capability

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
N. As required by Required Action E.1 and referenced in Table 3.3.1.1-1.	N.1 Declare supported feature(s) inoperable.	1 hour
O. Required Action and associated Completion Time of Condition M.1 not met.	O.1 Declare supported feature(s) inoperable.	Immediately
P. As required by Required Action E.1 and referenced in Table 3.3.1.1-1.	P.1 Be in MODE 3. AND P.2 Be in MODE 4.	12 hours 36 hours
Q. As required by Required Action E.1 and referenced in Table 3.3.1.1-1.	Q.1 Isolate the associated penetration flow path(s) OR Q.2.1 Be in MODE 3. AND Q.2.2 Be in MODE 4.	12 hours 12 hours 36 hours
R. Required Action and associated Completion Time of Condition K.1 not met.	R.1 Be in MODE 3. AND R.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

--NOTE--
Refer to Table 3.3.1.1-1 to determine which SRs apply for each SSLC Sensor Instrumentation Function.

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.1	Perform SENSOR CHANNEL CHECK.	12 hours
SR 3.3.1.1.2	-------------------------------NOTE------------------------------ Only required to be met with THERMAL POWER ≥ 25% RTP. -- Verify the absolute difference between the average power range monitor (APRM) channels and the calculated power is ≤ 2% RTP.	[7] days
SR 3.3.1.1.3	-------------------------------NOTE------------------------------ Not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. -- Perform DIVISION FUNCTIONAL TEST.	[7] days
SR 3.3.1.1.4	Perform DIVISION FUNCTIONAL TEST.	[32] days
SR 3.3.1.1.5	Perform DIVISION FUNCTIONAL TEST.	[92] days
SR 3.3.1.1.6	Perform CHANNEL FUNCTIONAL TEST.	[92] days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.7	Calibrate the local power range monitors.	1000 MW·d/t average core exposure
SR 3.3.1.1.8	------------------------------NOTE------------------------------ 1. Required to be met with THERMAL POWER ≤ 5% RTP prior to entry into MODE 1 from MODE 2. 2. Required to be met prior to entry into MODE 2 from MODE 1. --- Verify the SRNM and APRM channels overlap within at least 1/2 decade.	[7] days
SR 3.3.1.1.9	------------------------------NOTE------------------------------ Radiation and Neutron detectors are excluded. --- Perform COMPREHENSIVE FUNCTIONAL TEST.	18 months
SR 3.3.1.1.10	------------------------------NOTES------------------------------ 1. Neutron detectors are excluded. 2. SENSOR CHANNEL CALIBRATION shall include calibration of all parameters used to calculate setpoints (e.g., recirculation flow for TPM setpoint) and all parameters used for trip function bypasses (e.g., Turbine first stage pressure for TSV closure bypass). --- Perform SENSOR CHANNEL CALIBRATION.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.11	Perform CHANNEL CALIBRATION.	18 months
SR 3.3.1.1.12	------------------------------NOTE----------------------------- Neutron detectors are excluded. -- Verify RPS RESPONSE TIME is within limits.	18 months
SR 3.3.1.1.13	Verify ECCS RESPONSE TIME is within limits.	18 months
SR 3.3.1.1.14	------------------------------NOTE----------------------------- Neutron detectors are excluded. -- Verify ISOLATION RESPONSE TIME is within limits.	18 months

Table 3.3.1.1-1 (Page 1 of 9)
SSLC Sensor Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Startup Range Neutron Monitors					
1a. SRNM Neutron Flux – High	2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.3 SR 3.3.1.1.8 SR 3.3.1.1.9 SR 3.3.1.1.10	≤ [ ]% RTP
	5[(a)]	4	I	SR 3.3.1.1.1 SR 3.3.1.1.4 SR 3.3.1.1.9 SR 3.3.1.1.10	≤ [ ]% RTP
1b. SRNM Neutron Flux – Short Period	2[(b)]	4	H	SR 3.3.1.1.1 SR 3.3.1.1.3 SR 3.3.1.1.8	≤ [ ] Seconds
	5[(a) (b)]	4	I	SR 3.3.1.1.1 SR 3.3.1.1.4 SR 3.3.1.1.9 SR 3.3.1.1.10	≤ [ ] Seconds
1c. SRNM ATWS Permissive	1,2	4	H	SR 3.3.1.1.5 SR 3.3.1.1.9	≤ [ ] RTP for ≥ [ ] min
1d. SRNM - Inop	1,2	4	H	SR 3.3.1.1.3	NA
	5[(a)]	4	I	SR 3.3.1.1.4 SR 3.3.1.1.9	
2. Average Power Range Monitors					
2a. APRM Neutron Flux – High, Setdown	2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.3 SR 3.3.1.1.7 SR 3.3.1.1.8	≤ [ ]% RTP
2b. APRM Simulated Thermal Power – High, Flow Biased	1	4	G	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.5 SR 3.3.1.1.7 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.12	≤ [W +]% RTP and ≤ [ ]% RTP

Table 3.3.1.1-1 (Page 2 of 9)
SSLC Sensor Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2c.	APRM Fixed Neutron Flux – High	1	4	G	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.5 SR 3.3.1.1.7 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.12	[ ]% RTP
2d.	APRM - Inop	1,2	4	H	SR 3.3.1.1.5 SR 3.3.1.1.7	NA
2e.	Rapid Core Flow Decrease	≥ [80]% RTP	4	F	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.12	≥ [ ]%/s
2f.	Oscillation Power Range Monitor	Per Figure 3.3.1.1-1	4	J	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.12	See footnote (c)
2g.	APRM ATWS ADS Permissive	1,2	4	H	SR 3.3.1.1.5 SR 3.3.1.1.9	≤ [ ] RTP for ≥ [ ] min
3.	Reactor Vessel Steam Dome Pressure – High					
3a.	RPS Trip Initiation	1,2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.12	≤ [ ] MPaG
3b.	Isolation Initiation	1,2,3	4	K	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.14	≤ [ ] MPaG
3c.	SLCS and FWRB Initiation	1,2	4	G	SR 3.3.1.1.1 SR 3.3.1.1.6 SR 3.3.1.1.11	≤ [ ] MPaG

Table 3.3.1.1-1 (Page 3 of 9)
SSLC Sensor Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. Reactor Steam Dome Pressure – Low (Injection Permissive)	1,2,3	4	N	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13	≤ [ ] MPaG
5. Reactor Vessel Water Level – High, Level 8	1,2,3 4[(e)],5[(e)]	4	N	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10	≤ [ ] cm
6. Reactor Vessel Water Level – Low, Level 3					
6a. RPS Trip Initiation	1,2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.12	≥ [ ] cm
6b. Isolation Initiation	1,2,3	4	K	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.14	≥ [ ] cm
	(f)	4	L	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.14	
7. Reactor Vessel Water Level - Low, Level 2					
7a. ESF Initiation	1,2,3	4	N	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13	≥ [ ] cm

Table 3.3.1.1-1 (Page 4 of 9)
SSLC Sensor Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
7b.	Isolation Initiation	1,2,3	4	K	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.14	≥ [ ] cm
		(f)	4	L	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.14	
7c.	SLCS and FWRB Initiation	1,2	4	G	SR 3.3.1.1.1 SR 3.3.1.1.6 SR 3.3.1.1.11	≥ [ ] cm
8.	Reactor Vessel Water Level – Low, Level 1.5					
8a.	ESF Initiation	1,2,3 4[(e)],5[(e)]	4	N	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13	≥ [ ] cm
8b.	Isolation Initiation	1,2,3	4	Q	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.14	≥ [ ] cm
8c.	ATWS ADS Inhibit	1,2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10	≥ [ ] cm

Table 3.3.1.1-1 (Page 5 of 9)
SSLC Sensor Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
9. Reactor Vessel Water Level – Low, Level 1					
9a. ADS A, CAMS A, LPFL A & LPFL C Initiation	1,2,3 4(e),5(e)	4	N	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13	≥ [ ] cm
9b. ADS B, Diesel Generator, RCW, CAMS B, & LPFL B Initiation	1,2,3 4(e),5(e)	4	N	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13	≥ [ ] cm
9c. Isolation Initiation	1,2,3	4	Q	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.14	≥ [ ] cm
10. Main Steam Isolation Valve - Closure	1	4	G	SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.12	≤ [ ]% closed
11. Drywell Pressure – High					
11a. RPS Initiation	1,2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.12	≤ [ ] MPaG
11b. ESF Initiation	1,2,3	4	P	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13	≤ [ ] MPaG
11c. Isolation Initiation	1,2,3	4	Q	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.14	≤ [ ] MPaG

Table 3.3.1.1-1 (Page 6 of 9)
SSLC Sensor Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
12. CRD Water Header Charging Pressure - Low	1,2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.5	≤ [ ] MPaG
	$5^{(a)}$	4	I	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10	
13. Turbine Stop Valve - Closure	≥ [40]% RTP	4	F	SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.12	≤ [ ]% closed
14. Turbine Control Valve Fast Closure, Trip Oil Pressure – Low	≥ [40]% RTP	4	F	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.12	≥ [ ] MPaG oil pressure
15. Main Steam Tunnel Radiation - High					
15a. RPS Trip Initiation	1,2	4	H	SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10	≤ [ ] gray
15b. Isolation Initiation	1,2,3	4	Q	SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10	≤ [ ] gray
16. Suppression Pool Temperature - High					
16a. RPS Initiation	1,2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.12	≤ [ ] °C
16b. ESF Initiation	1,2,3	4	N	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10	≤ [ ] °C

Table 3.3.1.1-1 (Page 7 of 9)
SSLC Sensor Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
17. Condensate Storage Tank Level - Low	1,2,3 4(e),5(e)	4	M	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10	≥ [ ] cm
18. Suppression Pool Water Level - High	1,2,3 4(e),5(e)	4	M	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10	≤ [ ] cm
19. Main Steam Line Pressure – Low	1	4	G	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10	≤ [ ] MPaG
20. Main Steam Line Flow –- High	1,2,3	4 per MSL	Q	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.14	≥ kg/hr
21. Condenser Vacuum – Low	1,2(d),3(d)	4	Q	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10	≥ [ ] MPaG
22. Main Steam Tunnel Temperature – High	1,2,3	4	Q	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10	≤ [ ] °C
23. Main Turbine Area Temperature - High	1,2,3	4	Q	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10	≤ [ ] °C
24a. Reactor Building Area Exhaust Air Radiation - High	1,2,3	4	K	SR 3.3.1.1.1 SR 3.3.1.1.5	≤ [ ] gray
	(f), (g)	4	L	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.14	

Table 3.3.1.1-1 (Page 8 of 9)
SSLC Sensor Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
24b. Fuel Handling Area Exhaust Air Radiation - High	1,2,3	4	K	SR 3.3.1.1.1 SR 3.3.1.1.5	≤ [ ] gray
	(f),(g)	4	L	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.14	
25. RCIC Steam Line Flow – High	1,2,3	4	K	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10	≥ kg/hr
26. RCIC Steam Supply Line Pressure – Low	1,2,3	4	K	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10	≤ [ ] MPaG
27. RCIC Equipment Area Temperature – High	1,2,3	4	K	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10	≤ [ ] °C
28. RHR Area Temperature - High	2,3	4 each RHR area	K	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10	≤ [ ] °C
29. CUW Differential Flow – High	1,2,3	4	K	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10	≤ [ ] Liters/min for < = [ ] Seconds
30. CUW Regenerative Heat Exchanger Area Temperature – High	1,2,3	4	K	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10	≤ [ ] °C
31. CUW non-regenerative Heat Exchanger Area Temperature – High	1,2,3	4	K	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10	≤ [ ] °C

Table 3.3.1.1-1 (Page 9 of 9)
SSLC Sensor Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
32. CUW Equipment Area Temperature – High	1,2,3	4	K	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10	≤ [ ] °C
33. RCW/RSW Heat Exchanger Room Water Level – High	(h)	4 each RCW/RSW HX Room	K	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.9 SR 3.3.1.1.10	≤ [ ] m

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

(b) Trip automatically bypassed within each SRNM and not required to be OPERABLE at reactor power levels ≤ [0.0001]% RTP.

(c) 1. Neutron flux oscillations within any OPRM cell have a period between [1.15] seconds and [3.35] seconds that persists for [10] cycles with a peak to peak amplitude that is [10]% of point or greater.

2. Neutron flux oscillations within any OPRM cell that have a period between [0.31] and [2.2] seconds become larger than [30]% of point within [3] periods or oscillations with the specified period range that are greater than [10%] of point grow by [30]% of point within [3] cycles.

(d) With any Turbine Stop Valve not fully closed.

(e) When associated features are required to be operable.

(f) During CORE ALTERATIONS or operations with a potential for draining the reactor vessel.

(g) During movement of irradiated fuel assemblies in the secondary containment.

(h) When RSW pumps are required to be OPERABLE or in operation.

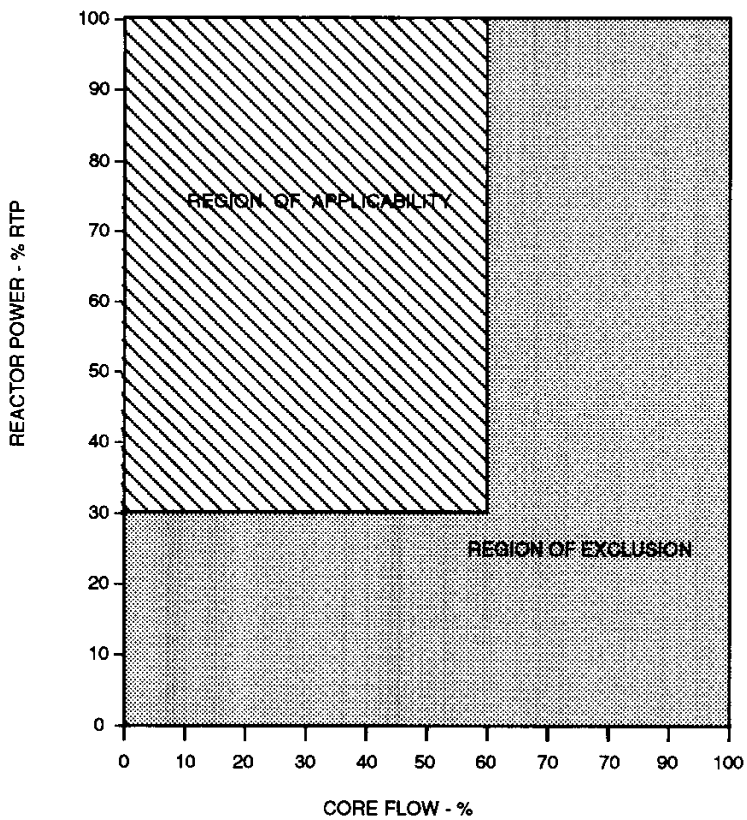

Figure 3.3.1.1-1 (Page 1 of 1)
Oscillation Power Range Function Conditions of Operability

3.3 INSTRUMENTATION

3.3.1.2 Reactor Protection System (RPS) and Main Steam Isolation Valve (MSIV) Actuation

LCO 3.3.1.2 The RPS and MSIV Actuation Functions in Table 3.3.1.2-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1.2-1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one channel inoperable.	--------------------NOTE------------------- Only applicable to Functions 1a, 2a, and 5. --	
	A.1 Place affected division in trip.	6 hours
	<u>OR</u>	
	A.2.1 Place affected division in TLU logic output bypass.	6 hours
	<u>AND</u>	
	A.2.2.1 Restore required channel(s) to OPERABLE status.	30 days
	<u>OR</u>	
	A.2.2.2 Place affected division in trip.	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more Functions with two channels inoperable.	--------------------NOTE------------------- Only applicable to Functions 1a, 2a, and 5. ---	
	B.1 Place one affected division in trip.	3 hours
	<u>AND</u>	
	B.2 Place the other affected division in TLU logic output bypass.	6 hours
	<u>AND</u>	
	B.3 Restore at least one inoperable channel to OPERABLE status.	30 days
C. One or more Functions with three channels inoperable.	--------------------NOTE------------------- Only applicable to Functions 1a, 2a, and 5. ---	
	C.1 Place one affected division in trip.	Immediately
	<u>AND</u>	
	C.2 Restore at least one inoperable channel to OPERABLE status.	6 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One or more Functions with four channels inoperable.	--------------------NOTE------------------- Only applicable to Functions 1a, 2a, and 5. ---	
	D.1 Place one affected division in trip.	Immediately
	<u>AND</u>	
	D.2 Restore at least one inoperable channel to OPERABLE status.	1 hour
E. One or more Functions with one OUTPUT CHANNEL inoperable.	--------------------NOTE------------------- Only applicable to Functions 1b and 2b. ---	
	E.1 Place inoperable channel in trip.	6 hours
F. One or more Functions with two OUTPUT CHANNELs inoperable.	--------------------NOTE------------------- Only applicable to Functions 1b and 2b. ---	
	F.1 Place one inoperable channel in trip.	1 hour
	<u>AND</u>	
	F.2 Restore at least one inoperable channel to OPERABLE status.	7 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
G. One or more Functions with three or more OUTPUT CHANNELs inoperable.	--------------------NOTE------------------- Only applicable to Functions 1b and 2b. ---		
	G.1	Restore at least two channels to OPERABLE status.	1 hour
H. One or more Reactor Mode Switch-Shutdown Position channels inoperable.	H.1	Restore required channel to OPERABLE status.	1 hour
I. One RPS manual scram channel inoperable.	I.1	Place affected division in trip.	1 hour
	<u>AND</u>		
	I.2	Restore required channel to OPERABLE status.	30 days
J. Required Action and associated Completion Time not met for Conditions A, B, C, D, E, F, G, H, or I in MODE 1 or 2.	--------------------NOTE------------------- Only applicable to Functions 1, 3 and 4. ---		
	J.1	Be in MODE 3.	12 hours
K. Required Action and associated Completion Time not met for Conditions A, B, C, D, E, F, G, H, or I in MODE 5 with any control rod withdrawn in a core cell containing at least one fuel assembly.	--------------------NOTE------------------- Only applicable to Functions 1, 3 and 4. ---		
	K.1	Initiate action to insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
L. Required Action and associated Completion Time not met for Conditions A, B, C, D, E, F or G.	--------------------NOTE------------------- Only applicable to Functions 2 and 5. ---	
	L.1 Isolate the associated penetration flow path(s).	12 hours
	<u>OR</u>	
	L.2.1 Be in MODE 3.	12 hours
	<u>AND</u>	
	L.2.2 Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

---NOTE---
Refer to Table 3.3.1.2-1 to determine which SRs apply for each RPS and MSIV Actuation Function.

SURVEILLANCE		FREQUENCY
SR 3.3.1.2.1	Perform CHANNEL FUNCTIONAL TEST.	[7] days
SR 3.3.1.2.2	Perform DIVISION FUNCTIONAL TEST.	[92] days
SR 3.3.1.2.3	Perform CHANNEL FUNCTIONAL TEST.	[92] days
SR 3.3.1.2.4	Perform COMPREHENSIVE FUNCTIONAL TEST.	18 months
SR 3.3.1.2.5	Perform OUTPUT CHANNEL FUNCTIONAL TEST.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.2.6	Verify RPS RESPONSE TIME is within limits.	18 months
SR 3.3.1.2.7	Verify ISOLATION RESPONSE TIME is within limits.	18 months

Table 3.3.1.2-1 (Page 1 of 1)
RPS and MSIV Actuation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS
1. RPS Actuation			
a. Logic Channels	1, 2, 5[a]	4	SR 3.3.1.2.2 SR 3.3.1.2.4 SR 3.3.1.2.6
b. Output Channels	1, 2, 5[a]	4	SR 3.3.1.2.2 SR 3.3.1.2.4 SR 3.3.1.2.5 SR 3.3.1.2.6
2. MSIVs and MSL Drain Valves Actuation			
a. Logic Channels	1, 2, 3	4	SR 3.3.1.2.2 SR 3.3.1.2.4 SR 3.3.1.2.7
b. Output Channels	1, 2, 3	4	SR 3.3.1.2.2 SR 3.3.1.2.4 SR 3.3.1.2.5 SR 3.3.1.2.7
3. Manual RPS Scram	1, 2, 5[a]	2	SR 3.3.1.2.1
4. Reactor Mode Switch-Shutdown Position	1, 2, 5[a]	2	SR 3.3.1.2.4
5. Manual MSIV Actuation	1, 2, 3	4	SR 3.3.1.2.3 SR 3.3.1.2.4

(a) With any control rod withdrawn in a core cell containing at least one fuel assembly.

3.3 INSTRUMENTATION

3.3.1.3 Standby Liquid Control (SLC) and Feedwater Runback (FWRB) Actuation

LCO 3.3.1.3 The SLC and FWRB Actuation Functions in Table 3.3.1.3-1 shall be OPERABLE.

APPLICABILITY: MODES 1 AND 2.

ACTIONS

---NOTE---

Separate condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one LOGIC CHANNEL inoperable. <u>OR</u> One division with one or two manual ARI channels inoperable.	------------------NOTE------------------ Only applicable to Functions 1.a, 2.a, and 3. -- A.1 Place affected division in ATWS logic output bypass. <u>AND</u> A.2 Restore channel to OPERABLE status.	 6 hours 30 days
B. One or more Functions with two LOGIC CHANNELS inoperable. <u>OR</u> Two divisions with one or more manual ARI channels inoperable.	------------------NOTE------------------ Only applicable to Functions 1.a, 2.a, and 3. -- B.1 Place one affected division in ATWS logic output bypass. <u>AND</u> B.2 Restore the bypassed inoperable division to OPERABLE status.	 6 hours 7 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One or more Functions with one OUTPUT CHANNEL inoperable.	--------------------NOTE------------------- Only applicable to Functions 1.b and 2.b. ---		
	C.1	Restore channel to OPERABLE status.	30 days
D. One or more Functions with two OUTPUT CHANNELs inoperable.	--------------------NOTE------------------- Only applicable to Functions 1.b and 2.b. ---		
	D.1	Restore at least one inoperable channel to OPERABLE status.	7 days
E. Required Action and associated Completion Time not met for Conditions A, B, C, or D. <u>OR</u> One or more Functions with three or more LOGIC CHANNELS or OUTPUT CHANNELS inoperable. <u>OR</u> Three or more divisions with one or more manual ARI channels inoperable.	E.1	Declare SLC System inoperable.	1 hour

SURVEILLANCE REQUIREMENTS

---NOTE---

Refer to Table 3.3.1.3-1 to determine which SRs apply for each Function.

SURVEILLANCE		FREQUENCY
SR 3.3.1.3.1	Perform DIVISION FUNCTIONAL TEST.	[92] days
SR 3.3.1.3.2	Perform LOGIC SYSTEM FUNCTIONAL TEST.	18 months
SR 3.3.1.3.3	Perform OUTPUT CHANNEL FUNCTIONAL TEST.	18 months

Table 3.3.1.3-1 (Page 1 of 1)
SLC and FWRB Actuation

FUNCTION	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS
1. SLC Actuation		
a. Logic Channels	4	SR 3.3.1.3.1 SR 3.3.1.3.2
b. Output Channels	4	SR 3.3.1.3.2 SR 3.3.1.3.3
2. FWRB Actuation		
a. Logic Channels	4	SR 3.3.1.3.1 SR 3.3.1.3.2
b. Output Channels	4	SR 3.3.1.3.2 SR 3.3.1.3.3
3. Manual ATWS-ARI/SLCS Initiation	2/division	SR 3.3.1.3.1 SR 3.3.1.3.2

3.3 INSTRUMENTATION

3.3.1.4 ESF Actuation Instrumentation

LCO 3.3.1.4 The ESF Actuation Instrumentation 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 channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one or more channels inoperable.	A.1 Enter the Conditions referenced in Table 3.3.1.4-1.	Immediately
B. One or more Functions with one LOGIC CHANNEL inoperable. OR One or more Functions with one manual initiation channel inoperable.	B.1 Place associated channel in bypass. AND B.2.1 Restore channel to OPERABLE status. OR B.2.2 Verify redundant feature(s) are OPERABLE.	1 hour 30 days 30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One or more Functions with one SENSOR CHANNEL inoperable. <u>OR</u> One or more Functions with two LOGIC CHANNELS or two manual initiation channels inoperable.	C.1	Restore at least one required channel to OPERABLE status.	1 hour
D. One or more Functions with one or more OUTPUT CHANNELs inoperable. <u>OR</u> HPCF C manual initiation channel inoperable.	D.1	Restore ESF actuation capability for the affected devices.	1 hour
	<u>OR</u>		
	D.2	-------------NOTE------------- This Action applies only to Functions 10.b, 12.b, 13.b, and 14.b. ---------------------------------- Actuate associated device(s).	1 hour
E. One or more Functions with one inoperable SENSOR CHANNEL.	E.1	Restore inoperable channel.	24 hours
	<u>OR</u>		
	E.2	Declare associated device(s) inoperable.	24 hours
F. One or more Functions with two manual initiation channels inoperable.	F.1	Restore at least one channel to OPERABLE status.	7 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
G. Required Action and associated Completion Time not met for Condition B, C, D, E, or F.	G.1	Declare supported feature(s) inoperable.	1 hour
H. One OUPUT CHANNEL inoperable on one or more ADS valves. <u>OR</u> One or more ADS LOGIC CHANNELS inoperable in one ADS division. <u>OR</u> One or more ADS manual initiation channels inoperable in one ADS division. <u>OR</u> One or more ATWS manual ADS inhibit channels inoperable in one ADS division. <u>OR</u> Five required ADS SENSOR CHANNELS inoperable in one ADS division.	H.1	Restore channel(s) to OPERABLE status.	3 days if only one high pressure ECCS subsystem is OPERABLE <u>AND</u> 7 days if two or more high pressure ECCS subsystems are OPERABLE

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
I. One or more SENSOR CHANNELS inoperable. OR One or more ADS valves with two OUTPUT CHANNELS inoperable. OR One or more ADS LOGIC CHANNELS inoperable in two ADS divisions. OR One or more ADS manual initiation channels inoperable in two ADS divisions. OR One or more ATWS manual ADS inhibit channels inoperable in two ADS divisions. OR Required Action and associated Completion Time of Condition H not met.	I.1	Declare associated ESF features inoperable.	1 hour
J. One or two required SENSOR CHANNELS inoperable in one or more ADS divisions.	J.1	Restore required channel(s) to OPERABLE status.	Prior to entering MODE 2 following the next MODE 4 entry

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
K. Three required SENSOR CHANNELS inoperable in one or more ADS divisions.	K.1	Restore three required channels to OPERABLE status.	7 days
L. Four required SENSOR CHANNELS inoperable in one or more ADS divisions.	L.1	Restore two required channels to OPERABLE status.	24 hours
M. ADS initiation capability not maintained in both ADS divisions. OR Required Actions and associated Completion Times of Condition H, J, K, or L not met.	M.1	Declare ADS valves inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

---NOTE---

Refer to Table 3.3.1.4-1 to determine which SRs apply for each ESF Actuation Instrumentation Functions.

SURVEILLANCE		FREQUENCY
SR 3.3.1.4.1	Perform SENSOR CHANNEL CHECK.	12 hours
SR 3.3.1.4.2	Perform OUTPUT CHANNEL FUNCTIONAL TEST.	18 months
SR 3.3.1.4.3	Perform DIVISIONAL FUNCTIONAL TEST.	[92] days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.4.4	Perform COMPREHENSIVE FUNCTIONAL TEST.	18 months
SR 3.3.1.4.5	Perform ECCS RESPONSE TIME TEST.	18 months
SR 3.3.1.4.6	Perform SENSOR CHANNEL CALIBRATION.	18 months
SR 3.3.1.4.7	Perform Manual initiation CHANNEL FUNCTIONAL TEST.	18 months

Table 3.3.1.4-1 (Page 1 of 7)
ESF Actuation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	APPLICABLE CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Low Pressure Core Flooder Actuation					
1.a LPFL Pump Discharge Pressure – High	1,2,3, 4(g),5(g)	1 per pump(a)	C	SR 3.3.1.4.1 SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.6	≥ [ ] MPaG
1.b LPFL Pump Discharge Flow – Low	1,2,3, 4(g),5(g)	1 per pump(a)	C	SR 3.3.1.4.1 SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.6	≤ [ ] liters per min
1.c LPFL System Initiation	1,2,3, 4(g),5(g)	2 per subsystem(b)	B, C	SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.5	NA
1.d LPFL Device Actuation	1,2,3, 4(g),5(g)	1 per actuated device(c)	D	SR 3.3.1.4.2 SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.5	NA
1.e LPFL Manual Initiation	1,2,3, 4(g),5(g)	2 per subsystem(d)	B, F	SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.7	NA
2. High Pressure Core Flooder Actuation					
2.a HPCF Pump Discharge Pressure – High	1,2,3, 4(g),5(g)	1 per pump(a)	C	SR 3.3.1.4.1 SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.6	≥ [ ] MPaG
2.b HPCF Pump Discharge Flow – Low	1,2,3, 4(g),5(g)	1 per pump(a)	C	SR 3.3.1.4.1 SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.6	≤ [ ] liters per min
2.c HPCF Pump Suction Pressure – Low	1,2,3, 4(g),5(g)	1 per pump(a)	C	SR 3.3.1.4.1 SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.6	≥ [ ] MPaG
2.d HPCF System Initiation	1,2,3, 4(g),5(g)	2 per subsystem(b)	B, C	SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.5	NA

Table 3.3.1.4-1 (Page 2 of 7)
ESF Actuation Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	APPLICABLE CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2.e	HPCF Device Actuation	1,2,3, $4^{(g)}$,$5^{(g)}$	1 per actuated device(c)	D	SR 3.3.1.4.2 SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.5	NA
2.f	HPCF B Manual Initiation	1,2,3, $4^{(g)}$,$5^{(g)}$	$2^{(d)}$	B, F	SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.7	NA
2.g	HPCF C Manual Initiation	1,2,3, $4^{(g)}$,$5^{(g)}$	$1^{(d)}$	D	SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.7	NA
3.	Reactor Core Isolation Cooling System Actuation					
3.a	RCIC Pump Discharge Pressure – High	1,$2^{(e)}$,$3^{(e)}$	$1^{(a)}$	C	SR 3.3.1.4.1 SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.6	≥ [ ] MPaG
3.b	RCIC Pump Discharge Flow – Low	1,$2^{(e)}$,$3^{(e)}$	$1^{(a)}$	C	SR 3.3.1.4.1 SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.6	≤ [ ] liters per min
3.c	RCIC System Initiation	1,$2^{(e)}$,$3^{(e)}$	$2^{(b)}$	B, C	SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.5	NA
3.d	RCIC Device Actuation	1,$2^{(e)}$,$3^{(e)}$	1 per actuated device(c)	D	SR 3.3.1.4.2 SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.5	NA
3.e	RCIC Manual Initiation	1,$2^{(e)}$,$3^{(e)}$	$2^{(d)}$	B, F	SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.7	NA

Table 3.3.1.4-1 (Page 3 of 7)
ESF Actuation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	APPLICABLE CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. Automatic Depressurization System					
4.a ADS System Initiation	1,2,3, 4[(f)],5[(f)]	2 per subsystem[(b)]	H, I	SR 3.3.1.4.3 SR 3.3.1.4.4	NA
4.b ADS Device Actuation	1,2,3, 4[(f)],5[(f)]	2 per ADS valve[(c)]	H, I	SR 3.3.1.4.2 SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.5	NA
4.c ADS Manual Initiation	1,2,3, 4[(f)],5[(f)]	2 per subsystem[(d)]	H, I	SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.7	NA
4.d ADS Division I ECCS Pump Discharge Pressure – High (permissive)	1,2[(f)],3[(f)]	1 per each of 5 pumps[(a)]	H, J, K, L, M	SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.6	≥ [ ] MPaG
4.e ADS Division II ECCS Pump Discharge Pressure – High (permissive)	1,2[(f)],3[(f)]	1 per each of 5 pumps[(a)]	H, J, K, L, M	SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.6	≥ [ ] MPaG
4.f ATWS Manual ADS Inhibit	1,2	2 per subsystem[(d)]	H, I	SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.7	NA
5. Diesel-Generator Actuation					
5.a Division I, II, & III Loss of Voltage – 6.9 kV	1,2,3, 4[(h)],5[(h)]	1 per phase[(a)]	C	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	≥ [ ] V and ≤ [ ] V for ≥ [ ] s and ≤ [ ] s
5.b Division I, II, & III Degraded Voltage – 6.9 kV	1,2,3, 4[(h)],5[(h)]	1 per phase[(a)]	C	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	≥ [ ] V and ≤ [ ] V for ≥ [ ] s and ≤ [ ] s

Table 3.3.1.4-1 (Page 4 of 7)
ESF Actuation Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	APPLICABLE CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
5.c	DG System Initiation	1,2,3, $4^{(h)}$,$5^{(h)}$	2 per DG[(b)]	B, C	SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.5	NA
5.d	DG Device Actuation	1,2,3, $4^{(h)}$,$5^{(h)}$	1 per actuated device[(c)]	D	SR 3.3.1.4.2 SR 3.3.1.4.3 SR 3.3.1.4.4	NA
5.e	DG Manual Initiation	1,2,3, $4^{(h)}$,$5^{(h)}$	2 per DG[(d)]	B, F	SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.7	NA
6.	Standby Gas Treatment System Actuation					
6.a	SGTS Initiation	1,2,3 (i)(j)	1 per subsystem[(b)]	B, C	SR 3.3.1.4.3 SR 3.3.1.4.4	NA
6.b	SGTS Device Actuation	1,2,3 (i)(j)	1 per actuated device[(c)]	D	SR 3.3.1.4.2 SR 3.3.1.4.3 SR 3.3.1.4.4	NA
7.	Reactor Building Cooling Water/Service Water Actuation					
7.a	RCW/RSW System Initiation	1,2,3, $4^{(g)}$,$5^{(g)}$	2 per subsystem[(b)]	B, C	SR 3.3.1.4.3 SR 3.3.1.4.4	NA
7.b	RCW/RSW Device Actuation	1,2,3, $4^{(g)}$,$5^{(g)}$	1 per actuated device[(c)]	D	SR 3.3.1.4.2 SR 3.3.1.4.3 SR 3.3.1.4.4	NA
7.c	RCW/RSW Manual Initiation	1,2,3, $4^{(g)}$,$5^{(g)}$	2 per subsystem[(d)]	B, F	SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.7	NA
7.d	Division I, II, & III Loss of Voltage – 6.9 kV	1,2,3, $4^{(h)}$,$5^{(h)}$	1 per phase[(a)]	C	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	≥ [ ] V and ≤ [ ] V for ≥ [ ] s and ≤ [ ] s

Table 3.3.1.4-1 (Page 5 of 7)
ESF Actuation Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	APPLICABLE CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
7.e	Division I, II, & III Degraded Voltage – 6.9 kV	1,2,3, 4[h],5[h]	1 per phase[a]	C	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	≥ [ ] V and ≤ [ ] V for ≥ [ ] s and ≤ [ ] s
8.	Containment Atmospheric Monitoring					
8.a	CAM System Initiation	1,2,3	2 per subsystem[b]	B, C	SR 3.3.1.4.3 SR 3.3.1.4.4	NA
8.b	CAM Device Actuation	1,2,3	1 per actuated device[c]	D	SR 3.3.1.4.2 SR 3.3.1.4.3 SR 3.3.1.4.4	NA
9.	Suppression Pool Cooling Actuation					
9.a	SPC System Initiation	1,2,3, 4[g],5[g]	2 per subsystem[b]	B, C	SR 3.3.1.4.3 SR 3.3.1.4.4	NA
9.b	SPC Device Actuation	1,2,3, 4[g],5[g]	1 per actuated device[c]	D	SR 3.3.1.4.2 SR 3.3.1.4.3 SR 3.3.1.4.4	NA
9.c	SPC Manual Initiation	1,2,3, 4[g],5[g]	2 per subsystem[d]	B, F	SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.7	NA
10.	Containment Isolation Valves Actuation					
10.a	CIV System Initiation	1,2,3 (i)(j)	2 per division[b]	B, C	SR 3.3.1.4.3 SR 3.3.1.4.4	NA
10.b	CIV Device Actuation	1,2,3 (i)(j)	1 per actuated device[c]	D	SR 3.3.1.4.2 SR 3.3.1.4.3 SR 3.3.1.4.4	NA
10.c	Drywell Sump Drain LCW Radiation – High	1,2,3	1[a]	E	SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.6	≤ [ ] gray

Table 3.3.1.4-1 (Page 6 of 7)
ESF Actuation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	APPLICABLE CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
10.d Drywell Sump Drain HCW Radiation – High	1,2,3	1[(a)]	E	SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.6	≤ [ ] gray
11. CIV Divisional Manual Initiation	1,2,3 (j)	2 per division[(d)]	B, C	SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.7	NA
12. Reactor Core Isolation Cooling Isolation Actuation					
12.a RCIC System Isolation Initiation	1,2,3	2 per division[(b)]	B, C	SR 3.3.1.4.3 SR 3.3.1.4.4	NA
12.b RCIC Isolation Device Actuation	1,2,3	1 per actuated device[(c)]	D	SR 3.3.1.4.2 SR 3.3.1.4.3 SR 3.3.1.4.4	NA
12.c RCIC Manual Isolation Initiation	1,2,3	2 per division[(d)]	B, F	SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.7	NA
12.d RCIC Turbine Exhaust Diaphragm Pressure – High	1,2,3	2 per division[(a)]	I	SR 3.3.1.4.1 SR 3.3.1.4.3 SR 3.3.1.4.4 SR 3.3.1.4.6	≥ [ ] MPaG
13. Reactor Water Cleanup Isolation Actuation					
13.a CUW System Isolation Initiation	1,2,3 (i)	2 per division[(b)]	B, C	SR 3.3.1.4.3 SR 3.3.1.4.4	NA
13.b CUW Isolation Device Actuation	1,2,3 (i)	1 per actuated device[(c)]	D	SR 3.3.1.4.2 SR 3.3.1.4.3 SR 3.3.1.4.4	NA
13.c CUW Isolation on SLC Initiation	1,2,3	1 per SLC division[(a)]	E	SR 3.3.1.4.4	NA

Table 3.3.1.4-1 (Page 7 of 7)
ESF Actuation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	APPLICABLE CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
14. Shutdown Cooling System Isolation Actuation					
14.a SD Cooling System Isolation Initiation	2,3, (i)	2 per division(b)	B, C	SR 3.3.1.4.3 SR 3.3.1.4.4	NA
14.b SD Cooling Isolation Device Actuation	2,3, (i)	1 per actuated device(c)	D	SR 3.3.1.4.2 SR 3.3.1.4.3 SR 3.3.1.4.4	NA

(a) These are SENSOR CHANNEL Functions.

(b) These are LOGIC CHANNEL Functions.

(c) These are OUTPUT CHANNEL Functions.

(d) These are manual initiation channel Functions.

(e) With reactor pressure greater than 1.03 MPaG.

(f) With reactor pressure greater than 0.343 MPaG.

(g) When associated subsystems are required to be operable.

(h) When associated Diesel-Generator is required to be OPERABLE per LCO 3.8.2 “AC Sources – Shutdown.”

(i) During CORE ALTERATIONS and operations with the potential for draining the reactor vessel.

(j) During movement of irradiated fuel assemblies in the secondary containment.

3.3 INSTRUMENTATION

3.3.2.1 Startup Range Monitor (SRNM) Instrumentation

LCO 3.3.2.1 The SRNM instrumentation for each Function in Table 3.3.2.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.2.1-1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required channel inoperable in one or more bypass groups.	--------------------NOTE------------------- LCO 3.0.4 is not applicable. --- A.1 Place channel in bypass. OR A.2 Place channel in trip.	 1 hour
B. Required Action and associated Completion Time of Condition A not met. OR Four or more required channels inoperable.	B.1 Be in MODE 3.	12 hours
C. One or more required SRNMs inoperable in MODE 3 or 4.	C.1 Fully insert all insertable control rods. AND	1 hour

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.2 Place reactor mode switch in the shutdown position.	1 hour
D. One required SRNM inoperable in MODE 5.	D.1 Suspend CORE ALTERATIONS except for control rod insertion.	Immediately
	<u>AND</u>	
	D.2 Initiate action to insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately
	<u>And</u>	
	D.3 Initiate action to restore required SRNM to OPERABLE status.	7 days
E. Two required SRNMs inoperable in MODE 5.	E.1 Initiate action to restore one required SRNM to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

---NOTE---

Refer to Table 3.3.2.1-1 to determine which SRs apply for each applicable MODE or other specified conditions.

SURVEILLANCE	FREQUENCY
SR 3.3.2.1.1 Perform CHANNEL CHECK.	12 hours

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.2.1.2	-----------------------------NOTE--------------------------- 1. Only required to be met during CORE ALTERATIONS. 2. Only part a. is required under the conditions specified in footnote (a) of Table 3.3.2.1-1. 3. 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 <u>AND</u> Following a change in the core quadrant where CORE ALERATIONS are being performed
SR 3.3.2.1.3	------------------------------NOTE-------------------------- Not required to be met with four or less fuel assemblies adjacent to the SRNM and no other fuel assemblies in the associated core quadrant. --- Verify count rate is ≥ 3.0 cps.	12 hours during CORE ALTERATIONS <u>AND</u> 24 hours

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.2.1.4	Perform CHANNEL FUNCTIONAL TEST.	[7] days
SR 3.3.2.1.5	Perform CHANNEL FUNCTIONAL TEST.	[31] days
SR 3.3.2.1.6	-------------------------------NOTE------------------------------ Neutron detectors are excluded. --- Perform CHANNEL CALIBRATION.	 18 months

Table 3.3.2.1-1 (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	2	Group # 1 - 4 Group # 2 - 3 Group # 3 - 3	SR 3.3.2.1.1 SR 3.3.2.1.3 SR 3.3.2.1.5 SR 3.3.2.1.6
	3,4	2	SR 3.3.2.1.1 SR 3.3.2.1.3 SR 3.3.2.1.5 SR 3.3.2.1.6
	5	2[(a),(b)]	SR 3.3.2.1.1 SR 3.3.2.1.2 SR 3.3.2.1.3 SR 3.3.2.1.4 SR 3.3.2.1.6

(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 SRNMs if connected to normal SRNM circuits.

3.3 INSTRUMENTATION

3.3.3.1 Essential Multiplexing System (EMS)

LCO 3.3.3.1 Four divisions of EMS data transmission shall be OPERABLE.

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

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more data transmission segments inoperable in one EMS division with data transmission maintained.	------------------NOTE------------------ LCO 3.0.4 is not applicable. --- A.1 Restore all data transmission segments to OPERABLE status.	Prior to entering MODE 2 following next MODE 4 entry
B. One or more data transmission segments inoperable in two or more EMS divisions with data transmission maintained in all divisions.	B.1 Restore all data transmission segments in at least three EMS divisions to OPERABLE status.	[30] days
C. Required Actions and associated Completion Times of Condition B not met.	C.1 Verify data transmission capability. <u>AND</u> C.2 Initiate action in accordance with Specification 5.5.2.10.	1 hour <u>AND</u> Once per 24 hours thereafter Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One or more EMS divisions inoperable.	--------------------NOTE------------------- LCO 3.0.4 is not applicable. --- D.1 Declare affected Functions and supported Features inoperable.	 4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.3.1.1	Verify the required data transmission path segments are OPERABLE.	[92] days
SR 3.3.3.1.2	Perform a comprehensive network performance test.	18 months

3.3 INSTRUMENTATION

3.3.4.1 Anticipated Transient Without Scram (ATWS) and End-of-Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation

LCO 3.3.4.1 The channels for each Function listed in Table 3.3.4.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.4.1-1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one inoperable channel.	-------------------NOTE-------------------- Applies only to Functions 1, 3, 5, 11, and 14 in Table 3.3.4.1-1. --	
	A.1.1 Place channel(s) in bypass.	6 hours
	<u>AND</u>	
	A.1.2.1 Restore channel(s) to OPERABLE status.	14 days
	<u>OR</u>	
	A.1.2.2 Place channel(s) in trip.	14 days
	<u>OR</u>	
	A.2 Place channel(s) in trip.	6 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more Functions with two or more channels inoperable.	-------------------NOTE-------------------- Applies only to Functions 1, 3, 5, 11, and 14 in Table 3.3.4.1-1. ---	
	B.1 Restore two channels to OPERABLE status.	72 hours
C. One or more Functions with one channel inoperable.	-------------------NOTE-------------------- Applies only to Functions 2, 4, and 9 in Table 3.3.4.1-1. ---	
	C.1.1 Place channel(s) in bypass.	6 hours
	AND	
	C.1.2.1 Restore channel(s) to OPERABLE status.	30 days
	OR	
	C.1.2.2 Place channel(s) in trip.	30 days
	OR	
	C.2 Place channel(s) in trip.	6 hours
D. One or more Functions with two channels inoperable.	-------------------NOTE-------------------- Applies only to Functions 2, 4, and 9 in Table 3.3.4.1-1. ---	
	D.1 Restore one inoperable channel to OPERABLE status.	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One or more Functions with three or more channels inoperable.	-------------------NOTE-------------------- Applies only to Functions 2, 4, and 9 in Table 3.3.4.1-1. --	
	E.1 Restore at least one inoperable channel to OPERABLE status.	[24] hours
F. Required Action and associated Completion Time of Condition C, D, or E not met.	-------------------NOTE-------------------- Applies only to Function 4 in Table 3.3.4.1-1. --	
	F.1 Apply the MCPR limit for inoperable EOC-RPT as specified in the COLR.	[2] hours
	<u>OR</u>	
	F.2 Reduce power to ≤ 40% RTP.	[2] hours
G. One or more Functions with one or more channels inoperable.	-------------------NOTE-------------------- Applies only to Functions 6, 7, 8, 10, 12, 13, 15, and 16 in Table 3.3.4.1-1. --	
	G.1 Restore channels to OPERABLE status.	[24] hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
H. Required Action and associated Completion Time not met.	H.1	--------------NOTE------------ Applies only to Functions 6, 7, 8, and 16 in Table 3.3.4.1-1. ---------------------------------- Declare affected Functions and supported Features inoperable.	Immediately
	OR		
	H.2	--------------NOTE------------ Applies only to Function 1, 2, 3, 5, 9, 10, 12, 13, 14, and 15 in Table 3.3.4.1-1. ---------------------------------- Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

---NOTE---
Refer to Table 3.3.4.1-1 to determine the applicability of the SRs to each RPT Function.

SURVEILLANCE		FREQUENCY
SR 3.3.4.1.1	Perform SENSOR CHANNEL CHECK.	12 hours
SR 3.3.4.1.2	Perform CHANNEL FUNCTIONAL TEST.	[92] days
SR 3.3.4.1.3	Perform SENSOR CHANNEL CALIBRATION.	18 months
SR 3.3.4.1.4	Perform LOGIC SYSTEM FUNCTIONAL TEST.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.4.1.5	Verify the RPT SYSTEM RESPONSE TIME is within limits.	18 months
SR 3.3.4.1.6	Perform COMPREHENSIVE FUNCTIONAL TEST.	18 months
SR 3.3.4.1.7	Perform CHANNEL FUNCTIONAL TEST.	7 days

Table 3.3.4.1-1 (page 1 of 2)
ATWS and EOC-RPT Instrumentation

	FUNCTION	REQUIRED CHANNELS	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUES
1.	Feedwater Reactor Vessel Water Level – Low, Level 3	3	1,2	SR 3.3.4.1.1 SR 3.3.4.1.2 SR 3.3.4.1.3 SR 3.3.4.1.4 SR 3.3.4.1.5	≥ [ ] cm
2.	Reactor Water Vessel Level – Low, Level 2	4	1,2	SR 3.3.4.1.1 SR 3.3.4.1.2 SR 3.3.4.1.3 SR 3.3.4.1.4 SR 3.3.4.1.5 SR 3.3.4.1.6	≥ [ ] cm
3.	SB&PC Reactor Steam Dome Pressure – High	3	1,2	SR 3.3.4.1.1 SR 3.3.4.1.2 SR 3.3.4.1.3 SR 3.3.4.1.4 SR 3.3.4.1.5	≤ [ ] MPaG
4.	EOC-RPT Initiation	4	≥ 40% RTP.	SR 3.3.4.1.2 SR 3.3.4.1.5 SR 3.3.4.1.6	NA
5.	RPT Trip Initiation Function of the RFC	3	1,2	SR 3.3.4.1.2 SR 3.3.4.1.4	NA
6.	ASD Pump Trip Actuation	1 per ASD	1,2	SR 3.3.4.1.4	NA
7.	ASD Pump Trip Timers	1 per ASD	1,2	SR 3.3.4.1.3 SR 3.3.4.1.4	footnote [(a)]
8.	ASD Pump Trip Load Interruption	1 per ASD	1,2	SR 3.3.4.1.4	NA
9.	RPS Scram Follow Signal	4	1,2	SR 3.3.4.1.2 SR 3.3.4.1.4 SR 3.3.4.1.6	NA
10.	Manual ATWS-ARI/SLCS Initiation	2	1,2	SR 3.3.4.1.4 SR 3.3.4.1.7	NA
11.	ATWS-ARI Trip Initiation Function of the RFC	3	1,2	SR 3.3.4.1.4	NA
12.	ATWS-FMCRD Initiation Function of the RCIS	2	1,2	SR 3.3.4.1.4	NA

Table 3.3.4.1-1 (page 2 of 2)
ATWS and EOC-RPT Instrumentation

	FUNCTION	REQUIRED CHANNELS	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUES
13.	FMCRD Insertion Confirmatory Logic	1	1,2	SR 3.3.4.1.4	
14.	ATWS-ARI Valve Actuation	3	1,2	SR 3.3.4.1.4	NA
15.	FMCRD Emergency Insertion Invertor Control Logic	1 per rod	1,2	SR 3.3.4.1.4	NA
16.	Recirculation Runback	1 per pump	1,2	SR 3.3.4.1.4	NA

(a) ≤ [ ] seconds for RIPs [A, D, F, J, B, E, & H] and ≤ [ ] seconds for RIPs [C, G, & K].

3.3 INSTRUMENTATION

3.3.4.2 Feedwater and Main Turbine Trip Instrumentation

LCO 3.3.4.2 Three channels of feedwater and main turbine trip instrumentation shall be OPERABLE.

APPLICABILITY: THERMAL POWER ≥ 25% RTP.

ACTIONS

---NOTE---

Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One feedwater and main turbine trip channel inoperable.	A.1 Place channel in trip. <u>OR</u> A.2.1 Place channel in bypass. <u>AND</u> A.2.2.1 Restore channel to OPERABLE status. <u>OR</u> A.2.2.2 Place channel in trip.	6 hours 6 hours 14 days 14 days
B. Two or more feedwater and main turbine trip channels inoperable.	B.1 Restore two channels to OPERABLE status.	72 hours
C. Required Action and associated Completion Time not met.	C.1 Reduce THERMAL POWER to < 25% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.4.2.1	Perform SENSOR CHANNEL CHECK.	24 hours
SR 3.3.4.2.2	Perform CHANNEL FUNCTIONAL TEST.	[92] days
SR 3.3.4.2.3	Perform SENSOR CHANNEL CALIBRATION. The Allowable Value shall be ≤ [ ] inches.	18 months
SR 3.3.4.2.4	Perform LOGIC SYSTEM FUNCTIONAL TEST including [valve] actuation.	18 months

3.3 INSTRUMENTATION

3.3.5.1 Control Rod Block Instrumentation

LCO 3.3.5.1 The control rod block instrumentation for each Function in Table 3.3.5.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.5.1-1.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Automated Thermal Limit Motor (ATLM) channel inoperable.	A.1 Restore channel to OPERABLE status. OR A.2 Verify the thermal limits are met.	[72] hours 4 hours AND Once per 4 hours thereafter
B. Two ATLM channels inoperable.	--------------------NOTE-------------------- Removal of ATLM block under administrative control is permitted provided manual control of rod movement and thermal limits are verified by a second licensed operator. -- B.1 Insert an ATLM block. AND B.2 Verify RCIS blocks control rod movement by attempting to withdraw one rod or one gang or rods.	 Immediately 4 hours AND Once per 4 hours thereafter

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One Rod Worth Minimizer (RWM) channel inoperable.	C.1	Restore channel to OPERABLE status.	[72] Hours
D. Two RWM channels inoperable. <u>OR</u> Required Actions and associated Completion Time of Condition C not met.	D.1	Suspend control rod movement, except by scram.	Immediately
E. One or more Reactor Mode Switch - Shutdown Position channels inoperable.	E.1	Suspend control rod withdrawal.	Immediately
	<u>AND</u>		
	E.2	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 3.3.5.1-1 to determine which SRs apply for each Control Rod Block Function.

SURVEILLANCE		FREQUENCY
SR 3.3.5.1.1	------------------------------NOTE------------------------------ Not required to be performed until 1 hour after THERMAL POWER is > [10]% RTP. --- Perform CHANNEL FUNCTIONAL TEST.	[92] days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.5.1.2	------------------------------NOTE------------------------------ Not required to be performed until 1 hour after any control rod is withdrawn in MODE 2. --- Perform CHANNEL FUNCTIONAL TEST.	 [92] days
SR 3.3.5.1.3	Verify the RWM is not bypassed when THERMAL POWER is ≤ [10]% RTP.	18 months
SR 3.3.5.1.4	Verify the ATLM is not bypassed when THERMAL POWER is ≥ [30]% RTP.	18 months
SR 3.3.5.1.5	------------------------------NOTE------------------------------ Not required to be performed until 1 hour after reactor mode switch is in the shutdown position. --- Perform CHANNEL FUNCTIONAL TEST.	 18 months
SR 3.3.5.1.6	Perform CHANNEL CHECK of process parameter and setpoint inputs to the ATLM.	[24] hours
SR 3.3.5.1.7	Verify the bypassing and movement of control rods required to be bypassed in the Rod Action and Position Information (RAPI) Subsystem by a second licensed operator or other qualified member of the technical staff.	Prior to and during movement of control rods bypassed in the RAPI Subsystem

Table 3.3.5.1-1 (page 1 of 1)
Control Rod Block Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS
1. Rod Control & Information System			
a. Automated Thermal Limit Monitor	[(a)]	2	SR 3.3.5.1.1 SR 3.3.5.1.4 SR 3.3.5.1.6
b. Rod Worth Minimizer	1[(b)], 2[(b)]	2	SR 3.3.5.1.2 SR 3.3.5.1.3
2. Reactor Mode Switch – Shutdown Position	(c)	4	SR 3.3.5.1.5

(a) THERMAL POWER > [30]% RTP.

(b) With THERMAL POWER ≤ [10]% RTP.

(c) Reactor mode switch in the shutdown position.

3.3 INSTRUMENTATION

3.3.6.1 Post Accident Monitoring (PAM) Instrumentation

LCO 3.3.6.1 The PAM instrumentation for each Function in Table 3.3.6.1-1 shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

--NOTE--

1. LCO 3.0.4 is not applicable.

2. Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more Functions with one required channel inoperable.	A.1	Restore required channel to OPERABLE status.	30 days
B. Required Action and associated Completion Time of Condition A not met.	B.1	Provide alternate method of monitoring, determine the cause of the inoperability, and submit plans and schedule for restoring the instrumentation channels of the Functions to OPERABLE status to the NRC.	14 days
C. One or more Functions with two required channels inoperable.	--------------------NOTE------------------- This Action is not applicable to Functions 11 and 12. --		
	C.1	Restore at least one inoperable channel to OPERABLE status.	7 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Two required hydrogen/oxygen monitor channels inoperable.	D.1	Restore one required hydrogen/oxygen monitor channel to OPERABLE status.	72 hours
E. Required Action and associated Completion Time of Condition C or D not met.	E.1	Enter the Condition referenced in Table 3.3.6.1-1 for the channel.	Immediately
F. As required by Required Action E.1 and referenced in Table 3.3.6.1-1.	F.1	Be in MODE 3.	12 hours
G. As required by Required Action E.1 and referenced in Table 3.3.6.1-1.	G.1	Provide alternate method of monitoring, determine the cause of the inoperability, and submit plans and schedule for restoring the instrumentation channels of the Functions to OPERABLE status to the NRC.	14 days

SURVEILLANCE REQUIREMENTS

---NOTE---

1. These SRs apply to each Function in Table 3.3.6.1-1.

2. SR 3.3.6.1.1 does not apply to Function 8.

SURVEILLANCE		FREQUENCY
SR 3.3.6.1.1	Perform CHANNEL CHECK.	[31] days
SR 3.3.6.1.2	------------------NOTE----------------- Neutron detectors are excluded. --- Perform CHANNEL CALIBRATION.	18 months

Table 3.3.6.1-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION E.1
1. Reactor Steam Dome Pressure	2	F
2. Reactor Vessel Water Level – Wide Range	2	F
3. Reactor Vessel Water Level – Fuel Zone	2	F
4. Suppression Pool Water Level	2	F
5. Containment Pressure		
5a. Drywell Pressure	2	F
5b. Wide Range Containment Pressure	2	F
6. Drywell Area Radiation	2	G
7. Wetwell Area Radiation	2	G
8. PCIV Position	2 per penetration flow path [(a),(b)]	F
9. Startup Range Neutron Monitor – Neutron Flux	2[(c)]	F
10. Average Power Range Monitor – Neutron Flux	2[(d)]	F
11. Containment Atmospheric Monitors – Drywell H_2 & O_2 Analyzer	2	F
12. Containment Atmospheric Monitors – Wetwell H_2 & O_2 Analyzer	2	F
13. Containment Water Level	2	F
14. Suppression Pool Water Temperature	2[(e)]	F
15. Drywell Atmosphere Temperature	2	F
16. Main Steam Line Radiation	2	F

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

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

(c) When power is ≤ [10]% RTP.

(d) When power is > [10]% RTP.

(e) Bulk average temperature.

3.3 INSTRUMENTATION

3.3.6.2 Remote Shutdown System

LCO 3.3.6.2 The Remote Shutdown System (RSS) instrumentation for each Function listed in Table 3.3.6.2-1 shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

---NOTE---

1. LCO 3.0.4. is not applicable.

2. Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One RSS division with one or more required Functions inoperable.	A.1	Restore required Functions to OPERABLE status.	90 days
B. Two RSS divisions with one or more required Functions inoperable.	B.1	Restore required Functions to OPERABLE status.	30 days
C. Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.6.2.1	Perform CHANNEL CHECK for each required instrumentation channel.	[31] days
SR 3.3.6.2.2	Verify each required control circuit and transfer switch is capable of performing the intended functions.	18 months
SR 3.3.6.2.3	Perform CHANNEL CALIBRATION for each required instrumentation channel.	18 months

Table 3.3.6.2-1 (page 1 of 2)
Remote Shutdown System Instrumentation

FUNCTION (INSTRUMENT OR CONTROL PARAMETER)	REQUIRED NUMBER OF DIVISIONS
1. Reactor Steam Dome Pressure	2
2. HPCF B Flow	1
3. HPCF B Controls	1(c)
4. HPCF B Pump Discharge Pressure	1
5. RHR Flow	2(a)
6. RHR Hx Inlet Temperature	2(a)
7. RHR Hx Outlet Temperature	2(a)
8. RHR Hx Bypass Valve Position	2(a)
9. RHR Hx Outlet Valve Position	2(a)
10. RHR Pump Discharge Pressure	2(a)
11. RHR Controls	2(a)(c)
12. RPV Wide Range Water Level	2
13. RPV Narrow Range Water Level	2
14. Reactor Building Cooling Water Flow	2
15. Reactor Building Cooling Water Controls	2(c)
16. Reactor Building Service Water System Controls	2(c)
17. Cooling Water Flow to Flammability Control System	1
18. Suppression Pool Water Level	2
19. Condensate Storage Tank Water Level	2

Table 3.3.6.2-1 (page 2 of 2)
Remote Shutdown System Instrumentation

FUNCTION (INSTRUMENT OR CONTROL PARAMETER)	REQUIRED NUMBER OF DIVISIONS
20. Suppression Pool Temperature	2
21. Electric Power Distribution Controls	2(c)
22. Diesel Generator Interlock and Monitors	2
23. SRV Controls	(b)(c)
24. N_2 Header Pressure	2
25. Drywell Pressure – Wide Range	2
26. Suppression Pool Water Level – Wide Range	2
27. RPV Wide Range Water Level – Cold	2

(a) RHR A for division I RSS panel, RHR B for division II RSS panel.

(b) Three on the Division I RSS, 1 on division II RSS.

(c) The specified number of channels are required to be OPERABLE for each device that can be controlled from the RSS panels.

3.3 INSTRUMENTATION

3.3.7.1 Control Room Habitability Area (CRHA) Emergency Filtration (EF) System Instrumentation

LCO 3.3.7.1 The CRHA EF System instrumentation for each Function in Table 3.3.7.1-1 shall be OPERABLE.

APPLICABILITY:

a. MODES 1, 2, and 3.

b. During movement of irradiated fuel assemblies in the secondary containment.

c. During CORE ALTERATIONS.

d. During operations with a potential for draining the reactor vessel.

ACTIONS

--NOTE--

Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more EF divisions with one control room ventilation radiation monitor channel inoperable.	A.1	Place channel in trip.	6 hours
	OR		
	A.2	Place channel in bypass.	6 hours
B. One or more EF divisions with two control room ventilation radiation monitor channels inoperable.	B.1	Place one channel in trip and the other in bypass.	6 hours
	AND		
	B.2	Restore one channel to OPERABLE status.	Prior to completion of next CHANNEL FUNCTIONAL TEST

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met.	C.1	Place the associated EF division in the emergency filtration mode of operation.	1 hour
OR	OR		
One or more EF divisions with one or more Manual Switch channel or low flow actuation channel inoperable.	C.2	Declare associated EF division inoperable.	1 hour
OR			
One or more EF divisions with 3 or more control room radiation monitor channels inoperable.			

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE		FREQUENCY
SR 3.3.7.1.1	Perform CHANNEL CHECK.	[24] hours
SR 3.3.7.1.2	Perform CHANNEL FUNCTIONAL TEST.	[92] days
SR 3.3.7.1.3	Perform CHANNEL CALIBRATION.	18 months
SR 3.3.7.1.4	Perform LOGIC SYSTEM FUNCTIONAL TEST.	18 months

Table 3.3.7.1-1 (page 1 of 1)
Control Room Habitability Area - Emergency Filtration System Instrumentation

FUNCTION	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Control Room Ventilation Radiation Monitors	4 per EF division	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.3 SR 3.3.7.1.4	≤ [ ] mGy/h
2. Emergency Filtration System Low Flow	2 per EF division	SR 3.3.7.1.2 SR 3.3.7.1.3 SR 3.3.7.1.4	≤ [ ] kg/h
3. Emergency Filtration System Manual Switch	1 per EF division	SR 3.3.7.1.2 SR 3.3.7.1.4	NA

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

(b) During movement of irradiated fuel assemblies in the secondary containment.

3.3 INSTRUMENTATION

3.3.8.1 Electric Power Monitoring

LCO 3.3.8.1 Two Electric Power Monitoring assemblies shall be OPERABLE for each inservice Class 1E Constant Voltage Constant Frequency (CVCF) power supply.

APPLICABILITY: MODES 1, 2, and 3,
MODES 4 and 5 with any control rod withdrawn from a core cell containing one or more fuel assemblies, or with both residual heat removal (RHR) shutdown cooling isolation valves open.

ACTIONS

--NOTE--
Separate Condition entry is allowed for each CVCF power supply.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more inservice CVCF power supplies with one Electric Power Monitoring assembly inoperable.	A.1	Place the associated Electric Power Monitoring assembly circuit breaker in the tripped condition.	1 hour
B. One or more inservice CVCF power supplies with both Electric Power Monitoring assemblies inoperable.	B.1	Remove associated inservice power supply(s) from service.	72 hours
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	C.1	Be in MODE 3.	12 hours
	<u>AND</u>		
	C.2	Be in MODE 4.	36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Required Action and associated Completion Time of Condition A or B not met in MODE 4 or 5 with any control rod withdrawn from a core cell containing one or more fuel assemblies or with both RHR shutdown cooling isolation valves open.	D.1	Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately
	<u>AND</u>		
	D.2.1	Initiate action to restore one Electric Power Monitoring assembly to OPERABLE status for inservice power supply(s).	Immediately
	<u>OR</u>		
	D.2.2	Initiate action to isolate the Residual Heat Removal Shutdown Cooling Systems.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.8.1.1	Perform CHANNEL FUNCTIONAL TEST.	[92] days
SR 3.3.8.1.2	Perform CHANNEL CALIBRATION. The Allowable Values for Divisions I, II, III, and IV shall be: a. Undervoltage: ≤ [108] VAC. b. Overvoltage: ≥ [132] VAC. c. Underfrequency: ≤ [57] Hz. d. Overfrequency: ≥ [63] Hz.	[92] days
SR 3.3.8.1.3	Perform SYSTEM FUNCTIONAL TEST.	18 months

3.3 INSTRUMENTATION

3.3.8.2 Reactor Coolant Temperature Monitoring - Shutdown

LCO 3.3.8.2 One Reactor Coolant Temperature Monitoring channel associated with each RHR subsystem operating in the Shutdown Cooling Mode shall be OPERABLE.

APPLICABILITY: When RHR is operating in the Shutdown Cooling Mode.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more reactor coolant temperature monitoring channels inoperable.	A.1 Verify at least one RHR subsystem is operating in the Shutdown Cooling Mode. AND A.2 Verify an alternate method of reactor coolant temperature monitoring is available.	Immediately 1 hour AND Once per 24 hours thereafter
B. Required Action and associated Completion Time of Condition A not met.	B.1 Initiate action to restore reactor coolant temperature monitoring capability.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.8.2.1	Perform CHANNEL CHECK.	[7] days
SR 3.3.8.2.2	Perform CHANNEL FUNCTIONAL TEST.	[92] days
SR 3.3.8.2.3	Perform CHANNEL CALIBRATION.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.1 Reactor Internal Pumps (RIPs) - Operating

LCO 3.4.1 At least nine RIPs shall be in operation.

[OR

[ ] RIPs may be in operation provided the following limits are applied when the associated LCO is applicable:

a. LCO 3.2.1, “AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR),” limits specified in the COLR for [ ] RIPs in operation; and

b. LCO 3.2.2, “MINIMUM CRITICAL POWER RATIO (MCPR),” limits specified in the COLR for [ ] RIPs in operation; and

c. LCO 3.3.1.1, “SSLC Sensor Instrumentation,” Function 2.b (Average Power Range Monitors Flow Biased Simulated Thermal Power - High), Allowable Value of Table 3.3.1.1-1 is reset for operation with [ ] RIPs.]

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

SURVEILLANCE		FREQUENCY
SR 3.4.1.1	Verify at least the required number of RIPs are OPERABLE at any THERMAL POWER level.	24 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.2 Safety/Relief Valves (S/RVs)

LCO 3.4.2 The safety function of twelve S/RVs shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required S/RV inoperable.	A.1 Restore required S/RV to OPERABLE status.	14 day
B. Required Action and associated Completion Time of Condition A not met. OR Two or more required S/RVs inoperable.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.2.1	Verify the safety function lift setpoints of the required S/RVs are as follows: Number of S/RVs — Setpoint (MPaG) 2 — 7.92 ± 0.0792 4 — 7.99 ± 0.0799 4 — 8.06 ± 0.0806 4 — 8.13 ± 0.0813 4 — 8.19 ± 0.0819 Following testing, lift settings shall be within ± 1%.	In accordance with the Inservice Testing Program
SR 3.4.2.2	------------------------------NOTE----------------------------- Not required to be performed until 12 hours after reactor steam dome pressure is ≥ 6.55 MPaG. --- Verify each required S/RV opens when manually actuated.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.3 RCS Operational LEAKAGE

LCO 3.4.3 RCS operational LEAKAGE shall be limited to:

a. No pressure boundary LEAKAGE,

b. ≤ 3.785 L/min unidentified LEAKAGE; and

c. ≤ 98.4 L/min total LEAKAGE averaged over the previous 24 hour period.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Unidentified LEAKAGE not within limit. <u>OR</u> Total LEAKAGE not within limit.	A.1 Reduce LEAKAGE to within limits.	4 hours
B. Required Action and associated Completion Time of Condition A not met. <u>OR</u> Pressure boundary LEAKAGE exists.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.3.1	Verify RCS unidentified and total LEAKAGE are within limits.	8 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.4 RCS Pressure Isolation Valve (PIV) Leakage

LCO 3.4.4 The leakage from each RCS PIV shall be within limit.

APPLICABILITY: MODES 1 and 2,
MODE 3, except valves in the residual heat removal (RHR) shutdown cooling flowpath are not required to meet the requirements of this LCO when in the shutdown cooling mode of operation.

ACTIONS

---NOTES---

1. Separate Condition entry is allowed for each flow path.

2. Enter applicable Conditions and Required Actions for systems made inoperable by PIVs.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Leakage from one or more RCS PIVs not within limit.	--------------------NOTE------------------- Each valve used to satisfy Required Action A.1 and Required Action A.2 shall have been verified to meet SR 3.4.4.1 and be in the reactor coolant pressure boundary. ---	
	A.1 Isolate the high pressure portion of the affected system from the low pressure portion by use of one closed manual, deactivated automatic, or check valve.	4 hours
	<u>AND</u>	

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.2	Isolate the high pressure portion of the affected system from the low pressure portion by use of a second closed manual, deactivated automatic, or check valve.	72 hours
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.4.1	-------------------------------NOTE------------------------------ Not required to be performed in MODE 3. --- Verify equivalent leakage of each RCS PIV is ≤ 1.9 L/min per 2.54 cm (nominal inch) of valve size up to a maximum of 19 L/min, at an RCS pressure ≥ 7.17 MPaG and ≤ 7.31 MPaG.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Leakage Detection Instrumentation

LCO 3.4.5 The following RCS leakage detection instrumentation shall be OPERABLE:

a. Drywell floor drain sump monitoring system;

b. The airborne particulate channel of the drywell fission products monitoring system; and

c. The gaseous radioactivity channel of the drywell fission products monitoring system or the drywell air cooler condensate flow monitoring system.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drywell floor drain sump monitoring system inoperable.	--------------------NOTE------------------- LCO 3.0.4 is not applicable. --- A.1 Restore drywell floor drain sump monitoring system to OPERABLE status.	 30 days
B. Airborne particulate channel of drywell fission products monitoring system inoperable.	--------------------NOTE------------------- LCO 3.0.4 is not applicable. --- B.1 Analyze grab samples of drywell atmosphere. <u>AND</u> B.2 Restore airborne particulate channel of drywell fission product monitoring system to OPERABLE status.	 Once per 12 hours 30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Gaseous radioactivity channel of drywell fission products monitoring system inoperable. AND Drywell air cooler condensate flow monitoring system inoperable.	--------------------NOTE------------------- LCO 3.0.4 is not applicable. --- C.1 Restore gaseous radioactivity channel of drywell fission products monitoring system to OPERABLE status. OR C.2 Restore drywell air cooler condensate flow monitoring system to OPERABLE status.	 30 days 30 days
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 4.	12 hours 36 hours
E. All required leakage detection systems inoperable.	E.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.5.1	Perform CHANNEL CHECK of required drywell atmospheric monitoring system.	12 hours
SR 3.4.5.2	Perform CHANNEL FUNCTIONAL TEST of required leakage detection instrumentation.	31 days
SR 3.4.5.3	Perform CHANNEL CALIBRATION of required leakage detection instrumentation.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Specific Activity

LCO 3.4.6 The specific activity of the reactor coolant shall be limited to:

a. DOSE EQUIVALENT I-131 specific activity ≤ 7400 Bq/g; and

b. Gross specific activity ≤ ($3.7 \times 10^6/\bar{E}$) Bq/g.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Reactor coolant specific activity > 7400 Bq/g and ≤ 148,000 Bq/g DOSE EQUIVALENT I-131.	--------------------NOTE------------------- LCO 3.0.4 is not applicable. ---	
	A.1 Determine DOSE EQUIVALENT I-131.	Once per 4 hours
	<u>AND</u>	
	A.2 Restore DOSE EQUIVALENT I-131 to within limits.	48 hours
B. Required Action and associated Completion Time of Condition A not met. <u>OR</u> Reactor coolant specific activity > 148,000 Bq/g DOSE EQUIVALENT I-131.	B.1 Determine DOSE EQUIVALENT I-131.	Once per 4 hours
	<u>AND</u>	
	B.2.1 Isolate all main steam lines.	12 hours
	<u>OR</u>	
	B.2.2.1 Be in MODE 3.	12 hours
	<u>AND</u>	
	B.2.2.2 Be in MODE 4.	36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Reactor coolant specific activity > $(3.7x10^6/\bar{E})$ Bq/g.	C.1 Isolate all main steam lines. OR C.2.1 Be in MODE 3. AND C.2.2 Be in MODE 4.	12 hours 12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.6.1	Verify reactor coolant gross specific activity is ≤ $(3.7x10^6/\bar{E})$ Bq/g.	7 days
SR 3.4.6.2	------------------------------NOTE------------------------------ Only required to be performed in MODE 1. --- Verify reactor coolant DOSE EQUIVALENT I-131 specific activity is ≤ 7400 Bq/g.	31 days
SR 3.4.6.3	------------------------------NOTE------------------------------ Not required to be performed until 31 days after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours. --- Determine $\bar{E}$ from a sample taken in MODE 1 after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours.	184 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 Residual Heat Removal (RHR) Shutdown Cooling System – Hot Shutdown

LCO 3.4.7 Three RHR shutdown cooling subsystems shall be OPERABLE, and, with less than 5 reactor internal pumps (RIPs) in operation, at least one RHR shutdown cooling subsystem shall be in operation.

---NOTES---

1. All RHR shutdown cooling subsystems and reactor internal pumps may be removed from operation for up to 2 hours per 8 hour period.

2. One RHR shutdown cooling subsystem may be inoperable for up to 2 hours for performance of Surveillances provided one of the remaining RHR shutdown cooling subsystems is OPERABLE.

APPLICABILITY: MODE 3 with reactor steam dome pressure < 0.932 MPaG.

ACTIONS

---NOTE---

LCO 3.0.4 is not applicable.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more required RHR shutdown cooling subsystems inoperable.	A.1	Initiate action to restore required RHR shutdown cooling subsystem(s) to OPERABLE status.	Immediately
	<u>AND</u>		
			(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.2	Initiate action to be in MODE 4.	Immediately
	AND		
	A.3	Verify an alternate method of decay heat removal is available for each required inoperable RHR shutdown cooling subsystem.	1 hour
B. No RHR shutdown cooling subsystem in operation. AND Less than 5 RIPs in operation.	B.1.1	Initiate action to restore one RHR shutdown cooling subsystem to operation.	Immediately
	OR		
	B.1.2	Initiate action to restore at least 5 RIPs to operation.	Immediately
	AND		
	B.2	Verify reactor coolant circulation by an alternate method.	1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter
	AND		
	B.3	Monitor reactor coolant temperature and pressure.	Once per hour

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.7.1	-------------------------------NOTE------------------------------ Not required to be met until 2 hours after reactor steam dome pressure is < 0.932 MPaG. ---	
	Verify one RHR shutdown cooling subsystem or at least 5 RIPs are operating.	12 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 Residual Heat Removal (RHR) Shutdown Cooling System – Cold Shutdown

LCO 3.4.8 Three RHR shutdown cooling subsystems shall be OPERABLE, and, with less than 5 reactor internal pumps (RIPs) in operation, at least one RHR shutdown cooling subsystem shall be in operation.

--NOTES--

1. All RHR shutdown cooling subsystems and reactor internal pumps may be removed from operation for up to 2 hours per 8 hour period.

2. One RHR shutdown cooling subsystem may be inoperable for up to 2 hours for the performance of Surveillances.

3. One RHR shutdown cooling subsystem may be inoperable after 30 hours from initial entry into MODE 4 from MODE 3.

APPLICABILITY: MODE 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more required RHR shutdown cooling subsystems inoperable.	A.1	Verify an alternate method of decay heat removal is available for each required inoperable RHR shutdown cooling subsystem.	1 hour <u>AND</u> Once per 24 hours thereafter

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. No RHR shutdown cooling subsystem in operation. AND Less than 5 RIPs in operation.	B.1	Verify reactor coolant circulating by an alternate method.	1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter
	AND		
	B.2	Monitor reactor coolant temperature and pressure.	Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify one RHR shutdown cooling subsystem or at least 5 RIPs are operating.	12 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 RCS Pressure and Temperature (P/T) Limits

LCO 3.4.9 RCS pressure, RCS temperature, RCS heatup and cooldown rate requirements shall be maintained within the limits specified in the PTLR.

APPLICABILITY: At all times.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	-------------------------------NOTE------------------------------ Only required to be performed during RCS heatup and cooldown operations, and RCS inservice leak and hydrostatic testing. --- Verify RCS pressure, RCS temperature, and RCS heatup and cooldown rates are within the limits specified in the PTLR.	30 minutes
SR 3.4.9.2	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
SR 3.4.9.3	-------------------------------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 3.4.9.4	-------------------------------NOTE------------------------------ Not required to be performed until 30 minutes after RCS temperature ≤ [27°C] in MODE 4. --- Verify reactor vessel flange and head flange temperatures are within the limits specified in the PTLR.	30 minutes

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.9.5	-------------------------------NOTE------------------------------ Not required to be performed until 12 hours after RCS temperature ≤ [38°C] in MODE 4. --- Verify reactor vessel flange and head flange temperatures are within the limits specified in the PTLR.	 12 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.10 Reactor Steam Dome Pressure

LCO 3.4.10 The reactor steam dome pressure shall be ≤ 7.17 MPaG.

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 3.4.10.1	Verify reactor steam dome pressure is ≤ 7.17 MPaG.	12 hours

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.1 ECCS – Operating

LCO 3.5.1 Each ECCS subsystem and the Automatic Depressurization System (ADS) function of eight safety/relief valves shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3, except ADS valves and RCIC are not required to be OPERABLE with reactor steam dome pressure ≤ 0.343 MPaG for ADS and ≤ 1.03 MPaG for RCIC.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two ECCS subsystems inoperable provided RCIC is OPERABLE.	A.1 Restore ECCS subsystem(s) to OPERABLE status.	14 days
B. RCIC inoperable. OR RCIC and any one other ECCS subsystem inoperable.	B.1.1 Verify the CTG is functional by verifying the CTG starts and achieves steady state voltage and frequency within 2 minutes.	7 days
	AND	
	B.1.2 Verify the CTG circuit breakers are capable of being aligned to each of the ESF buses.	7 days AND Once per 8 hours thereafter
	OR	
	B.2 Verify the ACIWA mode of RHR(B or C) subsystem is functional.	7 days
	AND	
	B.3 Restore ECCS subsystem(s) to OPERABLE status.	14 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. RCIC and any other two ECCS subsystems inoperable provided at least one HPCF subsystem is OPERABLE.	C.1.1.1 Verify the CTG is functional by verifying the CTG starts and achieves steady state voltage and frequency within 2 minutes.	72 hours
	<u>AND</u>	
	C.1.1.2 Verify the CTG circuit breakers are capable of being aligned to each of the ESF buses.	72 hours <u>AND</u> Once per 8 hours thereafter
	<u>OR</u>	
	C.1.2 Verify the ACIWA mode of RHR(B or C) subsystem is functional.	72 hours
	<u>AND</u>	
	C.2 Restore one ECCS subsystem to OPERABLE status.	7 days
D. Any three ECCS subsystems inoperable provided RCIC is OPERABLE.	D.1 Restore one ECCS subsystem to OPERABLE status.	3 days
E. Three high pressure ECCS subsystems inoperable.	E.1 Restore one high pressure ECCS subsystem to OPERABLE status.	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
F. Required Action and associated Completion Time of Condition A, B, C, D or E not met. OR Any four ECCS subsystems inoperable.	F.1 AND F.2	Be in MODE 3. Be in MODE 4.	12 hours 36 hours
G. ------------NOTE------------ This Condition may exist concurrently with Conditions A through D. -------------------------------- One or two ADS valves inoperable.	G.1	Restore ADS valves to OPERABLE status.	14 days
H. -----------NOTE----------- This Condition may exist concurrently with Conditions A through C. ------------------------------- Three ADS valves inoperable.	H.1	Restore one ADS valve to OPERABLE status.	7 days
I. Four or more ADS valves inoperable. OR Required Action and associated Completion Time of Condition G or H not met.	I.1 AND I.2	Be in MODE 3. Reduce reactor steam dome pressure to $\leq$ 0.343 MPaG.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify, for each ECCS subsystem, the piping is filled with water from the pump discharge valve to the injection valve.	31 days
SR 3.5.1.2	---------------------------NOTE-------------------------- Low pressure core flooder (LPFL) subsystems may be considered OPERABLE during alignment and operation for decay heat removal with reactor steam dome pressure less than 0.932 MPaG in MODE 3, if capable of being manually realigned and not otherwise inoperable. --- Verify each ECCS subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	 31 days
SR 3.5.1.3	Verify ADS nitrogen supply pressure is ≥ 1.11 MPaG.	31 days
SR 3.5.1.4	Verify each motor driven ECCS pump develops the specified flow rate against a system head corresponding to the specified reactor pressure. <table><tr><th>SYSTEM</th><th>FLOW RATE</th><th>SYSTEM HEAD CORRESPONDING TO A REACTOR PRESSURE OF</th></tr><tr><td>LPFL</td><td>≥ 954 m^3/h</td><td>≥ 0.275 MPaG</td></tr><tr><td>HPCF</td><td>≥ 182 m^3/h</td><td>≥ 8.12 MPaG</td></tr></table>	92 days
SR 3.5.1.5	-----------------------------NOTE---------------------------- Not required to be performed until 12 hours after reactor steam dome pressure is ≥ 6.55 MPaG. --- Verify, with RCIC steam supply pressure ≤ 7.07 MPaG and ≥ 6.55 MPaG, the RCIC pump can develop a flow ≥ 182 m^3/h against a system head corresponding to reactor pressure.	 92 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.1.6	------------------------------NOTE------------------------------ Not required to be performed until 12 hours after reactor steam dome pressure is ≥ 1.03 MPaG. -- Verify, with RCIC steam supply pressure ≤ 1.14 MPaG, the RCIC pump can develop a flow rate ≥ 182 m^3/h against a system head corresponding to reactor pressure.	18 months
SR 3.5.1.7	------------------------------NOTE------------------------------ Vessel injection may be excluded. -- Verify each ECCS subsystem actuates on an actual or simulated automatic initiation signal.	18 months
SR 3.5.1.8	------------------------------NOTE------------------------------ Valve actuation may be excluded. -- Verify the ADS actuates on an actual or simulated automatic initiation signal.	18 months
SR 3.5.1.9	------------------------------NOTE------------------------------ Not required to be performed until 12 hours after reactor steam dome pressure is ≥ 6.55 MPaG. -- Verify each ADS valve opens when manually actuated.	18 months

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS – Shutdown

LCO 3.5.2 Two ECCS subsystems shall be OPERABLE.

APPLICABILITY: MODE 4,
MODE 5 except with the reactor cavity to dryer/separator storage pool gate removed and water level ≥ 7.0 m over the top of the reactor pressure vessel flange.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One required ECCS subsystem inoperable.	A.1	Restore required ECCS subsystem to OPERABLE status.	4 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1	Initiate action to suspend operations with a potential for draining the reactor vessel (OPDRVs).	Immediately
C. Two required ECCS subsystems inoperable.	C.1	Initiate action to suspend OPDRVs.	Immediately
	<u>AND</u>		
	C.2	Restore one ECCS subsystem to OPERABLE status.	4 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Required Action C.2 and associated Completion Time not met.	D.1	Initiate action to restore secondary containment to OPERABLE status.	Immediately
	<u>AND</u>		
	D.2	Initiate action to restore one standby gas treatment subsystem to OPERABLE status.	Immediately
	<u>AND</u>		
	D.3	Initiate action to restore one isolation valve and associated instrumentation to OPERABLE status in each secondary containment penetration flow path not isolated.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.2.1	Verify, for each required Low Pressure Core Flooder (LPFL) subsystem, the suppression pool water level is ≥ 7.0 m.	12 hours
SR 3.5.2.2	Verify, for the required High Pressure Core Flooder (HPCF) subsystem, the: a. Suppression pool water level is ≥ 7.0 m, or b. Condensate storage tank water level is ≥ [ ].	12 hours

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.2.3	Verify, for each required ECCS subsystem, the piping is filled with water from the pump discharge valve to the injection valve.	31 days
SR 3.5.2.4	------------------------------NOTE------------------------------ Low Pressure Core Flooder (LPFL) subsystem may be considered OPERABLE during alignment and operation in the decay heat removal shutdown cooling mode, if capable of being manually realigned and not otherwise inoperable. --	
	Verify each required ECCS subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.5.2.5	Verify each required ECCS pump develops the specified flow rate against a system head corresponding to the specified reactor pressure.	92 days
SR 3.5.2.6	------------------------------NOTE------------------------------ Vessel injection may be excluded. --	
	Verify each required ECCS subsystem actuates on an actual or simulated automatic initiation signal.	18 months

SR 3.5.2.5 (continued):

SYSTEM	FLOW RATE	NO OF PUMPS	SYSTEM HEAD CORRESPONDING TO A REACTOR PRESSURE OF
LPFL	$\geq 954\ m^3/h$	1	≥ 0.275 MPaG
HPCF	$\geq 182\ m^3/h$	1	≥ 8.12 MPaG

3.6 CONTAINMENT SYSTEMS

3.6.1.1 Primary Containment

LCO 3.6.1.1 Primary containment shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Primary containment inoperable.	A.1	Restore primary containment to OPERABLE status.	1 hour
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.1.1	Perform required visual examinations and leakage rate testing except for primary containment air lock testing, in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions. The maximum allowable leakage rate, L_a, is 0.5% of primary containment air weight per day at the calculated peak containment pressure, P_a.	-------NOTE------- SR 3.0.2 is not applicable ---------------------- In accordance with 10 CFR 50, Appendix J, as modified by approved exemptions
SR 3.6.1.1.2	Verify drywell to suppression chamber differential pressure does not decrease at a rate > 12 mm water gauge per minute tested over a 15 minute period at an initial differential pressure of 0.031 MPaD.	18 months <u>AND</u> -------NOTE------- Only required after two consecutive tests fail and continues until two consecutive tests pass ---------------------- 9 months

3.6 CONTAINMENT SYSTEMS

3.6.1.2 Primary Containment Air Locks

LCO 3.6.1.2 Two primary containment air locks shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

---NOTES---

1. Entry and exit is permissible to perform repairs of 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, "Primary Containment," when air lock leakage results in exceeding overall containment leakage rate acceptance criteria.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more primary containment air locks with one primary containment air lock door inoperable.	-------------------NOTES------------------ 1. Required Actions A.1, A.2, and A.3 are not applicable if both doors in the same air lock are inoperable and Condition C is entered. 2. Entry and exit is permissible for 7 days under administrative controls if both air locks are inoperable. --	

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.1	Verify the OPERABLE door is closed in the affected air lock(s).	1 hour
	AND		
	A.2	Lock the OPERABLE door closed in the affected air lock(s).	24 hours
	AND		
	A.3	---------------NOTE------------- Air lock doors in high radiation areas or areas with limited access due to inerting may be verified locked closed by administrative means. -------------------------------------	
		Verify the OPERABLE door is locked closed in the affected air lock(s).	Once per 31 days

(continued)

ACTIONS (continued)

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

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One or more primary containment air locks inoperable for reasons other than Condition A or B.	C.1	Initiate action to evaluate primary containment overall leakage rate per LCO 3.6.1.1, using current air lock test results.	Immediately
	<u>AND</u>		
	C.2	Verify a door is closed in the affected air lock(s).	1 hour
	<u>AND</u>		
	C.3	Restore air lock(s) to OPERABLE status.	24 hours
D. Required Action and associated Completion Time not met.	D.1	Be in MODE 3.	12 hours
	<u>AND</u>		
	D.2	Be in MODE 4.	36 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 of SR 3.6.1.1.1 in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions. --- Perform required primary containment air lock leakage rate testing in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions. The acceptance criteria for air lock testing are: a. Overall air lock leakage rate is $\leq 0.05\ L_a$ when tested at $\geq P_a$. b. For each door, leakage rate is $\leq 0.01\ L_a$ when the gap between the door seals is pressurized to ≥ [ ] MPaG for at least 15 minutes.	--------NOTE-------- SR 3.0.2 is not applicable ------------------------ In accordance with 10 CFR 50, Appendix J, as modified by approved exemptions
SR 3.6.1.2.2	------------------------------NOTE------------------------------ Only required to be performed upon entry into primary containment when the primary containment is de-inerted. --- Verify only one door in the primary containment air lock can be opened at a time.	184 days

3.6 CONTAINMENT SYSTEMS

3.6.1.3 Primary Containment Isolation Valves (PCIVs)

LCO 3.6.1.3 Each PCIV shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
When associated instrumentation is required to be OPERABLE per LCO 3.3.1.1, "SSLC Sensor Instrumentation," and LCO 3.3.1.4, "ESF Actuation Instrumentation."

ACTIONS

--NOTES--

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

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. ------------NOTE------------ Only applicable to penetration flow paths with two PCIVs. --------------------------------- One or more penetration flow paths with one PCIV inoperable except for purge valve leakage not within limit.	A.1 AND	Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.	4 hours except for main steam line AND 8 hours for main steam line

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.2	--------------NOTE------------ Valves and blind flanges in high radiation areas may be verified by use of administrative means. ---------------------------------- Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside primary containment, drywell, and steam tunnel <u>AND</u> Prior to entering MODE 2 or 3 from MODE 4, if primary containment was de-inerted while in MODE 4, if not performed within the previous 92 days, for isolation devices inside primary containment

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. ------------NOTE------------ Only applicable to penetration flow paths with two PCIVs. --------------------------------- One or more penetration flow paths with two PCIVs inoperable except for purge valve leakage not within limit.	B.1	Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	1 hour
C. ------------NOTE------------ Only applicable to penetration flow paths with only one PCIV. --------------------------------- One or more penetration flow paths with one PCIV inoperable.	C.1	Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	4 hours except for excess flow check valves (EFCVs) <u>AND</u> 12 hours for EFCVs
	<u>AND</u>		
	C.2	--------------NOTE------------ Valves and blind flanges in high radiation areas may be verified by use of administrative means. ---------------------------------- Verify the affected penetration flow path is isolated.	Once per 31 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. One or more penetration flow paths with one or more containment purge valves not within purge valve leakage limits.	D.1	Isolate the affected penetration flow path by use of at least one [closed and de-activated automatic valve, closed manual valve, or blind flange].	24 hours
	<u>AND</u>		
	D.2	--------------NOTE------------ Valves and blind flanges in high radiation areas may be verified by use of administrative means. ----------------------------------	
		Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside containment <u>AND</u> Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment
	<u>AND</u>		
	D.3	Perform SR 3.6.1.3.7 for the resilient seal purge valves closed to comply with Required Action D.1.	Once per [92] days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
E. Required Action and associated Completion Time of Condition A, B, C, or D not met in MODE 1, 2, or 3.	E.1 <u>AND</u> E.2	Be in MODE 3. Be in MODE 4.	12 hours 36 hours
F. Required Action and associated Completion Time of Condition A, B, C, or D not met for PCIV(s) required to be OPERABLE during movement of irradiated fuel assemblies in the secondary containment.	F.1	--------------NOTE------------ LCO 3.0.3 is not applicable. --------------------------------- Suspend movement of irradiated fuel assemblies in the secondary containment.	Immediately
G. Required Action and associated Completion Time of Condition A, B, C, or D not met for PCIV(s) required to be OPERABLE during CORE ALTERATIONS.	G.1	Suspend CORE ALTERATIONS.	Immediately
H. Required Action and associated Completion Time of Condition A, B, C, or D not met for PCIV(s) required to be OPERABLE during MODE 4 or 5 or during operations with a potential for draining the reactor vessel (OPDRVs).	H.1 <u>OR</u> H.2	Initiate action to suspend OPDRVs. Initiate action to restore valve(s) to OPERABLE status.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.1	-------------------------------NOTE------------------------------ Only required to be met in MODES 1, 2, and 3. --- Verify each 550 mm primary containment purge valve is sealed closed except for one purge valve in a penetration flow path while in Condition D of this LCO.	31 days
SR 3.6.1.3.2	------------------------------NOTES----------------------------- 1. Only required to be met in MODES 1, 2, and 3. 2. Not required to be met when the 550 mm primary 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 550 mm primary containment purge valve is closed.	31 days
SR 3.6.1.3.3	------------------------------NOTES----------------------------- 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. Not required to be met for PCIVs that are open under administrative controls. --- Verify each primary containment isolation manual valve and blind flange that is located outside primary containment and is required to be closed during accident conditions is closed.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.6.1.3.4	------------------------------NOTES------------------------------ 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. Not required to be met for PCIVs that are open under administrative controls. --- Verify each primary containment isolation manual valve and blind flange that is located inside primary containment and is required to be closed during accident conditions is closed.	Prior to entering MODE 2 or 3 from MODE 4, if primary containment was de-inerted while in MODE 4, if not performed within the previous 92 days
SR 3.6.1.3.5	Verify continuity of the automatic traversing incore probe (ATIP) shear isolation valve explosive charge.	31 days
SR 3.6.1.3.6	Verify the isolation time of each power operated and each automatic PCIV, except MSIVs, is within limits.	In accordance with the Inservice Testing Program
SR 3.6.1.3.7	------------------------------NOTES------------------------------ 1. Only required to be met in MODES 1, 2, and 3. 2. Results shall be evaluated against acceptance criteria of SR 3.6.1.1.1 in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions. --- Perform leakage rate testing for each primary containment purge valve with resilient seals.	184 days <u>AND</u> Once within 92 days after opening the valve

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.8	Verify the isolation time (i.e., total closure time exclusive of electrical delays) of each MSIV is $\geq$ 3 seconds and $\leq$ 4.5 seconds.	3 months
SR 3.6.1.3.9	Verify each automatic PCIV actuates to the isolation position on an actual or simulated isolation signal.	18 months
SR 3.6.1.3.10	Verify each reactor instrumentation line EFCV actuates on a simulated instrument line break to restrict flow to $\leq$ 1.05 cm^3/s.	18 months
SR 3.6.1.3.11	Remove and test the explosive squib from each shear isolation valve of the ATIP System.	18 months on a STAGGERED TEST BASIS
SR 3.6.1.3.12	------------------------------NOTE------------------------------ 1. Only required to be met in MODES 1, 2, and 3. 2. Results shall be evaluated against acceptance criteria of SR 3.6.1.1.1 in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions. --- Verify the combined leakage rate of 0.277 cm^3/hr times the total number of PCIVs through hydrostatically tested lines that penetrate the primary containment is not exceeded when these isolation valves are tested at $\geq$ 0.312 MPaG.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.13	-------------------------------NOTE------------------------------ Results shall be evaluated against acceptance criteria of SR 3.6.1.1.1 in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions. --- Verify leakage rate through each MSIV is ≤ 1 m^3/h when tested at ≥ 0.170 MPaG.	--------NOTE-------- SR 3.0.2 is not applicable ------------------------ In accordance with 10 CFR 50, Appendix J, as modified by approved exemptions
[SR 3.6.1.3.14	-------------------------------NOTE------------------------------ Only required to be met in MODES 1, 2, and 3. --- Verify each [550 mm] primary containment purge valve is blocked to restrict the valve from opening > [50]%.	18 months]

3.6 CONTAINMENT SYSTEMS

3.6.1.4 Drywell Pressure

LCO 3.6.1.4 Drywell pressure shall be ≤ 5.20 kPaG.

APPLICABILITY: MODES 1, 2, and 3.

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. AND B.2 Be in MODE 4.	12 hours 36 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 ≤ 57°C.

APPLICABILITY: MODES 1, 2, and 3.

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. <u>AND</u> B.2 Be in MODE 4.	12 hours 36 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 Eight wetwell-to-drywell vacuum breakers shall be OPERABLE.

AND

Eight wetwell-to-drywell vacuum breakers shall be closed.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One wetwell-to-drywell vacuum breaker inoperable for opening.	A.1	Restore the inoperable vacuum breaker to OPERABLE status.	72 hours
B. One or more wetwell-to-drywell vacuum breaker(s) not closed.	B.1	Verify closure of the vacuum breaker(s) by alternate methods.	12 hours
C. Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	12 hours
	AND		
	C.2	Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.6.1	-------------------------------NOTE------------------------------ Not required to be met for vacuum breakers when performing their intended function. -- Verify each vacuum breaker is closed.	14 days <u>AND</u> Within 2 hours after any discharge of steam to the wetwell from the safety/relief valves (S/RVs) or any operation that causes the wetwell-drywell differential pressure to be reduced by ≥ 0.69 kPaD
SR 3.6.1.6.2	Perform a functional test of each vacuum breaker.	18 months
SR 3.6.1.6.3	Verify each required vacuum breaker fully opens at ≤ 3.43 kPaD.	18 months
SR 3.6.1.6.4	Perform CHANNEL CALIBRATION of vacuum breaker position indication channel.	18 months

3.6 CONTAINMENT SYSTEMS

3.6.2.1 Suppression Pool Average Temperature

LCO 3.6.2.1 Suppression pool average temperature shall be:

a. ≤ 35°C when THERMAL POWER is > 1% RTP and no testing that adds heat to the suppression pool is being performed;

b. ≤ 40.6°C when THERMAL POWER is > 1% RTP and testing that adds heat to the suppression pool is being performed; and

c. ≤ 43.3°C when THERMAL POWER is ≤ 1% RTP.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Suppression pool average temperature > 35°C but ≤ 43.3°C. AND THERMAL POWER is > 1% RTP. AND Not performing testing that adds heat to the suppression pool.	A.1 Verify suppression pool average temperature ≤ 43.3°C. AND A.2 Restore suppression pool average temperature to ≤ 35°C.	Once per hour 24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met.	B.1	Reduce THERMAL POWER to < 1% RTP.	12 hours
C. Suppression pool average temperature > 40.6°C. AND THERMAL POWER > 1% RTP. AND 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 > 43.3°C but ≤ 48.9°C.	D.1	Verify suppression pool average temperature is ≤ 48.9°C.	Once per 30 minutes
E. Suppression pool average temperature > 48.9°C.	E.1	Depressurize the reactor vessel to < 1.38 MPaG.	12 hours
	AND		
	E.2	Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.1.1	Verify suppression pool average temperature is within the applicable limits.	24 hours AND 5 minutes when performing testing that adds heat to the suppression pool

3.6 CONTAINMENT SYSTEMS

3.6.2.2 Suppression Pool Water Level

LCO 3.6.2.2 Suppression pool water level shall be ≥ 7 meters and ≤ 7.1 meters.

APPLICABILITY: MODES 1, 2, and 3.

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

3.6.2.3 Residual Heat Removal (RHR) Suppression Pool Cooling

LCO 3.6.2.3 Three RHR suppression pool cooling subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One RHR suppression pool cooling subsystem inoperable.	A.1	Restore RHR suppression pool cooling subsystem to OPERABLE status.	14 days
B. Required Action and associated Completion Time of Condition A not met. <u>OR</u> Two or more RHR suppression pool cooling subsystems inoperable.	B.1 <u>AND</u> B.2	Be in MODE 3. Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.3.1	Verify each RHR suppression pool cooling subsystem 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 or can be aligned to the correct position.	31 days
SR 3.6.2.3.2	Verify each RHR pump develops a flow rate $\geq 954\ m^3/h$ through the associated heat exchanger while operating in the suppression pool cooling mode.	92 days

3.6 CONTAINMENT SYSTEMS

3.6.2.4 Residual Heat Removal (RHR) Containment Spray

LCO 3.6.2.4 Two RHR containment spray subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One RHR containment spray subsystem inoperable.	A.1	Verify the ACIWA mode of RHR(B or C) subsystem is functional.	7 days
	<u>AND</u>		
	A.2	Restore RHR containment spray subsystem to OPERABLE status.	14 days
B. Two RHR containment spray subsystems inoperable.	B.1	Restore one RHR containment spray subsystem to OPERABLE status.	8 hours
C. Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	12 hours
	<u>AND</u>		
	C.2	Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.4.1	Verify each RHR containment spray subsystem 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 or can be aligned to the correct position.	31 days
SR 3.6.2.4.2	Verify each associated (i.e., in subsystems B & C) RHR pump develops a flow rate ≥ 114 m^3/h and < 160 m^3/h through the wetwell spray sparger.	92 days

3.6 CONTAINMENT SYSTEMS

3.6.3.1 Primary Containment Hydrogen Recombiners

LCO 3.6.3.1 Two primary containment hydrogen recombiners shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One primary containment hydrogen recombiner inoperable.	A.1	--------------NOTE------------- LCO 3.0.4 is not applicable. ------------------------------------ Restore primary containment hydrogen recombiner to OPERABLE status.	 30 days
B. Two primary containment hydrogen recombiners inoperable.	B.1	Verify by administrative means that the hydrogen control function is maintained.	1 hour <u>AND</u> Once per 12 hours thereafter
	<u>AND</u>		
	B.2	Restore one primary containment hydrogen recombiner to OPERABLE status.	7 days
C. Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.3.1.1	Perform a system functional test for each primary containment hydrogen recombiner.	6 months
SR 3.6.3.1.2	Perform a system functional test for each primary containment hydrogen recombiner.	18 months
SR 3.6.3.1.3	Visually examine each primary containment hydrogen recombiner enclosure and verify there is no evidence of abnormal conditions.	18 months
SR 3.6.3.1.4	Perform a resistance to ground test for each heater phase.	18 months

3.6 CONTAINMENT SYSTEMS

3.6.3.2 Primary Containment Oxygen Concentration

LCO 3.6.3.2 The primary containment oxygen concentration shall be < 3.5 volume percent.

APPLICABILITY: MODE 1 during the time period:

a. From 24 hours after THERMAL POWER is > 15% RTP following startup, to

b. 24 hours prior to reducing THERMAL POWER to < 15% RTP prior to the next scheduled reactor shutdown.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Primary containment oxygen concentration not within limit.	A.1	Restore oxygen concentration to within limit.	24 hours
B. Required Action and associated Completion Time not met.	B.1	Reduce THERMAL POWER to ≤ 15% RTP.	8 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.3.2.1	Verify primary containment oxygen concentration is within limits.	7 days

3.6 CONTAINMENT SYSTEMS

3.6.4.1 Secondary Containment

LCO 3.6.4.1 The secondary containment shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During movement of irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Secondary containment inoperable in MODE 1, 2, or 3.	A.1	Restore secondary containment to OPERABLE status.	4 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Be in MODE 4.	36 hours
C. Secondary containment inoperable during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs.	C.1	---------------NOTE------------- LCO 3.0.3 is not applicable. ------------------------------------ Suspend movement of irradiated fuel assemblies in the secondary containment.	Immediately
	AND		
	C.2	Suspend CORE ALTERATIONS.	Immediately
	AND		
	C.3	Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.1.1	Verify secondary containment vacuum is ≥ 6.4 mm water gauge.	24 hours
SR 3.6.4.1.2	Verify all secondary containment equipment hatches are closed and sealed.	31 days
SR 3.6.4.1.3	Verify each secondary containment access door is closed, except when the access opening is being used for entry and exit, then at least one door shall be closed.	31 days
SR 3.6.4.1.4	Verify each standby gas treatment (SGT) subsystem will draw down the secondary containment to ≥ 6.4 mm water gauge vacuum in ≤ 120 seconds.	18 months on a STAGGERED TEST BASIS
SR 3.6.4.1.5	Verify each SGT subsystem can maintain ≥ 6.4 mm water gauge vacuum in the secondary containment for 1 hour at a flow rate ≤ 6800 m^3/h.	18 months on a STAGGERED TEST BASIS

3.6 CONTAINMENT SYSTEMS

3.6.4.2 Secondary Containment Isolation Valves (SCIVs)

LCO 3.6.4.2 Each SCIV shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During movement of irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

---NOTES---

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

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

3. Enter applicable Conditions and Required Actions for systems made inoperable by SCIVs.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more penetration flow paths with one SCIV inoperable.	A.1	Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	8 hours
	<u>AND</u>		

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.2	--------------NOTE------------ Valves and blind flanges in high radiation areas may be verified by use of administrative means. ---------------------------------- Verify the affected penetration flow path is isolated.	 Once per 31 days
B. ------------NOTE------------ Only applicable to penetration flow paths with two isolation valves. --------------------------------- One or more penetration flow paths with two SCIVs inoperable.	B.1	Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	4 hours
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	C.1	Be in MODE 3.	12 hours
	<u>AND</u>		
	C.2	Be in MODE 4.	36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Required Action and associated Completion Time of Condition A or B not met during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs.	D.1	--------------NOTE------------ LCO 3.0.3 is not applicable. --------------------------------- Suspend movement of irradiated fuel assemblies in the secondary containment.	Immediately
	AND		
	D.2	Suspend CORE ALTERATIONS.	Immediately
	AND		
	D.3	Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.2.1	------------------------------NOTES----------------------------- 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. Not required to be met for SCIVs that are open under administrative controls. --- Verify each secondary containment isolation manual valve and blind flange that is required to be closed during accident conditions is closed.	31 days
SR 3.6.4.2.2	Verify the isolation time of each power operated and each automatic SCIV is within limits.	92 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.4.2.3	Verify each automatic SCIV actuates to the isolation position on an actual or simulated actuation signal.	18 months

3.6 CONTAINMENT SYSTEMS

3.6.4.3 Standby Gas Treatment (SGT) System

LCO 3.6.4.3 Two SGT trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During movement of irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SGT subsystem inoperable.	A.1 Restore SGT train to OPERABLE status.	7 days
B. Two SGT trains inoperable in MODES 1, 2, or 3.	B.1 Restore one SGT train to OPERABLE status.	4 hours
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 4.	12 hours 36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs.	--------------------NOTE------------------- LCO 3.0.3 is not applicable. ---	
	D.1 Place OPERABLE SGT train in operation.	Immediately
	<u>OR</u>	
	D.2.1 Suspend movement of irradiated fuel assemblies in secondary containment.	Immediately
	<u>AND</u>	
	D.2.2 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	D.2.3 Initiate action to suspend OPDRVs.	Immediately
E. Two SGT subsystems inoperable during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs.	E.1 --------------NOTE------------ LCO 3.0.3 is not applicable. ---------------------------------- Suspend movement of irradiated fuel assemblies in secondary containment.	Immediately
	<u>AND</u>	
	E.2 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	E.3 Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.3.1	Operate each SGT train for ≥ 10 continuous hours with heaters operating.	31 days
SR 3.6.4.3.2	Perform required SGT filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.6.4.3.3	Verify each SGT train actuates on an actual or simulated initiation signal.	18 months
SR 3.6.4.3.4	Verify each SGT filter cooler bypass damper can be opened and the fan started.	18 months

3.7 PLANT SYSTEMS

3.7.1 Reactor Building Cooling Water (RCW) System, Reactor Service Water (RSW) System and Ultimate Heat Sink (UHS) – Operating

LCO 3.7.1 Divisions A, B and C of the RCW/RSW System and the UHS shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One RCW pump and/or one RSW pump and/or one RCW/RSW heat exchanger and/or one [spray network] in the UHS inoperable in a single division.	A.1	Restore pump(s) and/or heat exchanger and/or UHS [spray network] to OPERABLE status.	14 days
B. One RCW/RSW division inoperable for reasons other than Condition A. <u>OR</u> Both [spray networks] in one UHS division inoperable.	B.1	Declare associated supported required feature(s) inoperable and enter applicable Conditions and Required Actions of the LCOs for the inoperable required feature(s).	Immediately
	<u>AND</u>		
	B.2	Initiate action to restore RCW/RSW division or UHS [spray networks] to OPERABLE status.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Condition A exists in two or more RCW/RSW or UHS [spray network] divisions.	C.1 Restore one inoperable RCW/RSW or UHS [spray network] division to OPERABLE status.	7 days
	<u>AND</u>	
	C.2 Restore two inoperable RCW/RSW or UHS [spray network] divisions to OPERABLE status.	14 days
D. Required Action and associated Completion Time of Condition A, B or C not met. <u>OR</u> Two or more RCW/RSW divisions inoperable for reasons other than Condition C. <u>OR</u> UHS inoperable. <u>OR</u> Two or more UHS [spray network] divisions inoperable for reasons other than Condition C.	D.1 Be in MODE 3. <u>AND</u> D.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.1.1	Verify the water level of each UHS [spray pond] is ≥ [ ] m.	24 hours
SR 3.7.1.2	Verify the water level in each RSW pump well of the intake structure is ≥ [ ] m.	24 hours
SR 3.7.1.3	Verify the RSW water temperature at the inlet to the RCW/RSW heat exchangers is ≤ [33.3]°C.	24 hours
SR 3.7.1.4	-------------------------------NOTE------------------------------ Isolation of flow to individual components does not render RCW/RSW System inoperable. --- Verify each RCW/RSW division and associated UHS [spray network] division manual, power operated, and automatic valve in the flow path servicing safety related systems or components, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.7.1.5	Verify each RCW/RSW division and associated UHS [spray network] division actuate on an actual or simulated initiation signal.	18 months

3.7 PLANT SYSTEMS

3.7.2 Reactor Building Cooling Water (RCW) System, Reactor Service Water (RSW) System and Ultimate Heat Sink (UHS) – Shutdown

LCO 3.7.2 Three RCW/RSW divisions and UHS shall be OPERABLE.

--------------------------------------NOTE---
One RCW/RSW division may be inoperable in MODE 5, and after 30 hours from initial entry into MODE 4 from MODE 3.

APPLICABILITY: MODE 4,
MODE 5 except with the reactor cavity to dryer/separator storage pool gate removed and water level ≥ 7.0 m over the top of the reactor pressure vessel flange.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One RCW pump and/or one RSW pump and/or one RCW/RSW heat exchanger and/or one [spray network] in the UHS in one division inoperable.	A.1	Restore pump(s) and/or heat exchanger and/or UHS [spray network] to OPERABLE status.	14 days
B. Condition A exists in two or more RCW/RSW or UHS [spray network] divisions.	B.1	Restore one inoperable RCW/RSW or UHS [spray network] division to OPERABLE status.	7 days
	<u>AND</u>		
	B.2	Restore two inoperable RCW/RSW or UHS [spray network] divisions to OPERABLE status.	14 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One or more required RCW/RSW or UHS [spray network] divisions inoperable for reasons other then Condition A or B. OR UHS inoperable. OR Required Action and associated Completion Time of Condition A or B not met.	C.1	Enter applicable Conditions and Required Actions of LCO 3.8.11, “AC Sources – Shutdown (Low Water Level)” for diesel generator(s) made inoperable by RCW/RSW.	Immediately
	AND		
	C.2	Enter applicable Conditions and Required Actions of LCO 3.4.8, “Residual Heat Removal (RHR) – MODE 4,” or LCO 3.9.8, “RHR – Low Water Level,” for RHR shutdown cooling made inoperable by RCW/RSW.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.2.1	Verify the water level of each UHS [spray pond] is ≥ [ ] m.	24 hours
SR 3.7.2.2	Verify the water level in each RSW pump well of the intake structure is ≥ [ ] m.	24 hours
SR 3.7.2.3	Verify the RSW water temperature at the inlet to the RCW/RSW heat exchangers is ≤ [33.3]°C.	24 hours

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.7.2.4	-------------------------------NOTE---------------------------- Isolation of flow to individual components does not render RCW/RSW System inoperable. -- Verify each RCW/RSW division and associated UHS [spray network] division manual, power operated, and automatic valve in the flow path servicing safety related systems or components, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.7.2.5	Verify each RCW/RSW division and associated UHS [spray network] division actuate on an actual or simulated initiation signal.	18 months

3.7 PLANT SYSTEMS

3.7.3 Reactor Building Cooling Water (RCW) System and Reactor Service Water (RSW) System and Ultimate Heat Sink (UHS) – Refueling

LCO 3.7.3 One RCW/RSW division and UHS shall be OPERABLE.

APPLICABILITY: MODE 5 with the reactor cavity to dryer/separator storage pool gate removed and water level ≥ 7.0 m over the top of the reactor pressure vessel flange.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. No RCW/RSW division OPERABLE. OR UHS inoperable. OR Associated divisional UHS [spray networks] inoperable.	A.1 Enter applicable Conditions and Required Actions of LCO 3.8.2, "AC Sources-Refueling" for the diesel generator made inoperable by RCW/RSW. AND A.2 Enter applicable Conditions and Required Actions of LCO 3.9.7, "RHR-High Water Level," for RHR-Shutdown Cooling made inoperable by RCW/RSW.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.3.1	Verify the water level of each UHS [spray pond] is ≥ [ ] m.	24 hours
SR 3.7.3.2	Verify the water level in each RSW pump well of the intake structure is ≥ [ ] m.	24 hours
SR 3.7.3.3	Verify the RSW water temperature at the inlet to the RCW/RSW heat exchangers is ≤ [33.3]°C.	24 hours
SR 3.7.3.4	------------------------------NOTE--------------------------- Isolation of flow to individual components does not render RCW/RSW System inoperable. -- Verify RCW/RSW division and associated UHS [spray network] division manual, power operated, and automatic valve in the flow path servicing safety related systems or components, that is not locked, sealed, or otherwise secured in position is in the correct position.	31 days
SR 3.7.3.5	Verify each RCW/RSW division and associated UHS [spray network] division actuate on an actual or simulated initiation signal.	18 months

3.7 PLANT SYSTEMS

3.7.4 Control Room Habitability Area (CRHA) – Emergency Filtration (EF) System

LCO 3.7.4 Two divisions of the CRHA EF Systems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During movement of irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One EF division inoperable.	A.1 Restore EF division to OPERABLE status.	7 days
B. Required Action and Associated Completion Time of Condition A not met in MODE 1, 2, or 3.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs.	--------------------NOTE------------------- LCO 3.0.3 is not applicable. --- C.1 Place OPERABLE EF division in standby mode. <u>OR</u> C.2.1 Suspend movement of irradiated fuel assemblies in the secondary containment. <u>AND</u> C.2.2 Suspend CORE ALTERATIONS. <u>AND</u> C.2.3 Initiate action to suspend OPDRVs.	 Immediately Immediately Immediately Immediately
D. Two EF divisions inoperable in MODE 1, 2, or 3.	D.1 Enter LCO 3.0.3.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Two EF divisions inoperable during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs.	--------------------NOTE------------------- LCO 3.0.3 is not applicable. ---	
	E.1 Suspend movement of irradiated fuel assemblies in the secondary containment.	Immediately
	<u>AND</u>	
	E.2 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	E.3 Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.4.1	Operate each EF division for ≥ 10 continuous hours with the heaters operating.	31 days
SR 3.7.4.2	Perform required EF filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.4.3	Verify each EF division actuates on an actual or simulated initiation signal.	18 months
SR 3.7.4.4	Verify each EF division can maintain a positive pressure of ≥ 3.2 mm water gauge relative to the atmosphere during the isolation mode of operation at a flow rate of ≤ 360 m^3/h.	18 months on a STAGGERED TEST BASIS

3.7 PLANT SYSTEMS

3.7.5 Control Room Habitability Area (CRHA) – Air Conditioning (AC) System

LCO 3.7.5 Two divisions of the CRHA AC System shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During movement of irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One AC division inoperable.	A.1 Restore AC division to OPERABLE status.	30 days
B. Required Action and Associated Completion Time of Condition A not met in MODE 1, 2, or 3.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours
C. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs.	--------------------NOTE------------------- LCO 3.0.3 is not applicable. --- C.1 Place OPERABLE AC division in operation. OR	 Immediately (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.2.1 Suspend movement of irradiated fuel assemblies in the secondary containment.	Immediately
	<u>AND</u>	
	C.2.2 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	C.2.3 Initiate action to suspend OPDRVs.	Immediately
D. Two AC divisions inoperable in MODE 1, 2, or 3.	D.1 Enter LCO 3.0.3.	Immediately
E. Two AC divisions inoperable during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs.	--------------------NOTE------------------- LCO 3.0.3 is not applicable. --	
	E.1 Suspend movement of irradiated fuel assemblies in the secondary containment.	Immediately
	<u>AND</u>	
	E.2 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	E.3 Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.5.1	Verify each CRHA AC division has the capability to remove the assumed heat load.	18 months
SR 3.7.5.2	Verify each CRHA AC division actuates on an actual or simulated initiation signal.	18 months

3.7 PLANT SYSTEMS

3.7.6 Main Condenser Offgas

LCO 3.7.6 The gross gamma activity rate of the noble gases measured at the offgas recombiner effluent shall be ≤ 14.8 GBq/second after decay of 30 minutes.

APPLICABILITY: MODE 1,
MODES 2 and 3 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.	12 hours
	<u>OR</u>		
	B.2	Isolate SJAE.	12 hours
	<u>OR</u>		
	B.3.1	Be in MODE 3.	12 hours
	<u>AND</u>		
	B.3.2	Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.6.1	-------------------------------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 ≤ 14.8 GBq/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

3.7.7 Main Turbine Bypass System

LCO 3.7.7 The Main Turbine Bypass System shall be OPERABLE.

OR

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

APPLICABILITY: THERMAL POWER ≥ 40% RTP.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Requirements of the LCO not met or Main Turbine Bypass System inoperable.	A.1	Satisfy the requirements of the LCO or restore Main Turbine Bypass System to OPERABLE status.	2 hours
B. Required Action and associated Completion Time not met.	B.1	Reduce THERMAL POWER to ≤ 40% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.7.1	Perform bypass valve opening test to ≥ 10% position for each turbine bypass valve.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.7.7.2	Perform a system functional test.	18 months
SR 3.7.7.3	Verify the TURBINE BYPASS SYSTEM RESPONSE TIME is within limits.	18 months

3.7 PLANT SYSTEMS

3.7.8 Fuel Pool Water Level

LCO 3.7.8 The fuel pool water level shall be ≥ 7.0 m over the top of irradiated fuel assemblies seated in the spent fuel storage pool.

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.	A.1	--------------NOTE------------ LCO 3.0.3 is not applicable. ---------------------------------- Suspend movement of irradiated fuel assemblies in the associated fuel storage pool(s).	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.8.1	Verify the fuel pool water level is ≥ 7.0 m over the top of irradiated fuel assemblies seated in the storage racks.	7 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources – Operating

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

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

b. Three diesel generators (DGs).

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One of two offsite AC power sources to one ESF bus inoperable.	A.1	Verify affected ESF bus is powered from the other operable offsite AC circuit.	72 hours <u>AND</u> Once per 8 hours thereafter
	<u>AND</u>		
	A.2	Verify the CTG is functional by verifying the CTG starts and achieves steady state voltage and frequency within 2 minutes.	72 hours <u>AND</u> Once per 7 days thereafter
	<u>AND</u>		
	A.3	Verify the CTG circuit breakers are aligned to the affected ESF bus.	72 hours <u>AND</u> Once per 8 hours thereafter
	<u>AND</u>		

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.4	Restore inoperable offsite AC power to affected ESF bus.	30 days
B. One required offsite circuit inoperable.	B.1	Perform SR 3.8.1.1 for OPERABLE required offsite circuit.	1 hour <u>AND</u> Once per 8 hours thereafter
	<u>AND</u>		
	B.2	Declare required feature(s) with no power available from an OPERABLE offsite circuit inoperable when the redundant required feature(s) are inoperable.	24 hours from discovery of no power available from an OPERABLE offsite circuit to one division concurrent with inoperability of redundant required feature(s)
	<u>AND</u>		
	B.3	Verify the combustion turbine generator (CTG) is functional by verifying the CTG starts and achieves steady state voltage and frequency within 2 minutes.	72 hours
	<u>AND</u>		
	B.4	Verify the CTG circuit breakers are capable of being aligned to each of the ESF buses.	72 hours <u>AND</u> Once per 8 hours thereafter
	<u>AND</u>		

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.5	Restore required offsite circuit to OPERABLE status.	14 days <u>AND</u> 1 day from discovery of two divisions with no power available from an OPERABLE offsite circuit <u>AND</u> 15 days from discovery of failure to meet the LCO
C. ------------NOTE------------ Required Action C.3.1 or C.3.2 shall be completed if this Condition is entered. --------------------------------- One required DG inoperable.	C.1	Perform SR 3.8.1.1 for OPERABLE required offsite circuit(s).	1 hour <u>AND</u> Once per 8 hours thereafter
	<u>AND</u>		
	C.2	Declare required feature(s), supported by the inoperable DG, inoperable when the redundant required features(s) are inoperable.	4 hours from discovery of Condition C concurrent with inoperability of redundant required feature(s)
	<u>AND</u>		
	C.3.1	Determine OPERABLE DG(s) are not inoperable due to common cause failure.	24 hours
	<u>OR</u>		

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. (continued)	C.3.2	Perform SR 3.8.1.2 for OPERABLE DG(s).	24 hours
	<u>AND</u>		
	C.4	Verify the combustion turbine generator (CTG) is functional by verifying the CTG starts and achieves steady state voltage and frequency within 2 minutes.	72 hours
	<u>AND</u>		
	C.5	Verify the CTG circuit breakers are aligned to the ESF bus associated with the inoperable DG.	72 hours <u>AND</u> Once per 8 hours thereafter
	<u>AND</u>		
	C.6	Restore required DG to OPERABLE status.	14 days <u>AND</u> 15 days from discovery of failure to meet the LCO
D. Two required offsite circuits inoperable.	D.1	Declare required feature(s) inoperable when the redundant required feature(s) are inoperable.	12 hours from discovery of Condition D concurrent with inoperability of redundant required feature(s)
	<u>AND</u>		
	D.2	Restore one required offsite circuit to OPERABLE status.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One required offsite circuit inoperable. <u>AND</u> One required DG inoperable.	--------------------NOTE------------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, “Distribution Systems – Operating,” when Condition D is entered with no required AC power source to one division. --	
	E.1 Verify the combustion turbine generator (CTG) is functional by verifying the CTG starts and achieves steady state voltage and frequency within 2 minutes.	12 hours
	<u>AND</u>	
	E.2 Verify the CTG circuit breakers are aligned to the ESF bus associated with the inoperable DG.	12 hours <u>AND</u> Once per 8 hours thereafter
	<u>AND</u>	
	E.3.1 Restore required offsite circuit to OPERABLE status.	72 hours
	<u>OR</u>	
	E.3.2 Restore required DG to OPERABLE status.	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
F. Two required DGs inoperable.	F.1	Verify the combustion turbine generator (CTG) is functional by verifying the CTG starts and achieves steady state voltage and frequency within 2 minutes.	2 hours
	<u>AND</u>		
	F.2	Verify the CTG circuit breakers are aligned to one ESF bus associated with an inoperable DG and capable of being aligned to the other ESF bus associated with an inoperable DG.	2 hours <u>AND</u> Once per 8 hours thereafter
	<u>AND</u>		
	F.3	Restore one required DG to OPERABLE status.	72 hours
G. Required Action and Associated Completion Time of Condition A, B, C, D, E or F not met.	G.1	Be in MODE 3.	12 hours
	<u>AND</u>		
	G.2	Be in MODE 4.	36 hours
H. Three or more required AC sources inoperable.	H.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each required offsite circuit.	7 days
SR 3.8.1.2	------------------------------NOTES----------------------------- 1. Performance of SR 3.8.1.7 satisfies this SR. 2. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 3. A modified DG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. When modified start procedures are not used, the time, voltage, and frequency tolerances of SR 3.8.1.7 must be met. ---	
	Verify each DG starts from standby conditions and achieves steady state voltage ≥ [6210] V and ≤ [7590] V and frequency ≥ [58.8] Hz and ≤ [61.2] Hz.	As specified in Table 3.8.1-1
SR 3.8.1.3	------------------------------NOTES----------------------------- 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by, and immediately follow, without shutdown, a successful performance of SR 3.8.1.2 or SR 3.8.1.7. ---	
	Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 5000 kW and ≤ [ ] kW.	As specified in Table 3.8.1-1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.4	Verify each day tank contains ≥ [ ] liters of fuel oil.	31 days
SR 3.8.1.5	Check for and remove accumulated water from each day tank.	31 days
SR 3.8.1.6	Verify the fuel oil transfer system operates to automatically transfer fuel oil from the storage tank to the day tank.	92 days
SR 3.8.1.7	------------------------------NOTE----------------------------- All DG starts may be preceded by an engine prelube period. --- Verify each DG starts from standby condition and achieves, in ≤ 20 seconds, voltage ≥ [6210] V and ≤ [7590] V and frequency ≥ [58.8] Hz and ≤ [61.2] Hz.	184 days
SR 3.8.1.8	-----------------------------NOTES---------------------------- 1. This Surveillance shall not be performed in MODE 1 or 2. 2. Credit may be taken for unplanned events that satisfy this SR. --- Verify manual transfer of the [unit power supply] from the normal offsite circuit to each required alternate offsite circuit.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.9	------------------------------NOTES--------------------------- 1. This Surveillance shall not be performed in MODE 1 or 2. 2. Credit may be taken for unplanned events that satisfy this SR. --- Verify each DG operating at a power factor ≤ 0.9 rejects a load ≥ 540 kW for Division 1 and ≥ 1400 kW for Divisions 2 and 3, and: a. Following load rejection, the frequency is ≤ [ ] Hz; b. Within 3 seconds following load rejection, the voltage is ≥ [6210] V and ≤ [7590] V; and c. Within 3 seconds following load rejection, the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz.	18 months
SR 3.8.1.10	-----------------------------NOTES---------------------------- 1. This Surveillance shall not be performed in MODE 1 or 2. 2. Credit may be taken for unplanned events that satisfy this SR. --- Verify each DG operating at a power factor ≤ 0.9 does not trip and voltage is maintained ≤ [ ] V during and following a load rejection of a load ≥ [5000] V and ≤ [ ] kW.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.11	------------------------------NOTES----------------------------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, or 3. 3. Credit may be taken for unplanned events that satisfy this SR. ---	
	Verify on an actual or simulated loss of offsite power signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 20 seconds, 2. sequentially energizes auto-connected shutdown loads, 3. maintains steady state voltage ≥ [6210] V and ≤ [7590] V, 4. maintains steady state frequency ≥ [58.8] Hz and ≤ [61.2] Hz, and 5. supplies permanently connected and auto-connected shutdown loads for ≥ 5 minutes.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.12	------------------------------NOTES----------------------------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1 or 2. 3. Credit may be taken for unplanned events that satisfy this SR. ---	
	Verify on an actual or simulated Emergency Core Cooling System (ECCS) initiation signal each DG auto-starts from standby condition and: a. In ≤ 20 seconds after auto-start and during tests, achieves voltage ≥ [6210] V and ≤ [7590] V; b. In ≤ 20 seconds after auto-start and during tests, achieves frequency ≥ [58.8] Hz and ≤ [61.2] Hz; c. Operates for ≥ 5 minutes; d. Permanently connected loads remain energized from the offsite power system; and e. Emergency loads are sequentially energized from the offsite power system.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.13	------------------------------NOTES----------------------------- 1. This Surveillance shall not be performed in MODE 1, 2, or 3. 2. Credit may be taken for unplanned events that satisfy this SR. --- Verify each DG's automatic trips are bypassed on actual or simulated loss of voltage signal on the emergency bus concurrent with an actual or simulated ECCS initiation signal except: a. Engine overspeed; and b. Generator differential current.	18 months
SR 3.8.1.14	------------------------------NOTES----------------------------- 1. Momentary transients outside the load and power factor ranges do not invalidate this test. 2. This Surveillance shall not be performed in MODE 1 or 2. 3. Credit may be taken for unplanned events that satisfy this SR. --- Verify each DG operating at a power factor ≤ 0.9, operates for ≥ 24 hours: a. For ≥ 2 hours loaded, ≥ 5225 kW and ≤ 5500 kW; and b. For the remaining hours of the test loaded ≥ 5000 kW and $\leq$ [ ].	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.15	------------------------------NOTES---------------------------- 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 5225 kW and ≤ 5500 kW. Momentary transients outside of load range do not invalidate this test. 2. All DG starts may be preceded by an engine prelube period. --- Verify each DG starts and achieves, in ≤ 20 seconds, voltage ≥ [6210] V and ≤ [7590] V and frequency ≥ [58.8] Hz and ≤ [61.2] Hz.	18 months
SR 3.8.1.16	------------------------------NOTES---------------------------- 1. This Surveillance shall not be performed in MODE 1, 2, or 3. 2. Credit may be taken for unplanned events that satisfy this SR. --- Verify each DG: a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.17	------------------------------NOTES---------------------------- 1. This Surveillance shall not be performed in MODE 1, 2, or 3. 2. Credit may be taken for unplanned events that satisfy this SR. ---	
	Verify, with a DG operating in test mode and connected to its bus, an actual or simulated ECCS initiation signal overrides the test mode by: a. Returning DG to ready-to-load operation; and b. Automatically energizing the emergency load from offsite power.	18 months
SR 3.8.1.18	------------------------------NOTES---------------------------- 1. This Surveillance shall not be performed in MODE 1, 2, or 3. 2. Credit may be taken for unplanned events that satisfy this SR. ---	
	Verify interval between each sequenced load block is within ± 10% of design interval for each load sequencer timer.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.19	------------------------------NOTES---------------------------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, or 3. 3. Credit may be taken for unplanned events that satisfy this SR. ---	
	Verify, on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ECCS initiation signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 20 seconds, 2. sequentially energizes auto-connected emergency loads, 3. achieves steady state voltage ≥ [6210] V and ≤ [7590] V, 4. achieves steady state frequency ≥ [58.8] Hz and ≤ [61.2] Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.20	-------------------------------NOTE------------------------------ All DG starts may be preceded by an engine prelube period. --- Verify, when started simultaneously from standby condition, each Division 1, 2, and 3 DG achieves, in ≤ 20 seconds, voltage ≥ [6210] V and ≤ [7590] V and frequency ≥ [58.8] Hz and ≤ [61.2] Hz.	10 years during shutdown

Table 3.8.1-1 (page 1 of 1)
Diesel Generator Test Schedule

NUMBER OF FAILURES IN LAST 25 VALID TESTS [(a)]	FREQUENCY
≤ 3	31 days
≥ 4	7 days[(b)] (but ≥ 24 hours)

(a) Criteria for determining number of failures and valid tests shall be in accordance with Regulatory Position C.2.1 of Regulatory Guide 1.9, Revision 3, where the number of tests and failures is determined on a per DG basis.

(b) This test frequency shall be maintained until seven consecutive failure free starts from standby conditions and load and run tests have been performed. This is consistent with Regulatory Position [ ], of Regulatory Guide 1.9, Revision 3. If, subsequent to the 7 failure free tests, 1 or more additional failures occur such that there are again 4 or more failures in the last 25 tests, the testing interval shall again be reduced as noted above and maintained until 7 consecutive failure free tests have been performed.

3.8 ELECTRICAL POWER SYSTEMS

3.8.2 AC Sources – Refueling

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

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

b. One or more diesel generator(s) (DG) capable of supplying at least one division of the required OPERABLE features via the onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.10.

APPLICABILITY: MODE 5 with water level in the refueling cavity ≥ 7.0 meters above the reactor pressure vessel flange, or during movement of irradiated fuel assemblies in secondary containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required offsite circuit inoperable.	--------------------NOTE------------------- Enter applicable Condition and Required Actions of LCO 3.8.10, with one required division de-energized as a result of Condition B. --	
	A.1 Initiate action to restore required offsite circuit to OPERABLE status supplying power to all required ESF buses.	Immediately
	<u>AND</u>	

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.1.2	Declare affected required feature(s) with no power available from an OPERABLE offsite circuit inoperable.	Immediately
	<u>OR</u>		
	A.2.1	Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>		
	A.2.2	Suspend movement of irradiated fuel assemblies in secondary containment.	Immediately
	<u>AND</u>		
	A.2.3	Initiate action to suspend operations with a potential for draining the reactor vessel (OPDRVs).	Immediately
	<u>AND</u>		
	A.2.4	Initiate action to restore required offsite circuit to OPERABLE status supplying power to all required ESF buses.	Immediately
B. One or more required DGs inoperable.	B.1	Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>		
	B.2	Suspend movement of irradiated fuel assemblies in secondary containment.	Immediately
	<u>AND</u>		

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.3	Initiate action to suspend OPDRVs.	Immediately
	<u>AND</u>		
	B.4	Initiate action to restore required DG(s) to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.2.1	-------------------------------NOTE------------------------------ 1. SR 3.8.1.3 is only required when more than the minimum number of AC sources required by LCO 3.8.2 are available, but at least every six months. 2. SR 3.8.1.12, SR 3.8.1.13, SR 3.8.1.17, and SR 3.8.1.19 are only required when the associated ECCS loads are required to be OPERABLE. ---	
	For AC sources required to be OPERABLE, the SRs of Specification 3.8.1, except SR 3.8.1.8, SR 3.8.1.14, and SR 3.8.1.20 are applicable.	In accordance with applicable SRs

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

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

APPLICABILITY: When associated DG is required to be OPERABLE.

ACTIONS

--NOTE--

Separate Condition entry is allowed for each DG.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more DGs with fuel oil level < [ ] liters and ≥ [ ] liters in storage tank.	A.1	Restore fuel oil level to within limits.	48 hours
B. One or more DGs with lube oil inventory < [ ] liters and ≥ [ ] liters.	B.1	Restore lube oil inventory to within limits.	48 hours
C. One or more DGs with stored fuel oil total particulates not within limit.	C.1	Restore fuel oil total particulates to within limit.	7 days
D. One or more DGs with new fuel oil properties not within limits.	D.1	Restore stored fuel oil properties to within limits.	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
E. One or more DGs with starting air receiver pressure < [ ] kPaG and ≥ [ ] kPaG.	E.1	Restore starting air receiver pressure to ≥ [ ] kPaG.	48 hours
F. Required Actions and associated Completion Time not met. <u>OR</u> One or more DGs with diesel fuel oil, lube oil, or starting air subsystem not within limits for reasons other than Condition A, B, C, D, or E.	F.1	Declare associated DG inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	Verify each fuel oil storage tank contains ≥ [ ] liters.	31 days
SR 3.8.3.2	Verify lube oil inventory for each DG is ≥ [ ] liters.	31 days
SR 3.8.3.3	Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.4	Verify each DG air start receiver pressure is ≥ [ ] kPaG.	31 days
SR 3.8.3.5	Check for and remove accumulated water from each fuel oil storage tank.	31 days
SR 3.8.3.6	For each fuel oil storage tank: a. Drain the fuel oil; b. Remove the sediment; and c. Clean the tank.	10 years

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources – Operating

LCO 3.8.4 The Division I, Division II, Division III, and Division IV DC electrical power subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One DC electrical power subsystem (either Division I, II, or III) inoperable.	A.1	Determine OPERABLE DC electrical subsystems are not inoperable due to common cause failure.	2 hours
	AND		
	A.2	Declare affected required features inoperable.	2 hours
	AND		
	A.3	Verify the combustion turbine generator (CTG) is functional by verifying the CTG starts and achieves steady state voltage and frequency within 2 minutes.	12 hours
	AND		
	A.4	Verify the CTG circuit breakers are capable of being aligned to the two unaffected ESF buses.	12 hours AND Once per 8 hours thereafter
	AND		

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.5	Restore inoperable DC electrical power subsystem to OPERABLE status.	72 hours
B. Division IV DC electrical power subsystem inoperable.	B.1	Determine OPERABLE DC electrical subsystems are not inoperable due to common cause failure.	2 hours
	AND		
	B.2	Declare affected required features inoperable.	2 hours
C. One DC electrical power subsystem (either Division I, II, or III) inoperable. AND Division IV DC electrical power subsystem inoperable.	C.1	Restore inoperable DC electrical power subsystem (other than Division IV) to OPERABLE status.	2 hours
	OR		
	C.2	Restore Division IV DC electrical power subsystem to OPERABLE status.	2 hours
D. Required Action and associated Completion Time not met.	D.1	Be in MODE 3.	12 hours
	AND		
	D.2	Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.4.1	Verify battery terminal voltage is ≥ [ ] V on float charge.	7 days
SR 3.8.4.2	Verify no visible corrosion at terminals and connectors. <u>OR</u> Verify connection resistance is ≤ [ ] ohms for inter-cell connections, ≤ [ ] ohms for inter-rack connections, ≤ [ ] ohms for inter-tier connections, and ≤ [ ] ohms for terminal connections.	92 days
SR 3.8.4.3	Verify cells, cell plates, and battery racks show no visual indication of physical damage or abnormal deterioration.	12 months
SR 3.8.4.4	Remove visible corrosion, and verify cell to cell and terminal connections are coated with anti-corrosion material.	12 months
SR 3.8.4.5	Verify connection resistance is ≤ [ ] ohms for inter-cell connections, ≤ [ ] ohms for inter-rack connections, ≤ [ ] ohms for inter-tier connections, and ≤ [ ] ohms for terminal connections.	12 months
SR 3.8.4.6	-----------------------------NOTES---------------------------- 1. This Surveillance shall not be performed in MODE 1, 2, or 3. 2. Credit may be taken for unplanned events that satisfy this SR. -- Verify each required battery charger supplies ≥ [ ] amps at ≥ 125 V for ≥ 12 hours.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.4.7	------------------------------NOTES---------------------------- 1. The modified performance discharge test in SR 3.8.4.8 may be performed every 60 months in lieu of a service test in SR 3.8.4.7. 2. This Surveillance shall not be performed in MODE 1, 2, or 3. 3. Credit may be taken for unplanned events that satisfy this SR. --- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test.	18 months
SR 3.8.4.8	------------------------------NOTES---------------------------- 1. This Surveillance shall not be performed in MODE 1, 2, or 3. 2. Credit may be taken for unplanned events that satisfy this SR. --- Verify battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	60 months <u>AND</u> --------NOTE-------- Only applicable when battery shows degradation or has reached 85% of expected life ----------------------- 12 months

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources – Shutdown

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

APPLICABILITY: MODES 4 and 5,
During movement of irradiated fuel assemblies in secondary containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required DC electrical power subsystems 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 irradiated fuel assemblies in secondary containment.	Immediately
	AND	
	A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel.	Immediately
	AND	
	A.2.4 Initiate action to restore required DC electrical power subsystems to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.5.1	For DC sources required to be OPERABLE the following SRs are applicable: SR 3.8.4.1 SR 3.8.4.4 SR 3.8.4.7 SR 3.8.4.2 SR 3.8.4.5 SR 3.8.4.8. SR 3.8.4.3 SR 3.8.4.6	In accordance with applicable SRs

3.8 ELECTRICAL POWER SYSTEMS

3.8.6 Battery Cell Parameters

LCO 3.8.6 Battery cell parameters for the Division 1, 2, 3, and 4 batteries shall be within the Category A and B limits of Table 3.8.6-1.

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

ACTIONS

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

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

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met. OR One or more batteries with average electrolyte temperature of the representative cells < 10°C. OR One or more batteries with one or more battery cell parameters not within Category C limits.	B.1 Declare associated battery inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

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

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.6.2	Verify battery cell parameters meet Table 3.8.6-1 Category B limits.	92 days <u>AND</u> Once within 24 hours after battery discharge < [ ] V <u>AND</u> Once within 24 hours after battery overcharge > [ ] V
SR 3.8.6.3	Verify average electrolyte temperature of representative cells is ≥ 10°C.	92 days

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

PARAMETER	CATEGORY A: LIMITS FOR EACH DESIGNATED PILOT CELL	CATEGORY B: LIMITS FOR EACH CONNECTED CELL	CATEGORY C: LIMITS FOR EACH CONNECTED CELL
Electrolyte Level	> Minimum level indication mark, and ≤ 6 mm above maximum level indication mark[a]	> Minimum level indication mark, and ≤ 6 mm above maximum level indication mark[a]	Above top of plates, and not overflowing
Float Voltage	≥ 2.13 V	≥ 2.13 V	> 2.07 V
Specific Gravity [b][c]	≥ [ ]	≥ [ ] <u>AND</u> Average of all connected cells > [ ]	Not more than 0.020 below average of all connected cells <u>AND</u> Average of all connected cells ≥ [ ]

(a) It is acceptable for the electrolyte level to temporarily increase above the specified maximum level during equalizing charges provided it is not overflowing.

(b) Corrected for electrolyte temperature and level.

(c) Or battery charging current is < [ ] amps when on float charge. This is acceptable only during a maximum of [ ] days following a battery recharge.

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Inverters – Operating

LCO 3.8.7 The Division I, Division II, Division III, and Division IV inverters shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One inverter inoperable.	--------------------NOTE------------------- Immediately enter applicable Conditions and Required Actions of LCO 3.8.9 “Distribution Systems – Operating” for de-energized AC Vital buses. --	
	A.1 Restore inverters to OPERABLE status.	7 days
	AND	
	A.2 Declare affected required features inoperable.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One inverter (either Division I, II, or III) inoperable. AND Division IV inverter inoperable.	--------------------NOTE------------------- Immediately enter applicable Conditions and Required Actions of LCO 3.8.9 “Distribution Systems – Operating,” for de-energized AC Vital buses. -- B.1 Restore inoperable inverter (other than Division IV) to OPERABLE status. OR B.2 Restore Division IV inverter to OPERABLE status.	 2 hours 2 hours
C. Required Action and associated Completion Time of Condition A, or B not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

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

3.8 ELECTRICAL POWER SYSTEMS

3.8.8 Inverters – Shutdown

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

APPLICABILITY: MODES 4 and 5,
During movement of irradiated fuel assemblies in the secondary containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required inverters inoperable.	A.1 Declare affected required feature(s) inoperable.	Immediately
	<u>OR</u>	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	A.2.2 Suspend handling of irradiated fuel assemblies in the secondary containment.	Immediately
	<u>AND</u>	
	A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel.	Immediately
	<u>AND</u>	
	A.2.4 Initiate action to restore required inverters to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

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

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems – Operating

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

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One AC electrical power distribution subsystem inoperable.	A.1	Declare affected required features inoperable.	2 hours
	AND		
	A.2	Verify the combustion turbine generator (CTG) is functional by verifying the CTG starts and achieves steady state voltage and frequency within 2 minutes.	12 hours
	AND		
	A.3	Verify the CTG circuit breakers are capable of being aligned to the OPERABLE 6.9 kV essential AC buses.	12 hours AND Once per 8 hours thereafter
	AND		
	A.4	Restore AC electrical power distribution subsystem to OPERABLE status.	72 hours AND 7 days from discovery of failure to meet LCO

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. One AC vital bus electrical power distribution subsystem inoperable.	B.1	Declare affected required features inoperable.	2 hours
	AND		
	B.2	Restore AC vital bus electrical power distribution subsystem to OPERABLE status.	72 hours AND 7 days from discovery of failure to meet LCO
C. One AC vital bus electrical power distribution subsystem (either Division I, II, or III) inoperable. AND Division IV AC vital bus inoperable.	C.1	Restore inoperable AC vital bus (other than Division IV) to OPERABLE status.	2 hours
	OR		
	C.2	Restore inoperable Division IV AC vital bus to OPERABLE status.	2 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. One DC electrical power distribution subsystem (either Division I, II, or III) inoperable.	D.1	Declare affected required features inoperable.	2 hours
	AND		
	D.2	Verify the combustion turbine generator (CTG) is functional by verifying the CTG starts and achieves steady state voltage and frequency within 2 minutes.	12 hours
	AND		
	D.3	Verify the CTG circuit breakers are capable of being aligned to the two unaffected 6.9 kV essential AC buses.	12 hours AND Once per 8 hours thereafter
	AND		
	D.4	Restore DC electrical power distribution subsystems to OPERABLE status.	72 hours AND 7 days from discovery of failure to meet LCO
E. Division IV DC electrical power distribution subsystem inoperable.	E.1	Declare affected required features inoperable.	2 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
F. One DC electrical power distribution subsystem (either Division I, II, or III) inoperable. AND Division IV DC electrical power distribution subsystem inoperable.	F.1	Restore inoperable DC electrical power distribution subsystems (other than Division IV) to OPERABLE status.	2 hours
	OR		
	F.2	Restore Division IV DC electrical power distribution subsystems to OPERABLE status.	2 hours
G. Required Action and associated Completion Time of Condition A, B, C, D, E, or F not met.	G.1	Be in MODE 3.	12 hours
	AND		
	G.2	Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

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

3.8 ELECTRICAL POWER SYSTEMS

3.8.10 Distribution Systems – Shutdown

LCO 3.8.10 The necessary portions of the Divisions I, II, and III AC, Divisions I, II, III, and IV DC, and Divisions I, II, III, and IV AC vital bus electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE.

APPLICABILITY: MODES 4 and 5,
During movement of irradiated fuel assemblies in the secondary containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required AC, DC, or AC vital bus electrical power distribution subsystems inoperable.	A.1 Declare associated supported required feature(s) inoperable.	Immediately
	<u>OR</u>	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	A.2.2 Suspend handling of irradiated fuel assemblies in the secondary containment.	Immediately
	<u>AND</u>	

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.2.3	Initiate action to suspend operations with a potential for draining the reactor vessel.	Immediately
	<u>AND</u>		
	A.2.4	Initiate actions to restore required AC, DC, and AC vital bus electrical power distribution subsystems to OPERABLE status.	Immediately
	<u>AND</u>		
	A.2.5	Declare associated required shutdown cooling subsystem(s) inoperable and not in operation.	Immediately

SURVEILLANCE REQUIREMENTS

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

3.8 ELECTRICAL POWER SYSTEMS

3.8.11 AC Sources – Shutdown (Low Water Level)

LCO 3.8.11 The following AC electrical power sources shall be OPERABLE:

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

b. Two or more diesel generators (DGs) capable of supplying the required OPERABLE features via the onsite Class 1E AC electrical power distribution subsystems required by LCO 3.8.10.

APPLICABILITY: MODE 4 and MODE 5 with water level in the refueling cavity < 7.0 meters above the reactor pressure vessel flange.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required offsite circuit inoperable.	--------------------NOTE------------------- Enter applicable Condition and Required Actions of LCO 3.8.10, with one required division de-energized as a result of Condition A. --	
	A.1.1 Initiate action to restore required offsite circuit to OPERABLE status supplying power to all required ESF buses.	Immediately
	AND	
	A.1.2 Declare affected required feature(s) with no power available from an OPERABLE offsite circuit inoperable.	8 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	OR		
	A.2.1	Suspend CORE ALTERATIONS.	8 hours
	AND		
	A.2.2	Suspend movement of irradiated fuel assemblies in secondary containment.	8 hours
	AND		
	A.2.3	Initiate action to suspend operations with a potential for draining the reactor vessel (OPDRVs).	8 hours
	AND		
	A.2.4	Initiate action to restore required offsite circuit to OPERABLE status supplying power to all required ESF buses.	Immediately
B. One required DG inoperable.	B.1	Verify the combustion turbine generator (CTG) is functional by verifying the CTG starts and achieves steady state voltage and frequency within 2 minutes.	1 hour
	AND		
	B.2	Verify the CTG circuit breakers are aligned to the 6.9 kV essential AC bus associated with the inoperable required DG.	1 hour AND Once per 8 hours thereafter
	AND		

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.3	Restore required DG to OPERABLE status.	14 days
C. Required Action and Completion Time of Condition B not met. OR Two or more required DGs inoperable.	C.1	Suspend CORE ALTERATIONS.	Immediately
	AND		
	C.2	Suspend movement of irradiated fuel assemblies in secondary containment.	Immediately
	AND		
	C.3	Initiate action to suspend OPDRVs.	Immediately
	AND		
	C.4	Initiate action to restore required DG(s) to OPERABLE status.	Immediately
	AND		
	C.5	Declare affected required features supported by the inoperable DG(s) inoperable.	8 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.11.1	For AC sources required to be OPERABLE, the SRs of Specification 3.8.2 are applicable.	In accordance with applicable SRs

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

SURVEILLANCE REQUIREMENTS

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

3.9 REFUELING OPERATIONS

3.9.2 Refuel Position Rod-Out Interlock

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

APPLICABILITY: MODE 5 with the reactor mode switch in the refuel position and any control rod withdrawn.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Refuel position rod-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 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 in core cells containing one or more fuel assemblies.

APPLICABILITY: MODE 5.

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	
	A.2.1 Initiate action to fully insert the control rod associated with the inoperable position indicator.	Immediately
	AND	

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.2.2	Initiate action to disarm the associated fully inserted control rod drive.	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 5.

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	Insert each withdrawn control rod at least one step.	7 days
SR 3.9.5.2	Verify each withdrawn control rod scram accumulator pressure is ≥ 10.49 MPaG.	7 days

3.9 REFUELING OPERATIONS

3.9.6 Reactor Pressure Vessel (RPV) Water Level

LCO 3.9.6 RPV water level shall be ≥ 7.0 m above the top of the RPV flange.

APPLICABILITY: During movement of irradiated fuel assemblies within the RPV,
During movement of new fuel assemblies or handling of control rods within the RPV, when irradiated fuel assemblies are seated within the RPV.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.6.1	Verify RPV water level is ≥ 7.0 m above the top of the RPV flange.	24 hours

3.9 REFUELING OPERATIONS

3.9.7 Residual Heat Removal (RHR) – High Water Level

LCO 3.9.7 One RHR shutdown cooling subsystem shall be OPERABLE and in operation.

--NOTE--
The required RHR shutdown cooling subsystem may be removed from operation for up to 2 hours per 8 hour period.

APPLICABILITY: MODE 5 with irradiated fuel in the reactor pressure vessel (RPV) and with the water level ≥ 7.0 m above the top of the RPV flange.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required RHR shutdown cooling subsystem inoperable.	A.1 Verify an alternate method of decay heat removal is available.	1 hour <u>AND</u> Once per 24 hours thereafter
B. Required Action and associated Completion Time of Condition A not met.	B.1 Suspend loading irradiated fuel assemblies into the RPV. <u>AND</u> B.2 Initiate action to restore the secondary containment to OPERABLE status. <u>AND</u>	Immediately Immediately (continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.3	Initiate action to restore one standby gas treatment subsystem to OPERABLE status.	Immediately
	<u>AND</u>		
	B.4	Initiate action to restore one secondary containment isolation valve and associated instrumentation to OPERABLE status in each associated penetration flow path not isolated.	Immediately
C. Required RHR shutdown cooling subsystem not in operation.	C.1	Establish reactor coolant circulation by an alternate method.	1 hour from discovery of no reactor coolant circulation
	<u>AND</u>		
	C.2	Monitor reactor coolant temperature.	Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.7.1	Verify one RHR shutdown cooling subsystem is operating and circulating reactor coolant.	12 hours

3.9 REFUELING OPERATIONS

3.9.8 Residual Heat Removal (RHR) – Low Water Level

LCO 3.9.8 Two RHR shutdown cooling subsystems shall be OPERABLE, and one RHR shutdown cooling subsystem shall be in operation.

---NOTE---
The required operating shutdown cooling subsystem may be removed from operation for up to 2 hours per 8 hour period.

APPLICABILITY: MODE 5 with irradiated fuel in the reactor pressure vessel (RPV) and with the water level < 7.0 m above the top of the RPV flange.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two RHR shutdown cooling subsystems inoperable.	A.1 Verify an alternate method of decay heat removal is available for each inoperable RHR shutdown cooling subsystem.	1 hour AND Once per 24 hours thereafter
B. Required Action and associated Completion Time of Condition A not met.	B.1 Initiate action to restore the secondary containment to OPERABLE status. AND B.2 Initiate action to restore one standby gas treatment subsystem to OPERABLE status. AND	Immediately Immediately

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.3	Initiate action to restore one secondary containment isolation valve and associated instrumentation to OPERABLE status in each associated penetration flow path not isolated.	Immediately
C. No RHR shutdown cooling subsystem in operation.	C.1	Establish reactor coolant circulation by an alternate method.	1 hour from discovery of no reactor coolant circulation
	<u>AND</u>		
	C.2	Monitor reactor coolant temperature.	Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.8.1	Verify one RHR shutdown cooling subsystem is operating and circulating reactor coolant.	12 hours

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 4 may be changed to “NA,” and operation considered not to be in MODE 3; and the requirements of LCO 3.4.8, “Residual Heat Removal (RHR) Shutdown Cooling System – Cold Shutdown,” may be suspended, to allow performance of an inservice leak or hydrostatic test provided the following MODE 3 LCOs are met:

a. LCO 3.3.1.1, “SSLC Sensor Instrumentation,” Functions 7b, 24a and 24b;

b. LCO 3.3.1.4, “ESF Actuation Instrumentation,” Function 11;

c. LCO 3.6.4.1, “Secondary Containment”;

d. LCO 3.6.4.2, “Secondary Containment Isolation Valves (SCIVs)”; and

e. LCO 3.6.4.3, “Standby Gas Treatment (SGT) System.”

APPLICABILITY: MODE 4 with average reactor coolant temperature > 93°C.

ACTIONS

---NOTE---

Separate Condition entry is 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 4 include reducing average reactor coolant temperature to ≤ 93°C. --------------------------------- Enter the applicable Condition of the affected LCO.	Immediately
	<u>OR</u>		
	A.2.1	Suspend activities that could increase the average reactor coolant temperature or pressure.	Immediately
	<u>AND</u>		
	A.2.2	Reduce average reactor coolant temperature to ≤ 93°C.	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 (Section 1.1, Definitions) for MODES 3, 4, and 5 may be changed to include the run, startup/hot standby, and refuel position, and operation considered not to be in MODE 1 or 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 and 4 with the reactor mode switch in the run, startup/hot standby, or refuel position,
MODE 5 with the reactor mode switch in the run or startup/hot standby 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
	<u>AND</u>	
	A.2 Fully insert all insertable control rods in core cells containing one or more fuel assemblies.	1 hour
	<u>AND</u>	
	A.3.1 Place the reactor mode switch in the shutdown position.	1 hour
	<u>OR</u>	

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.3.2	--------------NOTE------------ Only applicable in MODE 5. ---------------------------------- 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 – Hot Shutdown

LCO 3.10.3 The reactor mode switch position specified in Table 1.1-1 for MODE 3 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 Rod-Out Interlock”;

b. LCO 3.9.4, “Control Rod Position Indication”;

c. All other control rods are fully inserted; and

d. 1. LCO 3.3.1.1, “SSLC Sensor Instrumentation,” MODE 5 requirements for Functions 1.a, 1.d, 2.a, and 2.d of Table 3.3.1.1-1,
and

LCO 3.3.1.2, “RPS and MSIV Trip Actuation,” Functions 1.a, 1.b, 3, and 4,
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 5 requirements, except the single control rod or pair to be withdrawn may be assumed to be the highest worth control rod.

APPLICABILITY: MODE 3 with the reactor mode switch in the refuel position.

ACTIONS

---NOTE---
Separate Condition entry is 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
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 control rods, other than the control rod or rod pair 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 control rods, other than the control rod or 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 4 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, and subsequent removal of the associated control rod drives (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 Rod-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. LCO 3.3.1.1, "SSLC Sensor Instrumentation," MODE 5 requirements for Functions 1.a, 1.d, 2.a, and 2.d, of Table 3.3.1.1-1,

LCO 3.3.1.2, "RPS and MSIV Trip Actuation," Functions 1.a, 1.b, 3, and 4; 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 5 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 4 with the reactor mode switch in the refuel position.

ACTIONS

---NOTE---
Separate Condition entry is 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
	<u>OR</u>	
	A.2.1 Initiate action to fully insert all insertable control rods.	Immediately
	<u>AND</u>	
	A.2.2 Place the reactor mode switch in the shutdown position.	1 hour
B. One or more of the above requirements 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
	<u>AND</u>	
	B.2.1 Initiate action to fully insert all control rods.	Immediately
	<u>OR</u>	

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	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 or rod pair 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 control rods, other than the control rod or rod pair being withdrawn, are fully inserted.	24 hours
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 Functions 1.a, 1.b, 1.d, 2.a, 2.d and 12 of LCO 3.3.1.1, “SSLC Sensor Instrumentation”; Functions 1.a, 1.b, 3, and 4 of LCO 3.3.1.2, “RPS and MSIV Actuation”; LCO 3.3.8.1, “Electric Power Monitoring”; LCO 3.9.1, “Refueling Equipment Interlocks”; LCO 3.9.2, “Refueling Position Rod-Out Interlock”; LCO 3.9.4, “Control Rod Position Indication”; and LCO 3.9.5, “Control Rod OPERABILITY – Refueling,” may be suspended in MODE 5 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 being removed are disarmed;

c. A control rod withdrawal block is inserted;

d. LCO 3.1.1, “SHUTDOWN MARGIN (SDM),” MODE 5 requirements, except the single control rod (or pair) to be withdrawn may be assumed to be the highest worth control rod pair; and

e. No other CORE ALTERATIONS are in progress.

APPLICABILITY: MODE 5 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 control rod(s) and associated CRD mechanism. <u>AND</u> A.2.1 Initiate action to fully insert all control rods.	Immediately Immediately (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	<u>OR</u>	
	A.2.2 Initiate action to satisfy the requirements of this LCO.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.5.1	Verify all control rods, other than the control rod withdrawn for the removal of the associated CRD, are fully inserted.	24 hours
SR 3.10.5.2	Verify all control rods, other than the control rod withdrawn for the removal of the associated CRD, in a five by five array centered on each control rod withdrawn for the removal of the associated CRD, are disarmed.	24 hours
SR 3.10.5.3	Verify a control rod withdrawal block is inserted.	24 hours
SR 3.10.5.4	Perform SR 3.1.1.1.	According to SR 3.1.1.1
SR 3.10.5.5	Verify no CORE ALTERATIONS, other than the single control rod or control rod pair being removed, 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 in MODE 5, 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 5 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.2.1	Initiate action to fully insert all control rods in core cells containing one or more fuel assemblies.	Immediately
	OR		
	A.2.2	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
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 Action and Position Information (RAPI) Subsystem as allowed by SR 3.3.5.1.7, 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 5 may be changed to include the startup/hot standby position, and operation considered not to be in MODE 2, to allow SDM testing, provided the following requirements are met:

a. LCO 3.3.1.1, "SSLC Sensor Instrumentation," MODE 2 requirements for Function 2.a and 2.d of Table 3.3.1.1-1;

b. 1. LCO 3.3.5.1, "Control Rod Block Instrumentation," MODE 2 requirements for Function 1.b of Table 3.3.5.1-1,

<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 that are not in compliance with the Ganged Withdrawal Sequence Restrictions (GWSR) shall be made using either the NOTCH withdrawal mode or the STEP withdrawal mode; and

e. No other CORE ALTERATIONS are in progress.

APPLICABILITY: MODE 5 with the reactor mode switch in startup/hot standby position.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more of the above requirements not met, for reasons other than Condition B.	A.1	Place the reactor mode switch in the shutdown or refuel position.	Immediately
B. One control rod not coupled to its associated CRD.	B.1	Declare the affected control rod inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.8.1	Perform the applicable SRs for LCO 3.3.1.1, Functions 2.a and 2.d.	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 applicable SRs for LCO 3.3.5.1, Function 1.b.	According to the applicable SRs
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

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
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 that could affect coupling <u>AND</u> Once the first time the control rod is withdrawn to “full out” position after the associated orificed fuel support has been moved

3.10 SPECIAL OPERATIONS

3.10.9 Reactor Internal Pumps (RIPs) – Testing

LCO 3.10.9 The requirements of LCO 3.4.1, “Reactor Internal Pumps Operating,” may be suspended for ≤ 24 hours to allow:

a. PHYSICS TESTS, provided THERMAL POWER is ≤ 5% RTP; and

b. Performance of the Startup Test Program.

APPLICABILITY: MODES 1 and 2 with less than nine RIPs in operation.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Requirements of LCO 3.4.1 not met for > 24 hours.	A.1	Insert all insertable control rods.	1 hour
B. Requirements of the LCO not met for reasons other than Condition A.	B.1	Place the reactor mode switch in the shutdown position.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.9.1	Verify LCO 3.4.1 requirements suspended for ≤ 24 hours.	1 hour
SR 3.10.9.2	Verify THERMAL POWER is ≤ 5% RTP during PHYSICS TESTS.	1 hour

3.10 SPECIAL OPERATIONS

3.10.10 Training Startups

LCO 3.10.10 The low pressure core flooder (LPFL) OPERABILITY requirements specified in LCO 3.5.1, "ECCS – Operating," may be changed to allow one residual heat removal subsystem to be aligned in the shutdown cooling mode for training startups, provided the following requirements are met:

a. REACTOR THERMAL POWER ≤ 1% RTP; and

b. Average reactor coolant temperature is < 93°C.

APPLICABILITY: MODE 2 with one LPFL subsystem suction valve closed.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more of the above requirements not met.	A.1 Place the reactor mode switch in the shutdown position.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.10.1	Verify REACTOR THERMAL POWER ≤ 1% RTP.	1 hour
SR 3.10.10.2	Verify average reactor coolant temperature is < 93°C.	1 hour

3.10 SPECIAL OPERATIONS

3.10.11 Low Power PHYSICS TEST

LCO 3.10.11 The reactor mode switch position specified in Table 1.1-1 for MODE 5 may be changed to include the startup/hot standby position, and operation considered not to be in MODE 2, to allow Low Power PHYSICS TEST, provided the following requirements are met:

a. 1. LCO 3.3.5.1, “Control Rod Block Instrumentation,” MODE 2 requirements for Function 1.b of Table 3.3.5.1-1,

<u>OR</u>

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

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

c. All control rod withdrawals that are not in compliance with the Ganged Withdrawal Sequence Restrictions (GWSR) shall be made using either the NOTCH withdrawal mode or the STEP withdrawal mode;

d. No other CORE ALTERATIONS are in progress;

e. REACTOR THERMAL POWER ≤ 1% RTP; and

f. Average reactor coolant temperature ≤ 93°C (200°F).

APPLICABILITY: MODE 5 with the reactor mode switch in startup/hot standby position.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more of the above requirements not met.	A.1	Place the reactor mode switch in the shutdown or refuel position.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.11.1	------------------------------NOTE------------------------------ Not required to be met if SR 3.10.11.2 satisfied. --- Perform the applicable SRs for LCO 3.3.5.1, Function 1.b.	According to the applicable SRs
SR 3.10.11.2	------------------------------NOTE------------------------------ Not required to be met if SR 3.10.11.1 satisfied. --- Verify movement of control rods is in compliance with the approved control rod sequence for the Low Power PHYSICS TEST by a second licensed operator or other qualified member of the technical staff.	During control rod movement
SR 3.10.11.3	Verify no other CORE ALTERATIONS are in progress.	12 hours

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.10.11.4	Verify each withdrawn control rod does not go to the withdrawn overtravel position.	Prior to satisfying LCO 3.10.11.b requirement after work on control rod or CRD System that could affect coupling <u>AND</u> Once the first time the control rod is withdrawn to “full out” position after the associated orificed fuel support has been moved
SR 3.10.11.5	Verify REACTOR THERMAL POWER ≤ 1% RTP.	1 hour
SR 3.10.11.6	Verify average reactor coolant temperature is ≤ 93°C.	1 hour

3.10 SPECIAL OPERATIONS

3.10.12 Multiple Control Rod Drive Subassembly Removal – Refueling

LCO 3.10.12 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 in MODE 5, to allow removal of control rod drive subassemblies with the control rods maintained fully inserted by their anti-rotation devices, provided the following requirements are met:

a. No two adjacent (face or diagonal) control rod drives are to have their subassemblies removed concurrently unless one of the two adjacent control rods has its four fuel assemblies removed from its associated core cell, and

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

APPLICABILITY: MODE 5 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 removal of associated CRD subassemblies.	Immediately
	AND	
	A.2.1 Initiate action to fully insert all control rods in core cells containing one or more fuel assemblies.	Immediately
	OR	
	A.2.2 Initiate action to satisfy the requirements of this LCO.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.12.1	Verify the anti-rotation devices associated with each CRD subassembly removed are in the correct position to maintain the control rod fully inserted.	24 hours
SR 3.10.12.2	For each control rod with its associated CRD subassembly removed, verify from over the reactor vessel that the top of the control rod is visible at its fully inserted position.	24 hours
SR 3.10.12.3	Verify all other control rods in core cells containing one or more fuel assemblies are fully inserted.	24 hours

4.0 DESIGN FEATURES

4.1 Site

4.1.1 Site and Exclusion Area Boundaries

The site and exclusion area boundaries [shall be as described or as shown in Figure 4.1-1].

4.1.2 Low Population Zone (LPZ)

The LPZ [shall be as described or as shown in Figure 4.1-2].

4.2 Reactor Core

4.2.1 Fuel Assemblies

The reactor shall contain 872 fuel assemblies. Each assembly shall consist of a matrix of zirconium alloy fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO_2) as fuel material, and water rods. Limited substitutions of zirconium alloy 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 nonlimiting core regions.

4.2.2 Control Rod Assemblies

The reactor core shall contain 205 cruciform shaped control rod assemblies. The control material shall be boron carbide and/or hafnium metal as approved by the NRC.

4.3 Fuel Storage

4.3.1 Criticality

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

a. Fuel assemblies having a maximum 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 as described in Section 9.1 of the DCD Tier 2.

(continued)

4.0 DESIGN FEATURES

4.3 Fuel Storage (continued)

4.3.2 Drainage

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below 3.1 m above the top of the active fuel.

4.3.3 Capacity

The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no less than 2354 fuel assemblies (270% of full core discharge).

(This figure shall be supplied by the COL applicant.)

This figure shall consist of [a map of] the site area and provide, as a minimum, the information described in Section [2.1.2] of the FSAR relating to [the map].

Figure 4.1-1 (page 1 of 1)
Site and Exclusion Area Boundaries

(This figure shall be supplied by the COL applicant.)

This figure shall consist of [a map of] the site area showing the LPZ boundary. Features such as towns, roads, and recreational areas shall be indicated in sufficient detail to allow identification of significant shifts in population distribution within the LPZ.

Figure 4.1-2 (page 1 of 1)
Low Population Zone

5.0 ADMINISTRATIVE CONTROLS

5.1 Responsibility

5.1.1 The [Plant Superintendent] shall be responsible for overall unit operation and shall delegate in writing the succession to this responsibility during his absence.

The [Plant Superintendent], or his designee, in accordance with approved administrative procedures, shall approve, prior to implementation, each proposed test or experiment and proposed changes and modifications to unit systems or equipment that affect nuclear safety.

5.1.2 The [Shift Supervisor (SS)] shall be responsible for the control room command function. A management directive to this effect, signed by the [highest level of corporate or site management] shall be issued annually to all station personnel. 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, an individual with an active SRO license or Reactor Operator license shall be designated to assume the control room command function.

5.0 ADMINISTRATIVE CONTROLS

5.2 Organization

5.2.1 Onsite and Offsite Organizations

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

a. Lines of authority, responsibility, and communication shall be defined and established throughout highest management levels, intermediate levels, and all operating organization positions. These relationships shall be documented and updated, as appropriate, in organization charts, functional descriptions of departmental responsibilities and relationships, and job descriptions for key personnel positions, or in equivalent forms of documentation. These requirements shall be documented in the [applicant's FSAR];

b. The [Plant Superintendent] 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. The [a specified corporate executive position] 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. An auxiliary operator shall be assigned to each reactor containing fuel and an additional auxiliary operator shall be assigned for each control room from which a reactor is operating.[1]

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

(continued)

5.2 Organization

5.2.2 Unit Staff (continued)

b. At least one licensed Reactor Operator (RO) shall be present in the control room when fuel is in the reactor. In addition, while the unit is in MODE 1, 2, 3, or 4, at least one licensed Senior Reactor Operator (SRO) shall be present in the control room.

c. A [Health Physics 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 unit staff who perform safety related functions (e.g., licensed SROs, licensed ROs, health physicists, auxiliary operators, and key maintenance personnel).

Adequate shift coverage shall be maintained without routine heavy use of overtime. The objective shall be to have operating personnel work an [8 or 12] hour day, nominal 40 hour week, while the unit is operating. However, in the event that unforeseen problems require substantial amounts of overtime to be used, or during extended periods of shutdown for refueling, major maintenance, or major plant modification, on a temporary basis the following guidelines shall be followed:

1. An individual should not be permitted to work more than 16 hours straight, excluding shift turnover time;
2. An individual should not be permitted to work more than 16 hours in any 24 hour period, nor more than 24 hours in any 48 hour period, nor more than 72 hours in any 7 day period, all excluding shift turnover time;
3. A break of at least 8 hours should be allowed between work periods, including shift turnover time;
4. Except during extended shutdown periods, the use of overtime should be considered on an individual basis and not for the entire staff on a shift.

Any deviation from the above guidelines shall be authorized in advance by the [Plant Superintendent] or his designee, in accordance with approved administrative procedures, or by higher levels of management, in accordance with established procedures and with documentation of the basis for granting the deviation.

(continued)

5.2 Organization

5.2.2 Unit Staff (continued)

Controls shall be included in the procedures such that individual overtime shall be reviewed monthly by the [Plant Superintendent] or his designee to ensure that excessive hours have not been assigned. Routine deviation from the above guidelines is not authorized.

OR

The amount of overtime worked by unit staff members performing safety related functions shall be limited and controlled in accordance with the NRC Policy Statement on working hours (Generic Letter 82-12).

e. The [Operations Manager or Assistant Operations Manager] shall hold an active SRO license.

f. The Shift Technical Advisor (STA) shall provide advisory technical support to the Shift Supervisor (SS) in the areas of thermal hydraulics, reactor engineering, and plant analysis with regard to the safe operation of the unit. In addition, the STA 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 2, 1987, 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].

5.0 ADMINISTRATIVE CONTROLS

5.4 Technical Specifications (TS) Bases Control

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

5.4.2 Licensees may make changes to Bases without prior NRC approval provided the changes do not involve either of the following:

a. A change in the plant-specific TS, or plant-specific DCD Tier 1 or Tier 2 information; or

b. A change to the site-specific portion of the FSAR that involves an unreviewed safety question as defined in 10 CFR 50.59, or a change to Tier 2 of the plant-specific DCD that involves an unreviewed safety question as defined in the design certification rule for the ABWR (Appendix A to 10 CFR 52).

Changes to the Bases implemented without prior NRC approval shall be provided to the NRC on a frequency consistent with 10 CFR 50.71.

5.4.3 The Bases Control Program shall contain provisions to ensure that the Bases are maintained consistent with the FSAR, which consists of the plant-specific DCD and the site-specific portion of the FSAR.

5.4.4 Proposed changes that meet the criteria of Specification 5.4.2.a or Specification 5.4.2.b above shall be reviewed and approved by the NRC prior to implementation.

5.0 ADMINISTRATIVE CONTROLS

5.5 Procedures, Programs, and Manuals

5.5.1 Procedures

5.5.1.1 Scope

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

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

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

c. Quality assurance for effluent and environmental monitoring;

d. Fire Protection Program implementation; and

e. All programs specified in Specification 5.5.2.

5.5.2 Programs and Manuals

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

5.5.2.1 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 program required by Specification 5.5.2.4, and descriptions of the information that should be included in the Annual Radiological Environmental Operating, and Radioactive Effluent Release, reports required by Specification 5.7.1.2 and Specification 5.7.1.3.

Licensee initiated changes to the ODCM:

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

(continued)

5.5 Procedures, Programs, and Manuals

5.5.2.1 Offsite Dose Calculation Manual (ODCM) (continued)

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

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

b. Shall become effective after review and acceptance by plant reviews and the approval of the [Plant Superintendent]; and

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

5.5.2.2 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 Low Pressure Core Flooder, High Pressure Core Flooder, Residual Heat Removal, Reactor Core Isolation Cooling, Hydrogen Recombiner, Post Accident Sampling, Standby Gas Treatment, Suppression Pool Cleanup, Reactor Water Cleanup, Fuel Pool Cooling and Cleanup, Process Sampling, Containment Atmospheric Monitoring, and Fission Product Monitor. The program shall include the following:

a. Preventive maintenance and periodic visual inspection requirements; and

b. Integrated leak test requirements for each system at refueling cycle intervals or less.

5.5.2.3 Post Accident Sampling

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

a. Training of personnel;

(continued)

5.5 Procedures, Programs, and Manuals

5.5.2.3 Post Accident Sampling (continued)

b. Procedures for sampling and analysis; and

c. Provisions for maintenance of sampling and analysis equipment.

5.5.2.4 Radioactive Effluent Controls Program

This program conforms to 10 CFR 50.36a for the control of radioactive effluents and for maintaining the doses to members of the public from radioactive effluents as low as reasonably achievable. The program (1) shall be contained in the ODCM, (2) shall be implemented by procedures, and (3) 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 10 times the concentration values in Appendix B, Table 2, Column 2 to 10 CFR 20.1001-20.2401;

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

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

e. Determination of cumulative and projected 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;

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 percent of the guidelines for the annual dose or dose commitment, conforming to 10 CFR 50, Appendix I;

(continued)

5.5 Procedures, Programs, and Manuals

5.5.2.4 Radioactive Effluent Controls Program (continued)

g. Limitations on the dose rate resulting from radioactive material released in gaseous effluents to areas beyond the site boundary conforming to the dose associated with 10 CFR 20, Appendix B, Table II, Column 1;

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 due to releases of radioactivity and to radiation from uranium fuel cycle sources, conforming to 40 CFR 190.

5.5.2.5 Component Cyclic or Transient Limit

This program provides controls to track the cyclic and transient occurrences in DCD Tier 2, Section 3.9.1.1 to ensure that components are maintained within the design limits.

5.5.2.6 Inservice Testing Program

This program shall include the following:

a. Testing frequencies specified in Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as follows:

ASME Boiler and Pressure Vessel 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

(continued)

5.5 Procedures, Programs, and Manuals

5.5.2.6 Inservice Testing Program (continued)

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

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

d. Nothing in the ASME Boiler and Pressure Vessel Code shall be construed to supersede the requirements of any TS.

5.5.2.7 Ventilation Filter Testing Program (VFTP)

A program shall be established to implement the following required testing of Engineered Safety Feature (ESF) filter ventilation systems at the frequencies specified in [Regulatory Guide], and in accordance with Regulatory Guide 1.52, Revision 2; ASME N510-1989; and AG-1-1991.

a. Demonstrate for each of the ESF systems that an inplace test of the high efficiency particulate air (HEPA) filters shows a penetration and system bypass < [0.05]% when tested in accordance with Regulatory Guide 1.52, Revision 2, and ASME N510-1989 at the system flowrate specified below [± 10%]:

ESF Ventilation System	Flowrate
Control Room Habitability System Standby Gas Treatment System	[ ]

b. Demonstrate for each of the ESF systems that an inplace test of the charcoal adsorber shows a penetration and system bypass < [0.05]% when tested in accordance with Regulatory Guide 1.52, Revision 2, and ASME N510-1989 at the system flowrate specified below [± 10%]:

ESF Ventilation System	Flowrate
Control Room Habitability System Standby Gas Treatment System	[ ]

c. Demonstrate for each of the ESF systems that a laboratory test of a sample of the charcoal adsorber, when obtained as described in Regulatory Guide 1.52, Revision 2, shows the methyl iodide penetration less than the value specified below when tested in accordance with [ASTM D3803-1989] at a temperature of ≤ [30°C] and greater than or equal to the relative humidity specified below:

(continued)

5.5 Procedures, Programs, and Manuals

5.5.2.7 Ventilation Filter Testing Program (VFTP) (continued)

ESF Ventilation System	Penetration	RH
Control Room Habitability System Standby Gas Treatment System	[ ]	[ ]

[Reviewer's Note: Allowable penetration = [100% - methyl iodide efficiency for charcoal credited in staff safety evaluation]/(safety factor).

Safety factor = [5] for systems with heaters.]

d. Demonstrate for each of the ESF systems that the pressure drop across the combined HEPA filters, the prefilters, and the charcoal adsorbers is less than the value specified below when tested in accordance with Regulatory Guide 1.52, Revision 2, and ASME N510-1989 at the system flowrate specified below [± 10%]:

ESF Ventilation System	Delta P	Flowrate
Control Room Habitability System Standby Gas Treatment System	[ ]	[ ]

e. Demonstrate that the heaters for each of the ESF systems dissipate the value specified below [± 10%] when tested in accordance with ASME N510-1989:

ESF Ventilation System	Wattage
Control Room Habitability System Standby Gas Treatment System	[ ]

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

5.5.2.8 Explosive Gas Radioactivity Monitoring Program

This program provides controls for potentially explosive gas mixtures contained in the Offgas System. 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."

(continued)

5.5 Procedures, Programs, and Manuals

5.5.2.8 Explosive Gas Radioactivity Monitoring Program (continued)

The program shall include:

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

b. A surveillance program to ensure that the quantity of radioactivity in the Offgas System is less than the amount that would result in a whole body exposure of ≥ 25 mSv to any individual in an unrestricted area, in the event of inadvertent bypass of the Offgas Systems charcoal beds as analyzed in DCD Tier 2, Section 15.7.1.

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

5.5.2.9 Diesel Fuel Oil Testing Program

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

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

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

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

   3. a clear and bright appearance with proper color;

b. Other properties for ASTM 2D fuel oil are within limits within 31 days following sampling and addition to storage tanks; and

c. Total particulate concentration of the fuel oil is ≤ 10 mg/l when tested every 31 days in accordance with ASTM D-2276, Method A-2 or A-3.

(continued)

5.5 Procedures, Programs, and Manuals

5.5.2 Programs and Manuals (continued)

5.5.2.10 Software Error Evaluation Program

This program provides controls to ensure that appropriate software error evaluation procedures, to protect the plant from common mode software errors, are established to ensure that redundant system capability is not adversely affected. This program shall evaluate the cause of the inoperability, the affected components, and the plans and schedule for completing proposed remedial actions. If a determination is made that a common mode software error exists, then a Special Report shall be submitted in accordance with Specification 5.7.2.b.

5.0 ADMINISTRATIVE CONTROLS

5.6 Safety Function Determination Program (SFDP)

5.6.1 This program ensures loss of safety function is detected and appropriate actions taken. Upon failure to meet two or more LCOs at the same time, 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.

5.6.2 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;

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.

5.6.3 A loss of safety function exists when, assuming no concurrent single failure, 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 (Case A); or

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

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

(continued)

5.6 SFDP

5.6.3 (continued)

Generic Example:

Division A		Division B	
System i		System i	← Case C
↓		↓	
System ii	← (Support System Inoperable)	System ii	
↓		↓	
System iii		System iii	← Case A
↓		↓	
System iv		System iv	← Case B

5.6.4 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.

5.0 ADMINISTRATIVE CONTROLS

5.7 Reporting Requirements

5.7.1 Routine Reports

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

5.7.1.1 Annual Reports

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

Annual Reports covering the activities of the unit as described below for the previous calendar year shall be submitted by March 31 of each year. [The initial report shall be submitted by March 31 of the year following initial criticality.]

Reports required on an annual basis include:

a. Occupational Radiation Exposure Report

A tabulation on an annual basis of the number of station, utility, and other personnel (including contractors) for whom monitoring was required, receiving an annual deep dose equivalent > 1 mSv and the associated collective deep dose equivalent (reported in person-rem) according to work and job functions (e.g., reactor operations and surveillance, inservice inspection, routine maintenance, special maintenance [describe maintenance], waste processing, and refueling). This tabulation supplements the requirements of 10 CFR 20.2206. The dose assignments to various duty functions may be estimated based on pocket dosimeter, thermoluminescent dosimeter (TLD), or film badge measurements. Small exposures totalling < 20% of the individual total dose need not be accounted for. In the aggregate, at least 80% of the total deep dose equivalent received from external sources should be assigned to specific major work functions; and

[b. Any other unit unique reports required on an annual basis.]

5.7.1.2 Annual Radiological Environmental Operating Report

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

(continued)

5.7 Reporting Requirements

5.7.1.2 Annual Radiological Environmental Operating Report (continued)

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]. [The report shall identify the TLD results that represent collocated dosimeters in relation to the NRC TLD program and the exposure period associated with each result.] 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.

5.7.1.3 Radioactive Effluent Release 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; 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 50, Appendix I, Section IV.B.1.

5.7.1.4 Monthly Operating Reports

Routine reports of operating statistics and shutdown experience [, including documentation of all challenges to the safety/relief valves,] shall be submitted on a monthly basis no later than the 15th of each month following the calendar month covered by the report.

(continued)

5.7 Reporting Requirements

5.7.1 Routine Reports (continued)

5.7.1.5 CORE OPERATING LIMITS REPORT (COLR)

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

[The 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, title, date, and NRC staff approval document, or identify the staff Safety Evaluation Report for a plant specific methodology by NRC letter and date.]

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

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

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

The RCS pressure and temperature limits, including heatup and cooldown rates, criticality, and hydrostatic and leak test limits, shall be established and documented in the PTLR. [The individual Specifications that address the reactor vessel pressure and temperature limits and the heatup and cooldown rates may be referenced.] The analytical methods used to determine the pressure and temperature limits including the heatup and cooldown rates shall be those previously reviewed and approved by the NRC in [Topical Report(s), number, title, date, and NRC staff approval document, or staff safety evaluation report for a plant specific methodology by NRC letter and date]. The reactor vessel pressure and temperature limits, including those for heatup and cooldown rates, shall be determined so that all applicable limits (e.g., heatup limits, cooldown limits, and inservice leak and hydrostatic testing limits) of the analysis are met. The PTLR, including revisions or supplements thereto, shall be provided upon issuance for each reactor vessel fluency period.

(continued)

5.7 Reporting Requirements (continued)

5.7.2 Special Reports

[Special Reports may be required covering inspection, test, and maintenance activities. These special reports are determined on an individual basis for each unit, and their preparation and submittal are designated in the Technical Specifications.]

Special Reports shall be submitted in accordance with 10 CFR 50.4 within the time period specified for each report.

The following Special Reports shall be submitted:

a. When a Special Report is required by Condition C of LCO 3.3.3.1, “Essential Multiplexer System,” a report shall be submitted within the following 14 days. The report shall outline the cause of the inoperability, consideration of common mode failures, and the plans and schedule for restoring the EMS transmission segments to OPERABLE status.

b. When a Special Report is required by Specification 5.5.2.10, “Software Error Evaluation Program,” a report shall be submitted within the following 7 days. The report shall outline the cause of the inoperability, the affected components, and the plans and schedule for completing proposed remedial actions.